Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 06, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 20, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bob Michels
bob.michels@pacelabs.com
(612)607-6452
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Alaska Certification UST-107
California Certification #2973
California Certification #2973
Montana Certificate #CERT0103
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Nevada DCNR Certification #: MN000372018-1
Montana DHHS Certification #: CERT0102
Minnesota Dept of Health Certification #: 1382680
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10424249001	**FD-SB-A5(15-17)**	Solid	03/20/18 13:00	03/20/18 16:55
10424249002	**FD-SB-B5(11.5-23)**	Solid	03/20/18 15:10	03/20/18 16:55

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10424249001	**FD-SB-A5(15-17)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	AET1	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424249002	**FD-SB-B5(11.5-23)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	AET1	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-A5(15-17) **Lab ID: 10424249001** Collected: 03/20/18 13:00 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	**22.5**	ng/g	13.1	1	03/30/18 11:35	04/02/18 16:46	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	309-00-2	
alpha-BHC	ND	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	319-84-6	
beta-BHC	**35.0**	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	319-85-7	M6
delta-BHC	ND	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	58-89-9	
Chlordane (Technical)	ND	ug/kg	246	10	03/21/18 11:50	04/02/18 20:15	57-74-9	
alpha-Chlordane	ND	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	5103-71-9	
gamma-Chlordane	ND	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	5103-74-2	
4,4'-DDD	ND	ug/kg	49.0	10	03/21/18 11:50	04/02/18 20:15	72-54-8	
4,4'-DDE	**52.5**	ug/kg	49.0	10	03/21/18 11:50	04/02/18 20:15	72-55-9	M6,R1
4,4'-DDT	ND	ug/kg	49.0	10	03/21/18 11:50	04/02/18 20:15	50-29-3	
Dieldrin	ND	ug/kg	49.0	10	03/21/18 11:50	04/02/18 20:15	60-57-1	
Endosulfan I	ND	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	959-98-8	
Endosulfan II	ND	ug/kg	49.0	10	03/21/18 11:50	04/02/18 20:15	33213-65-9	
Endosulfan sulfate	ND	ug/kg	49.0	10	03/21/18 11:50	04/02/18 20:15	1031-07-8	M6,R1
Endrin	ND	ug/kg	49.0	10	03/21/18 11:50	04/02/18 20:15	72-20-8	
Endrin aldehyde	**56.5**	ug/kg	49.0	10	03/21/18 11:50	04/02/18 20:15	7421-93-4	M6,R1
Endrin ketone	**50.8**	ug/kg	49.0	10	03/21/18 11:50	04/02/18 20:15	53494-70-5	M6,R1
Heptachlor	ND	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	76-44-8	
Heptachlor epoxide	ND	ug/kg	24.6	10	03/21/18 11:50	04/02/18 20:15	1024-57-3	
Methoxychlor	ND	ug/kg	246	10	03/21/18 11:50	04/02/18 20:15	72-43-5	
Toxaphene	ND	ug/kg	736	10	03/21/18 11:50	04/02/18 20:15	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	10	03/21/18 11:50	04/02/18 20:15	877-09-8	3M,D4, S4
Decachlorobiphenyl (S)	0	%.	30-150	10	03/21/18 11:50	04/02/18 20:15	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	53469-21-9	
PCB-1248 (Aroclor 1248)	**394**	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	12672-29-6	
PCB-1254 (Aroclor 1254)	**293**	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	11100-14-4	
PCB, Total	**686**	ug/kg	48.6	1	03/21/18 12:24	03/26/18 15:59	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	81	%.	48-125	1	03/21/18 12:24	03/26/18 15:59	877-09-8	
Decachlorobiphenyl (S)	93	%.	30-134	1	03/21/18 12:24	03/26/18 15:59	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-A5(15-17) **Lab ID: 10424249001** Collected: 03/20/18 13:00 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**4400**	mg/kg	651	50	03/21/18 18:51	03/22/18 10:54		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	50	03/21/18 18:51	03/22/18 10:54	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**187**	mg/kg	20.4	1	03/27/18 09:24	03/28/18 02:39		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	03/27/18 09:24	03/28/18 02:39	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**13600**	mg/kg	71.5	5	03/21/18 04:13	03/23/18 15:47	7429-90-5	P6
Barium	**547**	mg/kg	3.6	5	03/21/18 04:13	03/23/18 15:47	7440-39-3	P6,R1
Boron	**238**	mg/kg	53.7	5	03/21/18 04:13	03/23/18 15:47	7440-42-8	M1
Copper	**137**	mg/kg	3.6	5	03/21/18 04:13	03/23/18 15:47	7440-50-8	M1,R1
Iron	**99500**	mg/kg	89.4	25	03/21/18 04:13	03/23/18 16:07	7439-89-6	P6,R1
Manganese	**3260**	mg/kg	8.9	25	03/21/18 04:13	03/23/18 16:07	7439-96-5	P6,R1
Nickel	**1480**	mg/kg	7.2	5	03/21/18 04:13	03/23/18 15:47	7440-02-0	P6,R1
Silver	ND	mg/kg	3.6	5	03/21/18 04:13	03/23/18 15:47	7440-22-4	D3
Tin	**204**	mg/kg	26.8	5	03/21/18 04:13	03/23/18 15:47	7440-31-5	M1
Titanium	**240**	mg/kg	8.9	5	03/21/18 04:13	03/23/18 15:47	7440-32-6	M1,R1
Zinc	**3030**	mg/kg	7.2	5	03/21/18 04:13	03/23/18 15:47	7440-66-6	P6,R1
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**215**	mg/kg	2.8	10	03/30/18 09:43	03/31/18 06:41	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**41.0**	mg/kg	0.73	20	03/21/18 04:13	03/21/18 12:39	7440-36-0	M6,R1
Arsenic	**19.0**	mg/kg	0.73	20	03/21/18 04:13	03/21/18 12:39	7440-38-2	
Beryllium	ND	mg/kg	0.29	20	03/21/18 04:13	03/21/18 12:39	7440-41-7	
Cadmium	**6.2**	mg/kg	0.12	20	03/21/18 04:13	03/21/18 12:39	7440-43-9	
Cobalt	**22.8**	mg/kg	0.73	20	03/21/18 04:13	03/21/18 12:39	7440-48-4	M6
Lead	**453**	mg/kg	0.15	20	03/21/18 04:13	03/21/18 12:39	7439-92-1	M6,R1
Lithium	**5.1**	mg/kg	0.73	20	03/21/18 04:13	03/21/18 12:39	7439-93-2	
Selenium	ND	mg/kg	0.73	20	03/21/18 04:13	03/21/18 12:39	7782-49-2	
Strontium	**68.5**	mg/kg	0.73	20	03/21/18 04:13	03/21/18 12:39	7440-24-6	M6,R1
Vanadium	**22.6**	mg/kg	1.5	20	03/21/18 04:13	03/21/18 12:39	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**9.4**	mg/kg	0.26	10	03/21/18 04:05	03/21/18 16:00	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**32.2**	%	0.10	1		03/21/18 11:05		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-A5(15-17) **Lab ID: 10424249001** Collected: 03/20/18 13:00 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	208-96-8	
Anthracene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	120-12-7	
Benzo(a)anthracene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	56-55-3	
Benzo(a)pyrene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	101-55-3	
Butylbenzylphthalate	**2630**	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	85-68-7	M1
Carbazole	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	59-50-7	
4-Chloroaniline	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	108-60-1	
2-Chloronaphthalene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	91-58-7	
2-Chlorophenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	7005-72-3	
Chrysene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	53-70-3	
Dibenzofuran	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	120-83-2	
Diethylphthalate	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	105-67-9	
Dimethylphthalate	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	131-11-3	
Di-n-butylphthalate	**2450**	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	84-74-2	M1
4,6-Dinitro-2-methylphenol	ND	ug/kg	12500	5	03/21/18 18:56	03/31/18 22:32	534-52-1	M1
2,4-Dinitrophenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	51-28-5	M1
2,4-Dinitrotoluene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	606-20-2	
Di-n-octylphthalate	**4800**	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	117-84-0	M1,R1
1,2-Diphenylhydrazine	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	122-66-7	
bis(2-Ethylhexyl)phthalate	**483000**	ug/kg	121000	250	03/21/18 18:56	04/03/18 12:33	117-81-7	M1,R1
Fluoranthene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	206-44-0	
Fluorene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	87-68-3	
Hexachlorobenzene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	118-74-1	
Hexachloroethane	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	193-39-5	
Isophorone	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	78-59-1	
1-Methylnaphthalene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	90-12-0	
2-Methylnaphthalene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-A5(15-17) **Lab ID: 10424249001** Collected: 03/20/18 13:00 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	4850	5	03/21/18 18:56	03/31/18 22:32		
Naphthalene	**2940**	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	91-20-3	M1
2-Nitroaniline	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	88-74-4	
3-Nitroaniline	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	99-09-2	
4-Nitroaniline	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	100-01-6	
Nitrobenzene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	98-95-3	
2-Nitrophenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	88-75-5	
4-Nitrophenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	86-30-6	
Pentachlorophenol	ND	ug/kg	4920	5	03/21/18 18:56	03/31/18 22:32	87-86-5	
Phenanthrene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	85-01-8	
Phenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	108-95-2	
Pyrene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	2420	5	03/21/18 18:56	03/31/18 22:32	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	79	%.	43-125	5	03/21/18 18:56	03/31/18 22:32	4165-60-0	D4
2-Fluorobiphenyl (S)	75	%.	30-132	5	03/21/18 18:56	03/31/18 22:32	321-60-8	
p-Terphenyl-d14 (S)	74	%.	62-125	5	03/21/18 18:56	03/31/18 22:32	1718-51-0	
Phenol-d6 (S)	80	%.	48-125	5	03/21/18 18:56	03/31/18 22:32	13127-88-3	
2-Fluorophenol (S)	69	%.	40-125	5	03/21/18 18:56	03/31/18 22:32	367-12-4	
2,4,6-Tribromophenol (S)	73	%.	60-125	5	03/21/18 18:56	03/31/18 22:32	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**546**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	83-32-9	
Acenaphthylene	ND	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	208-96-8	
Anthracene	**252**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	120-12-7	
Benzo(a)anthracene	**206**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	56-55-3	
Benzo(a)pyrene	**215**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	50-32-8	
Benzo(b)fluoranthene	**367**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	205-99-2	
Benzo(g,h,i)perylene	**282**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	191-24-2	
Benzo(k)fluoranthene	**130**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	207-08-9	
Chrysene	**450**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	218-01-9	
Dibenz(a,h)anthracene	**87.3**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	53-70-3	
Fluoranthene	**853**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	206-44-0	
Fluorene	**928**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	86-73-7	
Indeno(1,2,3-cd)pyrene	**210**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	193-39-5	
Naphthalene	**2300**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	91-20-3	
Phenanthrene	**1840**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	85-01-8	
Pyrene	**655**	ug/kg	73.5	5	03/21/18 09:04	03/22/18 22:14	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	88	%.	42-125	5	03/21/18 09:04	03/22/18 22:14	321-60-8	D3

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-A5(15-17) **Lab ID: 10424249001** Collected: 03/20/18 13:00 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	100	%.	57-125	5	03/21/18 09:04	03/22/18 22:14	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	25057-89-0	R1
2,4-D	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	94-75-7	M1
2,4-DB	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	94-82-6	
Dicamba	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	1918-00-9	
Dinoseb	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	88-85-7	
MCPA	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	94-74-6	
Pentachlorophenol	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	87-86-5	
Picloram	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	1918-02-1	M1
2,4,5-T	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	93-72-1	
Triclopyr	ND	mg/kg	0.48	5	03/23/18 07:54	03/29/18 15:57	55335-06-3	
Surrogates								
2,4-DCAA (S)	64	%.	46-125	5	03/23/18 07:54	03/29/18 15:57	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2860	1	03/26/18 09:03	03/26/18 11:30	67-64-1	
Allyl chloride	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	107-05-1	
Benzene	**981**	ug/kg	57.1	1	03/26/18 09:03	03/26/18 11:30	71-43-2	
Bromobenzene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	108-86-1	
Bromochloromethane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	74-97-5	
Bromodichloromethane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	75-27-4	
Bromoform	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	75-25-2	
Bromomethane	ND	ug/kg	1430	1	03/26/18 09:03	03/26/18 11:30	74-83-9	
2-Butanone (MEK)	ND	ug/kg	714	1	03/26/18 09:03	03/26/18 11:30	78-93-3	
n-Butylbenzene	**1950**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	104-51-8	
sec-Butylbenzene	**1510**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	135-98-8	
tert-Butylbenzene	**488**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	98-06-6	
Carbon tetrachloride	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	56-23-5	
Chlorobenzene	**479**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	108-90-7	
Chloroethane	ND	ug/kg	1430	1	03/26/18 09:03	03/26/18 11:30	75-00-3	
Chloroform	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	67-66-3	
Chloromethane	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	74-87-3	
2-Chlorotoluene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	95-49-8	
4-Chlorotoluene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1430	1	03/26/18 09:03	03/26/18 11:30	96-12-8	
Dibromochloromethane	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	106-93-4	
Dibromomethane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	74-95-3	
1,2-Dichlorobenzene	**435**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	541-73-1	
1,4-Dichlorobenzene	**1690**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	75-71-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-A5(15-17) **Lab ID: 10424249001** Collected: 03/20/18 13:00 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,1-Dichloroethane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	75-34-3	
1,2-Dichloroethane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	107-06-2	
1,1-Dichloroethene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1430	1	03/26/18 09:03	03/26/18 11:30	75-43-4	
1,2-Dichloropropane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	78-87-5	
1,3-Dichloropropane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	142-28-9	
2,2-Dichloropropane	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	594-20-7	
1,1-Dichloropropene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	60-29-7	
Ethylbenzene	**6520**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	714	1	03/26/18 09:03	03/26/18 11:30	87-68-3	
Isopropylbenzene (Cumene)	**1880**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	98-82-8	
p-Isopropyltoluene	**882**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	99-87-6	
Methylene Chloride	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	714	1	03/26/18 09:03	03/26/18 11:30	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	1634-04-4	
Naphthalene	**7650**	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	91-20-3	
n-Propylbenzene	**2480**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	103-65-1	
Styrene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	79-34-5	N2
Tetrachloroethene	**741**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	127-18-4	
Tetrahydrofuran	ND	ug/kg	5710	1	03/26/18 09:03	03/26/18 11:30	109-99-9	
Toluene	**3680**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	79-00-5	
Trichloroethene	ND	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	571	1	03/26/18 09:03	03/26/18 11:30	76-13-1	
1,2,4-Trimethylbenzene	**4970**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	95-63-6	
1,3,5-Trimethylbenzene	**1130**	ug/kg	143	1	03/26/18 09:03	03/26/18 11:30	108-67-8	
Vinyl chloride	ND	ug/kg	57.1	1	03/26/18 09:03	03/26/18 11:30	75-01-4	
Xylene (Total)	**7840**	ug/kg	428	1	03/26/18 09:03	03/26/18 11:30	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1	03/26/18 09:03	03/26/18 11:30	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/26/18 09:03	03/26/18 11:30	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	03/26/18 09:03	03/26/18 11:30	460-00-4	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-A5(15-17) **Lab ID: 10424249001** Collected: 03/20/18 13:00 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	29.6	10	03/30/18 14:00	04/03/18 11:10	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**215**	mg/kg	1.0	1		04/03/18 15:25	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**2.2**	mg/kg	0.60	1	03/29/18 10:55	03/29/18 12:51	57-12-5	M0,R1
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	03/30/18 14:00	03/31/18 02:27	16984-48-8	

Sample: FD-SB-B5(11.5-23) **Lab ID: 10424249002** Collected: 03/20/18 15:10 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	39.4	1	03/30/18 11:35	04/02/18 17:19	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	309-00-2	
alpha-BHC	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	319-84-6	
beta-BHC	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	319-85-7	
delta-BHC	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	58-89-9	
Chlordane (Technical)	ND	ug/kg	292	5	03/21/18 11:50	04/02/18 21:46	57-74-9	
alpha-Chlordane	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	5103-71-9	
gamma-Chlordane	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	5103-74-2	
4,4'-DDD	ND	ug/kg	58.1	5	03/21/18 11:50	04/02/18 21:46	72-54-8	
4,4'-DDE	ND	ug/kg	58.1	5	03/21/18 11:50	04/02/18 21:46	72-55-9	
4,4'-DDT	ND	ug/kg	58.1	5	03/21/18 11:50	04/02/18 21:46	50-29-3	
Dieldrin	ND	ug/kg	58.1	5	03/21/18 11:50	04/02/18 21:46	60-57-1	
Endosulfan I	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	959-98-8	
Endosulfan II	ND	ug/kg	58.1	5	03/21/18 11:50	04/02/18 21:46	33213-65-9	
Endosulfan sulfate	ND	ug/kg	58.1	5	03/21/18 11:50	04/02/18 21:46	1031-07-8	
Endrin	ND	ug/kg	58.1	5	03/21/18 11:50	04/02/18 21:46	72-20-8	
Endrin aldehyde	ND	ug/kg	58.1	5	03/21/18 11:50	04/02/18 21:46	7421-93-4	
Endrin ketone	ND	ug/kg	58.1	5	03/21/18 11:50	04/02/18 21:46	53494-70-5	
Heptachlor	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	76-44-8	
Heptachlor epoxide	ND	ug/kg	29.2	5	03/21/18 11:50	04/02/18 21:46	1024-57-3	
Methoxychlor	ND	ug/kg	292	5	03/21/18 11:50	04/02/18 21:46	72-43-5	
Toxaphene	ND	ug/kg	873	5	03/21/18 11:50	04/02/18 21:46	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	100	%.	30-150	5	03/21/18 11:50	04/02/18 21:46	877-09-8	4M,D3

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-B5(11.5-23) **Lab ID: 10424249002** Collected: 03/20/18 15:10 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Surrogates								
Decachlorobiphenyl (S)	93	%.	30-150	5	03/21/18 11:50	04/02/18 21:46	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	11100-14-4	
PCB, Total	ND	ug/kg	116	1	03/21/18 12:24	03/26/18 16:14	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	92	%.	48-125	1	03/21/18 12:24	03/26/18 16:14	877-09-8	
Decachlorobiphenyl (S)	92	%.	30-134	1	03/21/18 12:24	03/26/18 16:14	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**71.0**	mg/kg	33.6	1	03/21/18 18:51	03/22/18 10:47		T6
Surrogates								
n-Triacontane (S)	86	%.	50-150	1	03/21/18 18:51	03/22/18 10:47	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	52.1	1	03/27/18 09:24	03/28/18 03:03		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	03/27/18 09:24	03/28/18 03:03	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**3030**	mg/kg	33.4	1	03/21/18 04:13	03/23/18 15:44	7429-90-5	
Barium	**174**	mg/kg	1.7	1	03/21/18 04:13	03/23/18 15:44	7440-39-3	
Boron	**296**	mg/kg	25.0	1	03/21/18 04:13	03/23/18 15:44	7440-42-8	
Copper	**11.4**	mg/kg	1.7	1	03/21/18 04:13	03/23/18 15:44	7440-50-8	
Iron	**13600**	mg/kg	8.3	1	03/21/18 04:13	03/23/18 15:44	7439-89-6	
Manganese	**435**	mg/kg	0.83	1	03/21/18 04:13	03/23/18 15:44	7439-96-5	
Nickel	**13.3**	mg/kg	3.3	1	03/21/18 04:13	03/23/18 15:44	7440-02-0	
Silver	ND	mg/kg	1.7	1	03/21/18 04:13	03/23/18 15:44	7440-22-4	
Tin	ND	mg/kg	12.5	1	03/21/18 04:13	03/23/18 15:44	7440-31-5	
Titanium	**87.3**	mg/kg	4.2	1	03/21/18 04:13	03/23/18 15:44	7440-32-6	
Zinc	**38.0**	mg/kg	3.3	1	03/21/18 04:13	03/23/18 15:44	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**6.4**	mg/kg	3.4	5	03/30/18 09:43	03/31/18 04:43	7440-47-3	N2

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-B5(11.5-23) **Lab ID: 10424249002** Collected: 03/20/18 15:10 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	1.7	20	03/21/18 04:13	03/21/18 12:30	7440-36-0	
Arsenic	**9.7**	mg/kg	1.7	20	03/21/18 04:13	03/21/18 12:30	7440-38-2	
Beryllium	ND	mg/kg	0.67	20	03/21/18 04:13	03/21/18 12:30	7440-41-7	
Cadmium	**0.37**	mg/kg	0.27	20	03/21/18 04:13	03/21/18 12:30	7440-43-9	
Cobalt	**7.9**	mg/kg	1.7	20	03/21/18 04:13	03/21/18 12:30	7440-48-4	
Lead	**4.9**	mg/kg	0.33	20	03/21/18 04:13	03/21/18 12:30	7439-92-1	
Lithium	**2.5**	mg/kg	1.7	20	03/21/18 04:13	03/21/18 12:30	7439-93-2	
Selenium	**1.8**	mg/kg	1.7	20	03/21/18 04:13	03/21/18 12:30	7782-49-2	
Strontium	**47.7**	mg/kg	1.7	20	03/21/18 04:13	03/21/18 12:30	7440-24-6	
Vanadium	**19.2**	mg/kg	3.3	20	03/21/18 04:13	03/21/18 12:30	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.066	1	03/21/18 04:05	03/21/18 15:46	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**71.5**	%	0.10	1		03/21/18 11:05		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	83-32-9	
Acenaphthylene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	208-96-8	
Anthracene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	120-12-7	
Benzo(a)anthracene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	56-55-3	
Benzo(a)pyrene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	101-55-3	
Butylbenzylphthalate	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	85-68-7	
Carbazole	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	59-50-7	
4-Chloroaniline	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	108-60-1	
2-Chloronaphthalene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	91-58-7	
2-Chlorophenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	7005-72-3	
Chrysene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	53-70-3	
Dibenzofuran	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	120-83-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-B5(11.5-23) **Lab ID: 10424249002** Collected: 03/20/18 15:10 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Diethylphthalate	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	105-67-9	
Dimethylphthalate	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	131-11-3	
Di-n-butylphthalate	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	5950	1	03/21/18 18:56	03/31/18 21:33	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	606-20-2	
Di-n-octylphthalate	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	117-81-7	
Fluoranthene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	206-44-0	
Fluorene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	87-68-3	
Hexachlorobenzene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	118-74-1	
Hexachloroethane	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	193-39-5	
Isophorone	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	78-59-1	
1-Methylnaphthalene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	90-12-0	
2-Methylnaphthalene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	2310	1	03/21/18 18:56	03/31/18 21:33		
Naphthalene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	91-20-3	
2-Nitroaniline	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	88-74-4	
3-Nitroaniline	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	99-09-2	
4-Nitroaniline	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	100-01-6	
Nitrobenzene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	98-95-3	
2-Nitrophenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	88-75-5	
4-Nitrophenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	86-30-6	
Pentachlorophenol	ND	ug/kg	2340	1	03/21/18 18:56	03/31/18 21:33	87-86-5	
Phenanthrene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	85-01-8	
Phenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	108-95-2	
Pyrene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	1150	1	03/21/18 18:56	03/31/18 21:33	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	66	%.	43-125	1	03/21/18 18:56	03/31/18 21:33	4165-60-0	
2-Fluorobiphenyl (S)	76	%.	30-132	1	03/21/18 18:56	03/31/18 21:33	321-60-8	
p-Terphenyl-d14 (S)	91	%.	62-125	1	03/21/18 18:56	03/31/18 21:33	1718-51-0	
Phenol-d6 (S)	70	%.	48-125	1	03/21/18 18:56	03/31/18 21:33	13127-88-3	
2-Fluorophenol (S)	66	%.	40-125	1	03/21/18 18:56	03/31/18 21:33	367-12-4	
2,4,6-Tribromophenol (S)	86	%.	60-125	1	03/21/18 18:56	03/31/18 21:33	118-79-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-B5(11.5-23) **Lab ID: 10424249002** Collected: 03/20/18 15:10 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**2330**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	83-32-9	
Acenaphthylene	**305**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	208-96-8	
Anthracene	ND	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	120-12-7	
Benzo(a)anthracene	**261**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	56-55-3	
Benzo(a)pyrene	**1850**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	50-32-8	
Benzo(b)fluoranthene	**495**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	205-99-2	
Benzo(g,h,i)perylene	**7000**	ug/kg	349	10	03/21/18 09:04	03/23/18 12:40	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	207-08-9	
Chrysene	**239**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	53-70-3	
Fluoranthene	**2370**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	206-44-0	
Fluorene	**870**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	86-73-7	
Indeno(1,2,3-cd)pyrene	**1450**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	193-39-5	
Naphthalene	**619**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	91-20-3	
Phenanthrene	**1320**	ug/kg	175	5	03/21/18 09:04	03/22/18 22:38	85-01-8	
Pyrene	**7970**	ug/kg	349	10	03/21/18 09:04	03/23/18 12:40	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	87	%.	42-125	5	03/21/18 09:04	03/22/18 22:38	321-60-8	D3
p-Terphenyl-d14 (S)	97	%.	57-125	5	03/21/18 09:04	03/22/18 22:38	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	25057-89-0	
2,4-D	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	94-75-7	
2,4-DB	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	94-82-6	
Dicamba	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	1918-00-9	
Dinoseb	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	88-85-7	
MCPA	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	94-74-6	
Pentachlorophenol	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	87-86-5	
Picloram	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	1918-02-1	
2,4,5-T	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	93-72-1	
Triclopyr	ND	mg/kg	1.2	5	03/23/18 07:54	03/29/18 16:41	55335-06-3	
Surrogates								
2,4-DCAA (S)	68	%.	46-125	5	03/23/18 07:54	03/29/18 16:41	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	6200	1	03/26/18 09:03	03/26/18 11:47	67-64-1	
Allyl chloride	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	107-05-1	
Benzene	**277**	ug/kg	124	1	03/26/18 09:03	03/26/18 11:47	71-43-2	
Bromobenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	108-86-1	
Bromochloromethane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	74-97-5	
Bromodichloromethane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	75-27-4	
Bromoform	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	75-25-2	
Bromomethane	ND	ug/kg	3100	1	03/26/18 09:03	03/26/18 11:47	74-83-9	
2-Butanone (MEK)	ND	ug/kg	1550	1	03/26/18 09:03	03/26/18 11:47	78-93-3	
n-Butylbenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	104-51-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-B5(11.5-23) **Lab ID: 10424249002** Collected: 03/20/18 15:10 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
sec-Butylbenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	135-98-8	
tert-Butylbenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	98-06-6	
Carbon tetrachloride	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	56-23-5	
Chlorobenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	108-90-7	
Chloroethane	ND	ug/kg	3100	1	03/26/18 09:03	03/26/18 11:47	75-00-3	
Chloroform	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	67-66-3	
Chloromethane	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	74-87-3	
2-Chlorotoluene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	95-49-8	
4-Chlorotoluene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	3100	1	03/26/18 09:03	03/26/18 11:47	96-12-8	
Dibromochloromethane	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	106-93-4	
Dibromomethane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	75-71-8	
1,1-Dichloroethane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	75-34-3	
1,2-Dichloroethane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	107-06-2	
1,1-Dichloroethene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	156-60-5	
Dichlorofluoromethane	ND	ug/kg	3100	1	03/26/18 09:03	03/26/18 11:47	75-43-4	
1,2-Dichloropropane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	78-87-5	
1,3-Dichloropropane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	142-28-9	
2,2-Dichloropropane	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	594-20-7	
1,1-Dichloropropene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	60-29-7	
Ethylbenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	1550	1	03/26/18 09:03	03/26/18 11:47	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	98-82-8	
p-Isopropyltoluene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	99-87-6	
Methylene Chloride	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	1550	1	03/26/18 09:03	03/26/18 11:47	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	1634-04-4	
Naphthalene	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	91-20-3	
n-Propylbenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	103-65-1	
Styrene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	79-34-5	N2
Tetrachloroethene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	127-18-4	
Tetrahydrofuran	ND	ug/kg	12400	1	03/26/18 09:03	03/26/18 11:47	109-99-9	
Toluene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	87-61-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Sample: FD-SB-B5(11.5-23) **Lab ID: 10424249002** Collected: 03/20/18 15:10 Received: 03/20/18 16:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,2,4-Trichlorobenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	79-00-5	
Trichloroethene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 11:47	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 11:47	108-67-8	
Vinyl chloride	ND	ug/kg	124	1	03/26/18 09:03	03/26/18 11:47	75-01-4	
Xylene (Total)	ND	ug/kg	930	1	03/26/18 09:03	03/26/18 11:47	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1	03/26/18 09:03	03/26/18 11:47	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1	03/26/18 09:03	03/26/18 11:47	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	03/26/18 09:03	03/26/18 11:47	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	139	20	03/30/18 14:00	04/03/18 11:10	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**6.4**	mg/kg	1.0	1		04/03/18 15:25	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.96	1	03/29/18 10:55	03/29/18 12:59	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.98	1	03/30/18 14:00	03/31/18 02:47	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 139779 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 553598 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.16	04/02/18 14:39	N3

METHOD BLANK: 553599 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.14	04/02/18 14:46	N3

METHOD BLANK: 553600 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.19	04/02/18 14:52	N3

LABORATORY CONTROL SAMPLE: 553601

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	104	109	105	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553602 553603

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	22.5	480	482	389	390	76	76	65-135	0	35	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553604 553605

Parameter	Units	10424609001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	1000	932	788	743	79	80	65-135	6	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 529097 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2871492 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	03/27/18 19:50	
a,a,a-Trifluorotoluene (S)	%.	100	80-150	03/27/18 19:50	

LABORATORY CONTROL SAMPLE & LCSD: 2871493 2871494

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	44.0	45.8	88	92	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%.				99	100	80-150			

MATRIX SPIKE SAMPLE: 2871826

Parameter	Units	10424835001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	51.9	59.4	114	80-120	
a,a,a-Trifluorotoluene (S)	%.				100	80-150	

SAMPLE DUPLICATE: 2871827

Parameter	Units	10424835003 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	ND	ND		20	
a,a,a-Trifluorotoluene (S)	%.	100	99	2		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528273 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2867291 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.020	03/21/18 15:21	

LABORATORY CONTROL SAMPLE: 2867292

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.47	0.52	111	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867293 2867294

Parameter	Units	10424135001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.17	.5	.47	0.70	0.63	106	99	80-120	9	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528272 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2867287 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	9.8	03/23/18 15:23	
Barium	mg/kg	ND	0.49	03/23/18 15:23	
Boron	mg/kg	ND	7.4	03/23/18 15:23	
Copper	mg/kg	ND	0.49	03/23/18 15:23	
Iron	mg/kg	ND	2.5	03/23/18 15:23	
Manganese	mg/kg	ND	0.25	03/23/18 15:23	
Nickel	mg/kg	ND	0.98	03/23/18 15:23	
Silver	mg/kg	ND	0.49	03/23/18 15:23	
Tin	mg/kg	ND	3.7	03/23/18 15:23	
Titanium	mg/kg	ND	1.2	03/23/18 15:23	
Zinc	mg/kg	ND	0.98	03/23/18 15:23	

LABORATORY CONTROL SAMPLE: 2867288

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	962	975	101	80-120	
Barium	mg/kg	48.1	52.1	108	80-120	
Boron	mg/kg	48.1	47.0	98	80-120	
Copper	mg/kg	48.1	48.9	102	80-120	
Iron	mg/kg	962	1020	106	80-120	
Manganese	mg/kg	48.1	52.2	108	80-120	
Nickel	mg/kg	48.1	51.3	107	80-120	
Silver	mg/kg	24	23.9	99	80-120	
Tin	mg/kg	48.1	51.7	108	80-120	
Titanium	mg/kg	48.1	51.4	107	80-120	
Zinc	mg/kg	48.1	51.9	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867289 2867290

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	13600	1470	1390	8780	10600	-324	-212	75-125	19	20	P6
Barium	mg/kg	547	73.7	69.6	897	549	476	3	75-125	48	20	P6,R1
Boron	mg/kg	238	73.7	69.6	233	280	-7	60	75-125	18	20	M1
Copper	mg/kg	137	73.7	69.6	605	239	634	146	75-125	87	20	M1,R1
Iron	mg/kg	99500	1470	1390	442000	157000	23200	4150	75-125	95	20	P6,R1
Manganese	mg/kg	3260	73.7	69.6	4550	3600	1750	481	75-125	23	20	P6,R1
Nickel	mg/kg	1480	73.7	69.6	946	1620	-728	192	75-125	52	20	P6,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867289 2867290

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	ND	36.8	34.8	38.4	36.5	103	104	75-125	5	20	
Tin	mg/kg	204	73.7	69.6	402	456	269	363	75-125	13	20	M1
Titanium	mg/kg	240	73.7	69.6	200	301	-55	88	75-125	40	20	M1,R1
Zinc	mg/kg	3030	73.7	69.6	2600	8400	-594	7720	75-125	106	20	P6,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 434613 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2007430 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.18	03/31/18 04:29	N2

LABORATORY CONTROL SAMPLE: 2007431

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.6	97	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2007432 2007433

Parameter	Units	10424609003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	31.2	4.74	4.74	36.1	22.7	103	-179	75-125	46	20	1M, M0, N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528270 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2867279 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.49	03/21/18 12:26	
Arsenic	mg/kg	ND	0.49	03/21/18 12:26	
Beryllium	mg/kg	ND	0.19	03/21/18 12:26	
Cadmium	mg/kg	ND	0.078	03/21/18 12:26	
Cobalt	mg/kg	ND	0.49	03/21/18 12:26	
Lead	mg/kg	ND	0.097	03/21/18 12:26	
Lithium	mg/kg	ND	0.49	03/21/18 12:26	
Selenium	mg/kg	ND	0.49	03/21/18 12:26	
Strontium	mg/kg	ND	0.49	03/21/18 12:26	
Vanadium	mg/kg	ND	0.97	03/21/18 12:26	

LABORATORY CONTROL SAMPLE: 2867280

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	49.5	49.2	99	80-120	
Arsenic	mg/kg	49.5	48.9	99	80-120	
Beryllium	mg/kg	49.5	47.5	96	80-120	
Cadmium	mg/kg	49.5	49.2	99	80-120	
Cobalt	mg/kg	49.5	50.3	102	80-120	
Lead	mg/kg	49.5	50.6	102	80-120	
Lithium	mg/kg	49.5	48.2	97	80-120	
Selenium	mg/kg	49.5	49.0	99	80-120	
Strontium	mg/kg	49.5	48.1	97	80-120	
Vanadium	mg/kg	49.5	50.5	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867281 2867282

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	41.0	73	73.7	110	61.3	94	28	75-125	57	20	M6,R1
Arsenic	mg/kg	19.0	73	73.7	81.5	77.3	86	79	75-125	5	20	
Beryllium	mg/kg	ND	73	73.7	70.2	69.8	96	94	75-125	1	20	
Cadmium	mg/kg	6.2	73	73.7	74.0	77.3	93	96	75-125	4	20	
Cobalt	mg/kg	22.8	73	73.7	87.2	77.3	88	74	75-125	12	20	M6
Lead	mg/kg	453	73	73.7	333	600	-165	199	75-125	57	20	M6,R1
Lithium	mg/kg	5.1	73	73.7	75.1	79.9	96	101	75-125	6	20	
Selenium	mg/kg	ND	73	73.7	68.1	70.1	92	94	75-125	3	20	
Strontium	mg/kg	68.5	73	73.7	131	441	85	505	75-125	109	20	M6,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867281 2867282

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vanadium	mg/kg	22.6	73	73.7	101	96.5	107	100	75-125	4	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528315
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10424249001, 10424249002

SAMPLE DUPLICATE: 2867413

Parameter	Units	10424258003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	23.6	23.4	1	30	

SAMPLE DUPLICATE: 2867479

Parameter	Units	10424228001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.3	13.8	4	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528973 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2871002 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1,1-Trichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	03/26/18 10:56	N2
1,1,2-Trichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	03/26/18 10:56	
1,1-Dichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1-Dichloroethene	ug/kg	ND	50.0	03/26/18 10:56	
1,1-Dichloropropene	ug/kg	ND	50.0	03/26/18 10:56	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2,3-Trichloropropane	ug/kg	ND	200	03/26/18 10:56	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	03/26/18 10:56	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dichloropropane	ug/kg	ND	50.0	03/26/18 10:56	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,3-Dichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,3-Dichloropropane	ug/kg	ND	50.0	03/26/18 10:56	
1,4-Dichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
2,2-Dichloropropane	ug/kg	ND	200	03/26/18 10:56	
2-Butanone (MEK)	ug/kg	ND	250	03/26/18 10:56	
2-Chlorotoluene	ug/kg	ND	50.0	03/26/18 10:56	
4-Chlorotoluene	ug/kg	ND	50.0	03/26/18 10:56	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	03/26/18 10:56	
Acetone	ug/kg	ND	1000	03/26/18 10:56	
Allyl chloride	ug/kg	ND	200	03/26/18 10:56	
Benzene	ug/kg	ND	20.0	03/26/18 10:56	
Bromobenzene	ug/kg	ND	50.0	03/26/18 10:56	
Bromochloromethane	ug/kg	ND	50.0	03/26/18 10:56	
Bromodichloromethane	ug/kg	ND	50.0	03/26/18 10:56	
Bromoform	ug/kg	ND	200	03/26/18 10:56	
Bromomethane	ug/kg	ND	500	03/26/18 10:56	
Carbon tetrachloride	ug/kg	ND	50.0	03/26/18 10:56	
Chlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
Chloroethane	ug/kg	ND	500	03/26/18 10:56	
Chloroform	ug/kg	ND	50.0	03/26/18 10:56	
Chloromethane	ug/kg	ND	200	03/26/18 10:56	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	03/26/18 10:56	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	03/26/18 10:56	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

METHOD BLANK: 2871002 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	03/26/18 10:56	
Dibromomethane	ug/kg	ND	50.0	03/26/18 10:56	
Dichlorodifluoromethane	ug/kg	ND	200	03/26/18 10:56	
Dichlorofluoromethane	ug/kg	ND	500	03/26/18 10:56	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	03/26/18 10:56	
Ethylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Hexachloro-1,3-butadiene	ug/kg	ND	250	03/26/18 10:56	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	03/26/18 10:56	
Methyl-tert-butyl ether	ug/kg	ND	50.0	03/26/18 10:56	
Methylene Chloride	ug/kg	ND	200	03/26/18 10:56	
n-Butylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
n-Propylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Naphthalene	ug/kg	ND	200	03/26/18 10:56	
p-Isopropyltoluene	ug/kg	ND	50.0	03/26/18 10:56	
sec-Butylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Styrene	ug/kg	ND	50.0	03/26/18 10:56	
tert-Butylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Tetrachloroethene	ug/kg	ND	50.0	03/26/18 10:56	
Tetrahydrofuran	ug/kg	ND	2000	03/26/18 10:56	
Toluene	ug/kg	ND	50.0	03/26/18 10:56	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	03/26/18 10:56	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	03/26/18 10:56	
Trichloroethene	ug/kg	ND	50.0	03/26/18 10:56	N2
Trichlorofluoromethane	ug/kg	ND	200	03/26/18 10:56	
Vinyl chloride	ug/kg	ND	20.0	03/26/18 10:56	
Xylene (Total)	ug/kg	ND	150	03/26/18 10:56	
1,2-Dichloroethane-d4 (S)	%.	90	75-125	03/26/18 10:56	
4-Bromofluorobenzene (S)	%.	99	75-125	03/26/18 10:56	
Toluene-d8 (S)	%.	98	75-125	03/26/18 10:56	

LABORATORY CONTROL SAMPLE & LCSD: 2871003 2871004

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	828	958	83	96	59-125	15	20	
1,1,1-Trichloroethane	ug/kg	1000	802	933	80	93	59-125	15	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	803	971	80	97	58-125	19	20	N2
1,1,2-Trichloroethane	ug/kg	1000	778	897	78	90	64-125	14	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	776	922	78	92	65-125	17	20	
1,1-Dichloroethane	ug/kg	1000	754	861	75	86	63-125	13	20	
1,1-Dichloroethene	ug/kg	1000	790	968	79	97	59-125	20	20	
1,1-Dichloropropene	ug/kg	1000	799	946	80	95	64-125	17	20	
1,2,3-Trichlorobenzene	ug/kg	1000	776	965	78	97	55-126	22	20	R1
1,2,3-Trichloropropane	ug/kg	1000	736	872	74	87	62-125	17	20	
1,2,4-Trichlorobenzene	ug/kg	1000	804	961	80	96	62-125	18	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

LABORATORY CONTROL SAMPLE & LCSD: 2871003 2871004

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	793	931	79	93	59-125	16	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	1890	2200	76	88	54-125	15	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	781	899	78	90	64-125	14	20	
1,2-Dichlorobenzene	ug/kg	1000	765	890	76	89	63-125	15	20	
1,2-Dichloroethane	ug/kg	1000	684	807	68	81	57-125	17	20	
1,2-Dichloropropane	ug/kg	1000	779	896	78	90	67-125	14	20	
1,3,5-Trimethylbenzene	ug/kg	1000	811	936	81	94	59-125	14	20	
1,3-Dichlorobenzene	ug/kg	1000	738	884	74	88	64-125	18	20	
1,3-Dichloropropane	ug/kg	1000	757	878	76	88	64-125	15	20	
1,4-Dichlorobenzene	ug/kg	1000	766	874	77	87	63-125	13	20	
2,2-Dichloropropane	ug/kg	1000	860	973	86	97	37-126	12	20	
2-Butanone (MEK)	ug/kg	5000	3740	4230	75	85	48-125	12	20	
2-Chlorotoluene	ug/kg	1000	777	890	78	89	62-125	13	20	
4-Chlorotoluene	ug/kg	1000	763	893	76	89	63-125	16	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	3630	4290	73	86	52-135	17	20	
Acetone	ug/kg	5000	5390	6150	108	123	65-125	13	20	
Allyl chloride	ug/kg	1000	747	873	75	87	52-125	16	20	
Benzene	ug/kg	1000	765	859	76	86	61-125	12	20	
Bromobenzene	ug/kg	1000	794	916	79	92	64-125	14	20	
Bromochloromethane	ug/kg	1000	791	915	79	91	65-125	15	20	
Bromodichloromethane	ug/kg	1000	832	969	83	97	57-125	15	20	
Bromoform	ug/kg	1000	784	903	78	90	57-125	14	20	
Bromomethane	ug/kg	1000	777	845	78	85	60-125	8	20	
Carbon tetrachloride	ug/kg	1000	848	960	85	96	58-125	12	20	
Chlorobenzene	ug/kg	1000	782	883	78	88	66-125	12	20	
Chloroethane	ug/kg	1000	825	870	83	87	62-125	5	20	
Chloroform	ug/kg	1000	701	786	70	79	59-125	11	20	
Chloromethane	ug/kg	1000	733	791	73	79	50-125	8	20	
cis-1,2-Dichloroethene	ug/kg	1000	761	895	76	89	61-125	16	20	
cis-1,3-Dichloropropene	ug/kg	1000	794	937	79	94	61-125	17	20	
Dibromochloromethane	ug/kg	1000	790	890	79	89	60-125	12	20	
Dibromomethane	ug/kg	1000	808	948	81	95	69-125	16	20	
Dichlorodifluoromethane	ug/kg	1000	672	702	67	70	38-125	4	20	
Dichlorofluoromethane	ug/kg	1000	765	803	76	80	67-125	5	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1390	1250	139	125	60-125	11	20	L3
Ethylbenzene	ug/kg	1000	775	906	78	91	62-125	16	20	
Hexachloro-1,3-butadiene	ug/kg	1000	810	968	81	97	56-125	18	20	
Isopropylbenzene (Cumene)	ug/kg	1000	836	962	84	96	65-125	14	20	
Methyl-tert-butyl ether	ug/kg	1000	731	855	73	86	59-125	16	20	
Methylene Chloride	ug/kg	1000	774	888	77	89	64-125	14	20	
n-Butylbenzene	ug/kg	1000	802	976	80	98	59-125	20	20	
n-Propylbenzene	ug/kg	1000	808	931	81	93	61-125	14	20	
Naphthalene	ug/kg	1000	818	982	82	98	53-125	18	20	
p-Isopropyltoluene	ug/kg	1000	794	949	79	95	63-125	18	20	
sec-Butylbenzene	ug/kg	1000	819	960	82	96	62-125	16	20	
Styrene	ug/kg	1000	816	950	82	95	66-125	15	20	
tert-Butylbenzene	ug/kg	1000	806	939	81	94	64-125	15	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

LABORATORY CONTROL SAMPLE & LCSD: 2871003 2871004

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	810	941	81	94	67-125	15	20	
Tetrahydrofuran	ug/kg	10000	11200	12700	112	127	62-125	12	20	L3
Toluene	ug/kg	1000	798	905	80	91	61-125	13	20	
trans-1,2-Dichloroethene	ug/kg	1000	807	948	81	95	64-125	16	20	
trans-1,3-Dichloropropene	ug/kg	1000	809	946	81	95	56-125	16	20	
Trichloroethene	ug/kg	1000	767	896	77	90	67-125	15	20	N2
Trichlorofluoromethane	ug/kg	1000	782	818	78	82	65-125	5	20	
Vinyl chloride	ug/kg	1000	805	843	81	84	57-125	5	20	
Xylene (Total)	ug/kg	3000	2420	2790	81	93	62-125	14	20	
1,2-Dichloroethane-d4 (S)	%.				91	91	75-125			
4-Bromofluorobenzene (S)	%.				101	100	75-125			
Toluene-d8 (S)	%.				99	98	75-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528399 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2867751 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/02/18 19:38	
4,4'-DDE	ug/kg	ND	3.3	04/02/18 19:38	
4,4'-DDT	ug/kg	ND	3.3	04/02/18 19:38	
Aldrin	ug/kg	ND	1.7	04/02/18 19:38	
alpha-BHC	ug/kg	ND	1.7	04/02/18 19:38	
alpha-Chlordane	ug/kg	ND	1.7	04/02/18 19:38	
beta-BHC	ug/kg	ND	1.7	04/02/18 19:38	
Chlordane (Technical)	ug/kg	ND	16.7	04/02/18 19:38	
delta-BHC	ug/kg	ND	1.7	04/02/18 19:38	
Dieldrin	ug/kg	ND	3.3	04/02/18 19:38	
Endosulfan I	ug/kg	ND	1.7	04/02/18 19:38	
Endosulfan II	ug/kg	ND	3.3	04/02/18 19:38	
Endosulfan sulfate	ug/kg	ND	3.3	04/02/18 19:38	
Endrin	ug/kg	ND	3.3	04/02/18 19:38	
Endrin aldehyde	ug/kg	ND	3.3	04/02/18 19:38	
Endrin ketone	ug/kg	ND	3.3	04/02/18 19:38	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/02/18 19:38	
gamma-Chlordane	ug/kg	ND	1.7	04/02/18 19:38	
Heptachlor	ug/kg	ND	1.7	04/02/18 19:38	
Heptachlor epoxide	ug/kg	ND	1.7	04/02/18 19:38	
Methoxychlor	ug/kg	ND	16.7	04/02/18 19:38	
Toxaphene	ug/kg	ND	50.0	04/02/18 19:38	
Decachlorobiphenyl (S)	%.	87	30-150	04/02/18 19:38	
Tetrachloro-m-xylene (S)	%.	96	30-150	04/02/18 19:38	

LABORATORY CONTROL SAMPLE: 2867752

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	32.6	98	62-127	
4,4'-DDE	ug/kg	33.3	32.1	96	66-125	
4,4'-DDT	ug/kg	33.3	31.4	94	67-128	
Aldrin	ug/kg	16.7	14.7	88	66-125	
alpha-BHC	ug/kg	16.7	15.7	94	64-125	
alpha-Chlordane	ug/kg	16.7	15.3	92	68-125	
beta-BHC	ug/kg	16.7	15.4	92	69-125	
delta-BHC	ug/kg	16.7	15.1	91	42-133	
Dieldrin	ug/kg	33.3	33.5	100	69-126	
Endosulfan I	ug/kg	16.7	13.8	83	63-125	
Endosulfan II	ug/kg	33.3	32.3	97	69-125	
Endosulfan sulfate	ug/kg	33.3	29.5	89	56-137	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

LABORATORY CONTROL SAMPLE: 2867752

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	30.9	93	69-125	
Endrin aldehyde	ug/kg	33.3	30.6	92	65-125	
Endrin ketone	ug/kg	33.3	33.5	101	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	15.6	94	67-125	
gamma-Chlordane	ug/kg	16.7	14.2	85	63-125	
Heptachlor	ug/kg	16.7	15.8	95	69-125	
Heptachlor epoxide	ug/kg	16.7	15.4	93	68-125	
Methoxychlor	ug/kg	167	166	99	65-134	
Decachlorobiphenyl (S)	%.			86	30-150	
Tetrachloro-m-xylene (S)	%.			93	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867753 2867754

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	48.9	49.1	50.9	54.3	104	111	56-125	7	20	
4,4'-DDE	ug/kg	52.5	48.9	49.1	57.1	79.0	9	54	32-150	32	20	M6,R1
4,4'-DDT	ug/kg	ND	48.9	49.1	51.7	59.7	105	122	60-132	14	20	
Aldrin	ug/kg	ND	24.5	24.5	21.1J	22.8J	86	93	56-125		20	
alpha-BHC	ug/kg	ND	24.5	24.5	22.8J	23.3J	93	95	54-136		20	
alpha-Chlordane	ug/kg	ND	24.5	24.5	22.3J	28.2	91	115	54-133		20	
beta-BHC	ug/kg	35.0	24.5	24.5	33.4	37.2	-7	9	30-150	11	20	M6
delta-BHC	ug/kg	ND	24.5	24.5	27.0	29.6	110	121	45-145	9	20	
Dieldrin	ug/kg	ND	48.9	49.1	62.7	63.0	128	129	47-150	1	20	
Endosulfan I	ug/kg	ND	24.5	24.5	21J	25.3	86	103	35-145		20	
Endosulfan II	ug/kg	ND	48.9	49.1	50.7	48.4J	104	99	50-147		20	
Endosulfan sulfate	ug/kg	ND	48.9	49.1	65.5	51.1	134	104	54-132	25	20	M6,R1
Endrin	ug/kg	ND	48.9	49.1	48.3J	46.2J	99	94	62-125		20	
Endrin aldehyde	ug/kg	56.5	48.9	49.1	77.9	49.0	44	-15	33-150	46	20	M6,R1
Endrin ketone	ug/kg	50.8	48.9	49.1	61.4	85.8	22	71	56-144	33	20	M6,R1
gamma-BHC (Lindane)	ug/kg	ND	24.5	24.5	23.4J	23.5J	96	96	63-125		20	
gamma-Chlordane	ug/kg	ND	24.5	24.5	25.3	27.3	103	111	45-132	8	20	
Heptachlor	ug/kg	ND	24.5	24.5	23.7J	24.8	97	101	51-142		20	
Heptachlor epoxide	ug/kg	ND	24.5	24.5	22.2J	26.2	91	107	50-142		20	
Methoxychlor	ug/kg	ND	245	245	235J	252	96	103	58-139		20	
Decachlorobiphenyl (S)	%.						0	0	30-150			S4
Tetrachloro-m-xylene (S)	%.						0	0	30-150			3M,D4,S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528407 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2867808 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	03/26/18 15:29	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	03/26/18 15:29	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	03/26/18 15:29	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	03/26/18 15:29	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	03/26/18 15:29	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	03/26/18 15:29	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	03/26/18 15:29	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	03/26/18 15:29	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	03/26/18 15:29	
Decachlorobiphenyl (S)	%.	93	30-134	03/26/18 15:29	
Tetrachloro-m-xylene (S)	%.	101	48-125	03/26/18 15:29	

LABORATORY CONTROL SAMPLE: 2867809

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	597	90	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	576	86	62-125	
Decachlorobiphenyl (S)	%.			94	30-134	
Tetrachloro-m-xylene (S)	%.			100	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867810 2867811

Parameter	Units	10424249002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	2330	2330	2210	2250	95	97	30-150	2	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	2330	2330	2150	2180	92	94	30-138	2	30	
Decachlorobiphenyl (S)	%.						102	102	30-134			
Tetrachloro-m-xylene (S)	%.						101	105	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528383 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2867687 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	03/31/18 14:07	
1,2-Dichlorobenzene	ug/kg	ND	330	03/31/18 14:07	
1,2-Diphenylhydrazine	ug/kg	ND	330	03/31/18 14:07	
1,3-Dichlorobenzene	ug/kg	ND	330	03/31/18 14:07	
1,4-Dichlorobenzene	ug/kg	ND	330	03/31/18 14:07	
1-Methylnaphthalene	ug/kg	ND	330	03/31/18 14:07	
2,4,5-Trichlorophenol	ug/kg	ND	330	03/31/18 14:07	
2,4,6-Trichlorophenol	ug/kg	ND	330	03/31/18 14:07	
2,4-Dichlorophenol	ug/kg	ND	330	03/31/18 14:07	
2,4-Dimethylphenol	ug/kg	ND	330	03/31/18 14:07	
2,4-Dinitrophenol	ug/kg	ND	330	03/31/18 14:07	
2,4-Dinitrotoluene	ug/kg	ND	330	03/31/18 14:07	
2,6-Dinitrotoluene	ug/kg	ND	330	03/31/18 14:07	
2-Chloronaphthalene	ug/kg	ND	330	03/31/18 14:07	
2-Chlorophenol	ug/kg	ND	330	03/31/18 14:07	
2-Methylnaphthalene	ug/kg	ND	330	03/31/18 14:07	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	03/31/18 14:07	
2-Nitroaniline	ug/kg	ND	330	03/31/18 14:07	
2-Nitrophenol	ug/kg	ND	330	03/31/18 14:07	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	03/31/18 14:07	
3,3'-Dichlorobenzidine	ug/kg	ND	330	03/31/18 14:07	
3-Nitroaniline	ug/kg	ND	330	03/31/18 14:07	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	03/31/18 14:07	
4-Bromophenylphenyl ether	ug/kg	ND	330	03/31/18 14:07	
4-Chloro-3-methylphenol	ug/kg	ND	330	03/31/18 14:07	
4-Chloroaniline	ug/kg	ND	330	03/31/18 14:07	
4-Chlorophenylphenyl ether	ug/kg	ND	330	03/31/18 14:07	
4-Nitroaniline	ug/kg	ND	330	03/31/18 14:07	
4-Nitrophenol	ug/kg	ND	330	03/31/18 14:07	
Acenaphthene	ug/kg	ND	330	03/31/18 14:07	
Acenaphthylene	ug/kg	ND	330	03/31/18 14:07	
Anthracene	ug/kg	ND	330	03/31/18 14:07	
Benzo(a)anthracene	ug/kg	ND	330	03/31/18 14:07	
Benzo(a)pyrene	ug/kg	ND	330	03/31/18 14:07	
Benzo(b)fluoranthene	ug/kg	ND	330	03/31/18 14:07	
Benzo(g,h,i)perylene	ug/kg	ND	330	03/31/18 14:07	
Benzo(k)fluoranthene	ug/kg	ND	330	03/31/18 14:07	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	03/31/18 14:07	
bis(2-Chloroethyl) ether	ug/kg	ND	330	03/31/18 14:07	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	03/31/18 14:07	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	03/31/18 14:07	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

METHOD BLANK: 2867687 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	03/31/18 14:07	
Carbazole	ug/kg	ND	330	03/31/18 14:07	
Chrysene	ug/kg	ND	330	03/31/18 14:07	
Di-n-butylphthalate	ug/kg	ND	330	03/31/18 14:07	
Di-n-octylphthalate	ug/kg	ND	330	03/31/18 14:07	
Dibenz(a,h)anthracene	ug/kg	ND	330	03/31/18 14:07	
Dibenzofuran	ug/kg	ND	330	03/31/18 14:07	
Diethylphthalate	ug/kg	ND	330	03/31/18 14:07	
Dimethylphthalate	ug/kg	ND	330	03/31/18 14:07	
Fluoranthene	ug/kg	ND	330	03/31/18 14:07	
Fluorene	ug/kg	ND	330	03/31/18 14:07	
Hexachloro-1,3-butadiene	ug/kg	ND	330	03/31/18 14:07	
Hexachlorobenzene	ug/kg	ND	330	03/31/18 14:07	
Hexachloroethane	ug/kg	ND	330	03/31/18 14:07	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	03/31/18 14:07	
Isophorone	ug/kg	ND	330	03/31/18 14:07	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	03/31/18 14:07	
N-Nitrosodimethylamine	ug/kg	ND	330	03/31/18 14:07	
N-Nitrosodiphenylamine	ug/kg	ND	330	03/31/18 14:07	
Naphthalene	ug/kg	ND	330	03/31/18 14:07	
Nitrobenzene	ug/kg	ND	330	03/31/18 14:07	
Pentachlorophenol	ug/kg	ND	670	03/31/18 14:07	
Phenanthrene	ug/kg	ND	330	03/31/18 14:07	
Phenol	ug/kg	ND	330	03/31/18 14:07	
Pyrene	ug/kg	ND	330	03/31/18 14:07	
2,4,6-Tribromophenol (S)	%.	88	60-125	03/31/18 14:07	
2-Fluorobiphenyl (S)	%.	86	30-132	03/31/18 14:07	
2-Fluorophenol (S)	%.	89	40-125	03/31/18 14:07	
Nitrobenzene-d5 (S)	%.	86	43-125	03/31/18 14:07	
p-Terphenyl-d14 (S)	%.	96	62-125	03/31/18 14:07	
Phenol-d6 (S)	%.	90	48-125	03/31/18 14:07	

LABORATORY CONTROL SAMPLE: 2867688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1120	67	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1120	67	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1530	92	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1130	68	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1130	68	39-125	
1-Methylnaphthalene	ug/kg	1670	1280	77	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1380	83	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1360	81	61-125	
2,4-Dichlorophenol	ug/kg	1670	1310	79	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

LABORATORY CONTROL SAMPLE: 2867688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1390	84	51-125	
2,4-Dinitrophenol	ug/kg	1670	1370	82	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1500	90	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1470	88	63-125	
2-Chloronaphthalene	ug/kg	1670	1340	80	61-125	
2-Chlorophenol	ug/kg	1670	1180	71	46-125	
2-Methylnaphthalene	ug/kg	1670	1270	76	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1290	78	50-125	
2-Nitroaniline	ug/kg	1670	1580	95	61-125	
2-Nitrophenol	ug/kg	1670	1230	74	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1340	80	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1200	72	47-125	5M
3-Nitroaniline	ug/kg	1670	1370	82	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1490J	90	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1470	88	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1480	89	64-125	
4-Chloroaniline	ug/kg	1670	971	58	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1400	84	64-125	
4-Nitroaniline	ug/kg	1670	1430	86	59-125	
4-Nitrophenol	ug/kg	1670	1600	96	54-125	
Acenaphthene	ug/kg	1670	1380	83	62-125	
Acenaphthylene	ug/kg	1670	1390	83	61-125	
Anthracene	ug/kg	1670	1480	89	66-125	
Benzo(a)anthracene	ug/kg	1670	1440	86	69-125	
Benzo(a)pyrene	ug/kg	1670	1480	89	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1480	89	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1470	88	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1480	89	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1300	78	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1270	76	41-125	5M
bis(2-Chloroisopropyl) ether	ug/kg	1670	1350	81	37-125	5M
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1550	93	69-131	
Butylbenzylphthalate	ug/kg	1670	1550	93	69-129	
Carbazole	ug/kg	1670	1490	89	66-125	
Chrysene	ug/kg	1670	1470	88	68-125	
Di-n-butylphthalate	ug/kg	1670	1580	95	69-125	
Di-n-octylphthalate	ug/kg	1670	1570	94	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1510	91	64-125	
Dibenzofuran	ug/kg	1670	1390	84	65-125	
Diethylphthalate	ug/kg	1670	1500	90	67-125	
Dimethylphthalate	ug/kg	1670	1450	87	67-125	
Fluoranthene	ug/kg	1670	1480	89	66-125	
Fluorene	ug/kg	1670	1390	84	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1160	70	40-125	
Hexachlorobenzene	ug/kg	1670	1510	91	62-125	
Hexachloroethane	ug/kg	1670	1140	68	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1490	89	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

LABORATORY CONTROL SAMPLE: 2867688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1370	82	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1400	84	50-125	5M
N-Nitrosodimethylamine	ug/kg	1670	1220	73	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1490	89	65-125	
Naphthalene	ug/kg	1670	1210	72	48-125	
Nitrobenzene	ug/kg	1670	1320	79	48-125	
Pentachlorophenol	ug/kg	1670	1360	81	41-125	
Phenanthrene	ug/kg	1670	1470	88	66-125	
Phenol	ug/kg	1670	1300	78	46-125	
Pyrene	ug/kg	1670	1440	87	69-125	
2,4,6-Tribromophenol (S)	%.			98	60-125	
2-Fluorobiphenyl (S)	%.			86	30-132	
2-Fluorophenol (S)	%.			78	40-125	
Nitrobenzene-d5 (S)	%.			81	43-125	
p-Terphenyl-d14 (S)	%.			95	62-125	
Phenol-d6 (S)	%.			84	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867689 2867690

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	2450	2460	1480J	1510J	60	62	30-127		30	
1,2-Dichlorobenzene	ug/kg	ND	2450	2460	1410J	1460J	57	60	30-125		30	
1,2-Diphenylhydrazine	ug/kg	ND	2450	2460	1910J	1800J	78	73	30-150		30	
1,3-Dichlorobenzene	ug/kg	ND	2450	2460	1290J	1200J	53	49	30-125		30	
1,4-Dichlorobenzene	ug/kg	ND	2450	2460	1670J	1690J	68	69	30-125		30	
1-Methylnaphthalene	ug/kg	ND	2450	2460	2130J	2300J	87	94	42-125		30	
2,4,5-Trichlorophenol	ug/kg	ND	2450	2460	1660J	1550J	68	63	30-150		30	
2,4,6-Trichlorophenol	ug/kg	ND	2450	2460	1740J	1710J	71	70	30-150		30	
2,4-Dichlorophenol	ug/kg	ND	2450	2460	1670J	1660J	68	67	30-135		30	
2,4-Dimethylphenol	ug/kg	ND	2450	2460	1910J	1820J	78	74	30-148		30	
2,4-Dinitrophenol	ug/kg	ND	2450	2460	ND	ND	0	0	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	ND	2450	2460	1650J	1690J	67	69	30-150		30	
2,6-Dinitrotoluene	ug/kg	ND	2450	2460	1740J	1680J	71	68	30-150		30	
2-Chloronaphthalene	ug/kg	ND	2450	2460	1750J	1730J	72	70	30-138		30	
2-Chlorophenol	ug/kg	ND	2450	2460	1560J	1440J	64	59	30-130		30	
2-Methylnaphthalene	ug/kg	ND	2450	2460	2270J	2500	93	102	46-125		30	
2-Methylphenol(o-Cresol)	ug/kg	ND	2450	2460	1730J	1640J	71	67	30-133		30	
2-Nitroaniline	ug/kg	ND	2450	2460	2040J	1930J	83	79	30-150		30	
2-Nitrophenol	ug/kg	ND	2450	2460	1300J	1510J	53	61	30-134		30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	2450	2460	1870J	1700J	76	69	30-138		30	
3,3'-Dichlorobenzidine	ug/kg	ND	2450	2460	1820J	1780J	74	72	30-149		30	5M
3-Nitroaniline	ug/kg	ND	2450	2460	1410J	1040J	57	43	30-150		30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	2450	2460	ND	ND	0	0	30-133		30	M1

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867689 2867690

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	2450	2460	1950J	1770J	80	72	44-125		30	
4-Chloro-3-methylphenol	ug/kg	ND	2450	2460	1840J	1750J	75	71	30-150		30	
4-Chloroaniline	ug/kg	ND	2450	2460	1310J	990J	54	40	30-125		30	
4-Chlorophenylphenyl ether	ug/kg	ND	2450	2460	1710J	1620J	70	66	44-125		30	
4-Nitroaniline	ug/kg	ND	2450	2460	1830J	1600J	75	65	30-150		30	
4-Nitrophenol	ug/kg	ND	2450	2460	1610J	1380J	66	56	30-150		30	
Acenaphthene	ug/kg	ND	2450	2460	2000J	2020J	62	63	40-125		30	
Acenaphthylene	ug/kg	ND	2450	2460	1740J	1680J	71	69	30-150		30	
Anthracene	ug/kg	ND	2450	2460	1970J	1830J	80	75	30-150		30	
Benzo(a)anthracene	ug/kg	ND	2450	2460	2060J	2130J	84	87	30-150		30	
Benzo(a)pyrene	ug/kg	ND	2450	2460	1880J	1960J	77	80	30-150		30	
Benzo(b)fluoranthene	ug/kg	ND	2450	2460	1970J	1980J	80	81	30-150		30	
Benzo(g,h,i)perylene	ug/kg	ND	2450	2460	1930J	1830J	79	75	30-150		30	
Benzo(k)fluoranthene	ug/kg	ND	2450	2460	1840J	1960J	75	80	30-150		30	
bis(2-Chloroethoxy)methane	ug/kg	ND	2450	2460	1650J	1760J	67	72	30-134		30	
bis(2-Chloroethyl) ether	ug/kg	ND	2450	2460	1360J	1480J	55	60	30-125		30	5M
bis(2-Chloroisopropyl) ether	ug/kg	ND	2450	2460	1590J	1430J	65	58	30-125		30	5M
bis(2-Ethylhexyl)phthalate	ug/kg	483000	2450	2460	346000	501000	-5600	742	30-150	37	30	E,M1, R1
Butylbenzylphthalate	ug/kg	2630	2450	2460	3400	3310	31	28	30-150	3	30	M1
Carbazole	ug/kg	ND	2450	2460	2000J	1820J	82	74	41-125		30	
Chrysene	ug/kg	ND	2450	2460	2120J	2150J	86	88	30-150		30	
Di-n-butylphthalate	ug/kg	2450	2450	2460	2980	3070	22	25	30-150	3	30	M1
Di-n-octylphthalate	ug/kg	4800	2450	2460	2970	5690	-75	36	30-150	63	30	M1,R1
Dibenz(a,h)anthracene	ug/kg	ND	2450	2460	1790J	1640J	73	67	30-150		30	
Dibenzofuran	ug/kg	ND	2450	2460	2820	2800	66	65	45-125	1	30	
Diethylphthalate	ug/kg	ND	2450	2460	2090J	2070J	85	84	30-150		30	
Dimethylphthalate	ug/kg	ND	2450	2460	1780J	1670J	73	68	30-150		30	
Fluoranthene	ug/kg	ND	2450	2460	2720	2420J	111	99	30-150		30	
Fluorene	ug/kg	ND	2450	2460	2610	2650	107	108	30-150	1	30	
Hexachloro-1,3-butadiene	ug/kg	ND	2450	2460	1490J	1510J	61	61	30-128		30	
Hexachlorobenzene	ug/kg	ND	2450	2460	1710J	1560J	70	64	30-150		30	
Hexachloroethane	ug/kg	ND	2450	2460	1950J	2110J	79	86	30-125		30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	2450	2460	1820J	1730J	74	70	30-150		30	
Isophorone	ug/kg	ND	2450	2460	1720J	1710J	70	70	30-140		30	
N-Nitroso-di-n-propylamine	ug/kg	ND	2450	2460	1680J	1580J	69	64	30-147		30	5M
N-Nitrosodimethylamine	ug/kg	ND	2450	2460	984J	899J	40	37	30-125		30	
N-Nitrosodiphenylamine	ug/kg	ND	2450	2460	2160J	2210J	88	90	30-150		30	
Naphthalene	ug/kg	2940	2450	2460	2770	3180	-7	10	44-125	14	30	M1
Nitrobenzene	ug/kg	ND	2450	2460	1550J	1650J	63	67	30-136		30	
Pentachlorophenol	ug/kg	ND	2450	2460	1070J	1160J	44	47	30-150		30	
Phenanthrene	ug/kg	ND	2450	2460	3580	3800	57	66	30-150	6	30	
Phenol	ug/kg	ND	2450	2460	1720J	1590J	70	65	30-129		30	
Pyrene	ug/kg	ND	2450	2460	2400J	2220J	98	90	30-150		30	
2,4,6-Tribromophenol (S)	%.						72	66	60-125			
2-Fluorobiphenyl (S)	%.						75	73	30-132			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867689 2867690

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2-Fluorophenol (S)	%.						63	61	40-125			
Nitrobenzene-d5 (S)	%.						65	65	43-125			D4
p-Terphenyl-d14 (S)	%.						74	71	62-125			
Phenol-d6 (S)	%.						69	67	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528330 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2867448 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	03/22/18 13:08	
Acenaphthylene	ug/kg	ND	10.0	03/22/18 13:08	
Anthracene	ug/kg	ND	10.0	03/22/18 13:08	
Benzo(a)anthracene	ug/kg	ND	10.0	03/22/18 13:08	
Benzo(a)pyrene	ug/kg	ND	10.0	03/22/18 13:08	
Benzo(b)fluoranthene	ug/kg	ND	10.0	03/22/18 13:08	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	03/22/18 13:08	
Benzo(k)fluoranthene	ug/kg	ND	10.0	03/22/18 13:08	
Chrysene	ug/kg	ND	10.0	03/22/18 13:08	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	03/22/18 13:08	
Fluoranthene	ug/kg	ND	10.0	03/22/18 13:08	
Fluorene	ug/kg	ND	10.0	03/22/18 13:08	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	03/22/18 13:08	
Naphthalene	ug/kg	ND	10.0	03/22/18 13:08	
Phenanthrene	ug/kg	ND	10.0	03/22/18 13:08	
Pyrene	ug/kg	ND	10.0	03/22/18 13:08	
2-Fluorobiphenyl (S)	%.	46	42-125	03/22/18 13:08	
p-Terphenyl-d14 (S)	%.	81	57-125	03/22/18 13:08	

LABORATORY CONTROL SAMPLE: 2867449

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	20.5	61	52-125	
Acenaphthylene	ug/kg	33.3	21.6	65	50-125	
Anthracene	ug/kg	33.3	31.0	93	65-125	
Benzo(a)anthracene	ug/kg	33.3	32.2	97	60-125	
Benzo(a)pyrene	ug/kg	33.3	33.0	99	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	32.6	98	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	31.8	96	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	32.0	96	67-125	
Chrysene	ug/kg	33.3	30.5	92	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	32.4	97	63-125	
Fluoranthene	ug/kg	33.3	32.1	96	75-125	
Fluorene	ug/kg	33.3	23.9	72	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	33.8	101	63-125	
Naphthalene	ug/kg	33.3	19.4	58	49-125	
Phenanthrene	ug/kg	33.3	27.4	82	65-125	
Pyrene	ug/kg	33.3	29.1	87	64-125	
2-Fluorobiphenyl (S)	%.			60	42-125	
p-Terphenyl-d14 (S)	%.			84	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867450 2867451

Parameter	Units	10423800009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	74.5J	84.5	84.5	130	122J	65	57	30-125		30	
Acenaphthylene	ug/kg	26.8J	84.5	84.5	91.9J	84J	77	68	30-133		30	
Anthracene	ug/kg	170	84.5	84.5	246	251	89	95	30-150	2	30	
Benzo(a)anthracene	ug/kg	361	84.5	84.5	453	418	109	68	30-150	8	30	
Benzo(a)pyrene	ug/kg	412	84.5	84.5	471	381	69	-37	30-150	21	30	M1
Benzo(b)fluoranthene	ug/kg	534	84.5	84.5	544	455	11	-94	30-150	18	30	M1
Benzo(g,h,i)perylene	ug/kg	242	84.5	84.5	293	226	61	-19	30-150	26	30	M1
Benzo(k)fluoranthene	ug/kg	169	84.5	84.5	293	234	147	76	30-150	23	30	
Chrysene	ug/kg	416	84.5	84.5	535	396	141	-24	30-150	30	30	M1
Dibenz(a,h)anthracene	ug/kg	70.2J	84.5	84.5	140	96.7J	83	31	30-131		30	
Fluoranthene	ug/kg	773	84.5	84.5	885	820	131	55	30-150	8	30	
Fluorene	ug/kg	66.3J	84.5	84.5	134	119J	80	62	30-147		30	
Indeno(1,2,3-cd)pyrene	ug/kg	224	84.5	84.5	279	195	66	-35	30-150	36	30	M1,R1
Naphthalene	ug/kg	15.5J	84.5	84.5	46.7J	50.9J	37	42	30-131		30	
Phenanthrene	ug/kg	512	84.5	84.5	566	540	64	33	30-150	5	30	
Pyrene	ug/kg	656	84.5	84.5	755	709	118	63	30-150	6	30	
2-Fluorobiphenyl (S)	%.						76	72	42-125			D3
p-Terphenyl-d14 (S)	%.						94	92	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528725 Analysis Method: EPA 8270D
QC Batch Method: EPA 3546 Analysis Description: MDA2 Solid MSSV
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2869530 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,5-T	mg/kg	ND	0.033	03/29/18 15:27	
2,4,5-TP (Silvex)	mg/kg	ND	0.033	03/29/18 15:27	
2,4-D	mg/kg	ND	0.033	03/29/18 15:27	
2,4-DB	mg/kg	ND	0.033	03/29/18 15:27	
Bentazon	mg/kg	ND	0.033	03/29/18 15:27	
Dicamba	mg/kg	ND	0.033	03/29/18 15:27	
Dinoseb	mg/kg	ND	0.033	03/29/18 15:27	
MCPA	mg/kg	ND	0.033	03/29/18 15:27	
Pentachlorophenol	mg/kg	ND	0.033	03/29/18 15:27	
Picloram	mg/kg	ND	0.033	03/29/18 15:27	
Triclopyr	mg/kg	ND	0.033	03/29/18 15:27	
2,4-DCAA (S)	%.	81	46-125	03/29/18 15:27	

LABORATORY CONTROL SAMPLE: 2869531

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-T	mg/kg	.33	0.27	81	60-125	
2,4,5-TP (Silvex)	mg/kg	.33	0.26	77	61-125	
2,4-D	mg/kg	.33	0.28	83	63-125	
2,4-DB	mg/kg	.33	0.26	79	59-125	
Bentazon	mg/kg	.33	0.24	73	58-125	
Dicamba	mg/kg	.33	0.26	78	52-125	
Dinoseb	mg/kg	.33	0.23	68	35-126	
MCPA	mg/kg	.33	0.26	78	57-125	
Pentachlorophenol	mg/kg	.33	0.27	81	48-125	
Picloram	mg/kg	.33	0.22	65	47-125	
Triclopyr	mg/kg	.33	0.27	80	68-125	
2,4-DCAA (S)	%.			87	46-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2869532 2869533

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2,4,5-T	mg/kg	ND	.97	.97	0.49	.42J	50	43	30-145		20	
2,4,5-TP (Silvex)	mg/kg	ND	.97	.97	0.69	0.57	70	58	30-130	19	20	
2,4-D	mg/kg	ND	.97	.97	1.7	.3J	176	31	30-150		20	M1
2,4-DB	mg/kg	ND	.97	.97	0.69	0.60	71	61	45-126	15	20	
Bentazon	mg/kg	ND	.97	.97	0.87	0.66	89	67	30-133	28	20	R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2869532 2869533

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Dicamba	mg/kg	ND	.97	.97	.42J	.36J	43	37	30-140		20	
Dinoseb	mg/kg	ND	.97	.97	0.91	0.82	93	84	30-136	10	20	
MCPA	mg/kg	ND	.97	.97	0.55	0.55	56	57	30-136	0	20	
Pentachlorophenol	mg/kg	ND	.97	.97	0.63	0.70	64	71	44-125	11	20	
Picloram	mg/kg	ND	.97	.97	ND	ND	0	0	30-125		20	M1
Triclopyr	mg/kg	ND	.97	.97	0.59	0.52	60	54	30-149	12	20	
2,4-DCAA (S)	%.						78	68	46-125			D3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 528474 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2868174 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	03/22/18 09:57	
n-Triacontane (S)	%.	89	50-150	03/22/18 09:57	

LABORATORY CONTROL SAMPLE & LCSD: 2868175 2868176

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	62.9	66.2	79	83	70-120	5	20	
n-Triacontane (S)	%.				89	92	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 434844 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 2008420 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/03/18 11:09	

LABORATORY CONTROL SAMPLE: 2008421

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1090	929	85	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2008432 2008433

Parameter	Units	50193104001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	2190	2230	ND	ND	0	0	75-125		20	2M,M3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2008434 2008435

Parameter	Units	50193104001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	79.1	80.9	4.7J	6.3J	2	4	75-125		20	M3

SAMPLE DUPLICATE: 2008431

Parameter	Units	469837006 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 284581 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10424249001

METHOD BLANK: 1665480 Matrix: Solid
Associated Lab Samples: 10424249001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	03/29/18 12:23	

LABORATORY CONTROL SAMPLE: 1665481

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	2.8	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665482 1665483

Parameter	Units	40166365001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.16J	1.89	1.89	1.9	1.9	93	91	80-120	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665484 1665485

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	2.2	4.72	4.72	7.2	4.9	105	57	80-120	37	20	M0,R1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 284583 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10424249002

METHOD BLANK: 1665486 Matrix: Solid
Associated Lab Samples: 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	03/29/18 12:56	

LABORATORY CONTROL SAMPLE: 1665487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665488 1665489

Parameter	Units	10424609003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	ND	3.62	3.62	2.8	3.2	66	77	80-120	13	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665490 1665491

Parameter	Units	10424937006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.56	4.11	4.26	4.2	4.0	89	81	80-120	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

QC Batch: 139654 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10424249001, 10424249002

METHOD BLANK: 553043 Matrix: Solid
Associated Lab Samples: 10424249001, 10424249002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.98	03/31/18 00:49	

LABORATORY CONTROL SAMPLE: 553042

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	48.9	50.2	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553044 553045

Parameter	Units	10424443004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.9	50.3	50.2	28.2	28.6	50	51	80-120	1	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553046 553047

Parameter	Units	10424937003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	3.5	49.3	49	14.1	15.9	21	25	80-120	12	20	M1

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Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

BATCH QUALIFIERS

Batch: 529212

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	RPD value is outside control limits due to sample non-homogeneity.
2M	Redox (25 mv) and pH (7.84) values indicate a naturally reducing matrix. This accounts for poor recovery values on the sample per method Eh/pH phase diagram.
3M	Sample was dark brown in color and grainy. Sample was centrifuged and decanted.
4M	Sample was dark yellow in color.
5M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.

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QUALIFIERS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

ANALYTE QUALIFIERS

L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
T6	High boiling point hydrocarbons are present in the sample.

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Pace Analytical Services, LLC
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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424249

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424249001	**FD-SB-A5(15-17)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424249002	**FD-SB-B5(11.5-23)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424249001	**FD-SB-A5(15-17)**	EPA 3550	528399	EPA 8081B	530200
10424249002	**FD-SB-B5(11.5-23)**	EPA 3550	528399	EPA 8081B	530200
10424249001	**FD-SB-A5(15-17)**	EPA 3550	528407	EPA 8082A	529072
10424249002	**FD-SB-B5(11.5-23)**	EPA 3550	528407	EPA 8082A	529072
10424249001	**FD-SB-A5(15-17)**	WI MOD DRO	528474	WI MOD DRO	528523
10424249002	**FD-SB-B5(11.5-23)**	WI MOD DRO	528474	WI MOD DRO	528523
10424249001	**FD-SB-A5(15-17)**	EPA 5030 Medium Soil	529097	WI MOD GRO	529312
10424249002	**FD-SB-B5(11.5-23)**	EPA 5030 Medium Soil	529097	WI MOD GRO	529312
10424249001	**FD-SB-A5(15-17)**	EPA 3050	528272	EPA 6010C	528314
10424249002	**FD-SB-B5(11.5-23)**	EPA 3050	528272	EPA 6010C	528314
10424249001	**FD-SB-A5(15-17)**	EPA 3050B	434613	EPA 6020	434971
10424249002	**FD-SB-B5(11.5-23)**	EPA 3050B	434613	EPA 6020	434971
10424249001	**FD-SB-A5(15-17)**	EPA 3050	528270	EPA 6020A	528357
10424249002	**FD-SB-B5(11.5-23)**	EPA 3050	528270	EPA 6020A	528357
10424249001	**FD-SB-A5(15-17)**	EPA 7471	528273	EPA 7471	528417
10424249002	**FD-SB-B5(11.5-23)**	EPA 7471	528273	EPA 7471	528417
10424249001	**FD-SB-A5(15-17)**	ASTM D2974	528315		
10424249002	**FD-SB-B5(11.5-23)**	ASTM D2974	528315		
10424249001	**FD-SB-A5(15-17)**	EPA 3550	528383	EPA 8270D	529241
10424249002	**FD-SB-B5(11.5-23)**	EPA 3550	528383	EPA 8270D	529241
10424249001	**FD-SB-A5(15-17)**	EPA 3550	528330	EPA 8270D by SIM	528600
10424249002	**FD-SB-B5(11.5-23)**	EPA 3550	528330	EPA 8270D by SIM	528600
10424249001	**FD-SB-A5(15-17)**	EPA 3546	528725	EPA 8270D	529735
10424249002	**FD-SB-B5(11.5-23)**	EPA 3546	528725	EPA 8270D	529735
10424249001	**FD-SB-A5(15-17)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424249002	**FD-SB-B5(11.5-23)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424249001	**FD-SB-A5(15-17)**	EPA 3060A	434844	EPA 7196A	435162
10424249002	**FD-SB-B5(11.5-23)**	EPA 3060A	434844	EPA 7196A	435162
10424249001	**FD-SB-A5(15-17)**	Trivalent Chromium Calculation	435321		
10424249002	**FD-SB-B5(11.5-23)**	Trivalent Chromium Calculation	435321		
10424249001	**FD-SB-A5(15-17)**	EPA 9012A	284581	EPA 9012	284660
10424249002	**FD-SB-B5(11.5-23)**	EPA 9012A	284583	EPA 9012	284661
10424249001	**FD-SB-A5(15-17)**	EPA 300.0	139654	EPA 9056A	139672
10424249002	**FD-SB-B5(11.5-23)**	EPA 300.0	139654	EPA 9056A	139672

REPORT OF LABORATORY ANALYSIS

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Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number: | COC Type: | Page: 1 of

Turnaround Time: | COC ID:

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO		LABORATORY
Facility Code:	MPCA Freeway LF Soils	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA Freeway LF Soils	Project Task Code:	Address:
Project Manager:			EPIC Profile # 38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

SAMPLE DETAILS / ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in ~~meters~~	End Depth, in ~~meters~~	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: See attachment for soils/waste	ANALYSIS: Dioxins	Lab Sample No.	#
FD-SB-A5 (15-17) WM		3/20/18	1300	15'	17'	C	SD	WM			11		X	X	001	1
FD-SB-A4 (15-23) S		3/20/18	1510	15'	23'	C	SD	S			10		X		002	2
																3
																4
																5
																6
																7
																8
																9
																10

WO# : 10424249

10424249

Sampled By: Chris Pelesi | Sampler's Signature: Chris Pelesi | Phone #: 612-597-7254

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) Chris Pelesi Pace	3/20/18 1655	Matt Pace	3/20/18 1655

T = 8.1 ②

Received 3/19/18 / BGS

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluorine, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: WO#: 10424249

PM: BM2 Due Date: 04/03/18

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☒ Other: PB **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 8.1 **Cooler Temp Corrected (°C):** 8.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** 3/20/18 SP

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No		12.
All containers needing acid/base preservation have been checked? All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes ☐ Yes ☐ Yes	☐ No ☐ No ☐ No	☒ N/A ☒ N/A ☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N Sample # Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present? Pace Trip Blank Lot # (if purchased):	☐ Yes	☐ No	☒ N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: BM **Date:** 3/21/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Chain of Custody

40166406

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424249 Workorder Name: 18-00383 MPCA Freeway LF Soils Owner Received Date: 3/20/2018 Results Requested By: 4/3/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Cyanide by EPA 9012	LAB USE ONLY
1	FD-SB-A5(15-17) 001	PS	3/20/2018 13:00	10424249001	Solid	1	X	
2	FD-SB-B5(11.5-23) 002	PS	3/20/2018 15:10	10424249002	Solid	1	X	
3								
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	PACE	3/23/18 1730		
2		3/24/18 0805		3/24/18 0805
3				

Comments

Cooler Temperature on Receipt 2 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace MN

Project #:

WO#: 40166406

40166406

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other:

Tracking #: 1674108-1

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 75 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 2 /Corr: 2

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 3/24/18
Initials: SSh

Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4. IRWO SSh 3/24/18
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes	☐No		Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume: ☐Yes ☒No ☐N/A MS/MSD	☐Yes	☒No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☐No	☒N/A	
-Pace IR Containers Used:	☒Yes	☐No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11. 001+002
Sample Labels match COC:	☐Yes	☒No	☐N/A	12. No client collect time SSh 3/24/18
-Includes date/time/ID/Analysis Matrix: S				
Trip Blank Present:	☐Yes	☐No	☒N/A	13.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution: 002 client ID FD-SB-A4 (21.5-23.5) KJ 3/24/18

Project Manager Review: CW **Date:** 3/26/18

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424249 **Workorder Name:** 18-00383 MPCA Freeway LF Soils **Owner Received Date:** 3/20/2018 **Results Requested By:** 4/3/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Chromium III	Chromium VI	Total Cr by 6020	LAB USE ONLY
1	FD-SB-A5(15-17)	PS	3/20/2018 13:00	10424249001	Solid	1	X	X	X	001
2	FD-SB-B5(11.5-23)	PS	3/20/2018 15:10	10424249002	Solid	1	X	X	X	002
3										
4										
5										

SO93173

Transfers	Released By	Date/Time	Received By	Date/Time
1	FED EX	3/27/18 1645	FED EX	
2			David Schenkenfelder	3/28/18 0910
3				

Comments

Cooler Temperature on Receipt 1.0 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50193173

Date/Time and Initials of person examining contents: 3/28/18 1415 DK

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9831 7405

Custody Seal on Cooler/Box Present: ☒ Yes ☐ No **Seals Intact:** ☒ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer: (1) 2 3 4 5 6 A B C D E F **Ice Type:** ☒ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☒ N/A

Cooler Temperature: 0.8 / 1.0 Ice Visible in Sample Containers?: ☐ Yes ☒ No ☐ N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☒ N/A

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		✓	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		✓				
Chain of Custody Present:	✓					
Chain of Custody Filled Out:	✓		Dissolved Metals field filtered?:			
Short Hold Time Analysis (<72hr)?: Analysis:		✓	Headspace Wisconsin Sulfide			
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			
Rush TAT Requested:		✓	Headspace in VOA Vials (>6mm):			
Containers Intact?:	✓		Trip Blank Present?:		✓	
Sample Labels Match COC?: Except TCs, which only require sample ID	✓		Trip Blank Custody Seals?:		✓	

Comments:

Sample Container Count

WO# : 50193173

50193173

CLIENT: Pace MN

COC PAGE 1 of 1

COC ID# _____

Project # 50193173

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	SBS DI Bulk Kit R				Matrix SI (Soil/Wat Aqueous	pH <2	pH >9	pH>12
1							1														Soil			
2							1														tr			
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic	BP3U	250mL unpreserved plastic
BP1N	1 liter HNO3 plastic	BP3Z	250mL NaOH, Zn Ac plastic
BP1S	1 liter H2SO4 plastic		
BP1U	1 liter unpreserved plastic	AF	Air Filter
BP1Z	1 liter NaOH, Zn, Ac	C	Air Cassettes
BP2A	500mL NaOH, Asc Acid plastic	R	Terra core kit
BP2N	500mL HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
BP2O	500mL NaOH plastic	U	Summa Can
BP2S	500mL H2SO4 plastic	ZPLC	Ziploc Bag
BP2U	500mL unpreserved plastic		
BP2Z	500mL NaOH, Zn Ac		
BP3B	250mL NaOH plastic		
BP3N	250mL HNO3 plastic		
BP3S	250mL H2SO4 plastic		

Chain of Custody

WO#: 12106175

PM: HRZ Due Date: 04/03/18

CLIENT: PACE MPLS

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424249 Workorder Name: MPCA Freeway LF Soils

Owner Received Date: 3/20/2018 Results Requested By: 4/3/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury (EPA 1630)	LAB USE ONLY
1	FD-SB-A5(15-17)	PS	3/20/2018 13:00	10424249001	Solid	1	X	
2	FD-SB-B5(11.5-23)	PS	3/20/2018 15:10	10424249002	Solid	1	X	
3								
4								
5								

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	3/21/18 1605	DJ Chap	3-21-18 1900
2	DJ Chap	3-21-18 2300	[illegible]	3/22/18 800
3				

Cooler Temperature on Receipt 2.2 °C | Custody Seal ⊘ or N | Received on Ice ⊘ or N | Samples Intact ⊘ or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: **WO#: 12106175**

PM: HRZ Due Date: 04/03/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.9 Cooler Temp Corrected °C: 2.2 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 3-21-18 DC

Comments: M3/22/18

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☒ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☒ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: _____ Date: 3/22/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MI

Workorder: 10424249 Workorder Name: 18-00383 MPCA Freeway LF Soils Owner Received Date: 3/20/2018 Results Requested By: 4/3/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Fluoride by 9056	LAB USE ONLY
1	FD-SB-A5(15-17)	PS	3/20/2018 13:00	10424249001	Solid	1	X	
2	FD-SB-B5(11.5-23)	PS	3/20/2018 15:10	10424249002	Solid	1	X	
3								
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	3/27/18 1600	CB [signature]	3/27/18 1845
2	CB	3/27/18 2230	[signature]	3/28/18 1110
3				

Comments

Cooler Temperature on Receipt 4.0 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace - Mpls.

Project #: WO#: 12106175

PM: HRZ Due Date: 03/28/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.7 Cooler Temp Corrected °C: 4.0 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 3/27/18 CS

Comments: al 3/28/18

Chain of Custody Present?	☐ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☐ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☐ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☐ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes al	☐ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☐ Yes	☐ No al	☐ N/A	8.
Correct Containers Used?	☐ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☐ Yes	☐ No	☐ N/A	
Containers Intact?	☐ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☐ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☐ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☐ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Heather Stotts Date: 3/28/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10424250
Sample Receipt Date: 03/20/2018
Client Project #: MPCA Freeway LF Soils
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

April 11, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
April 2, 2018

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analysis performed on one sample submitted by a representative of Pace Analytical Services, Inc. The sample was analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. The sample was received above the recommended temperature range of 0-6 degrees Celsius.

The isotopically-labeled TCDD internal standard in the sample extract was recovered at 57%. Except for one low value, which was flagged "R" on the results table, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

Laboratory and matrix spike samples were also prepared with the sample batch using clean reference matrix or sample matrix that had been fortified with native standard materials. The results show that the spiked native TCDD was recovered at 70-111% with a relative percent difference (RPD) of 25.3%. The RPD value obtained for the matrix spike analyses was above the 20% target upper limit. This deviation may be due to sample inhomogeneity.

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without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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Report No.....10424250

Appendix A

Sample Management

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number: | COC Type: | Page: 1 of

Turnaround Time: | COC ID: | FOR LAB USE ONLY

PROJECT/CLIENT INFO		LABORATORY
Facility Code:	MPCA Freeway LF Soils — Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA Freeway LF Soils — Project Task Code:	Address: EPIC Profile # 38716
Project Manager:		
Potential Hazard?	If yes, add information to Sampler Comments Section	Phone No:

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wa-Ground=Groundwater; Wa-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

PRESERV.

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS: See attachment for soils/waste	ANALYSIS: Dioxins					Lab Sample No.	#
FD-SB-A5 (05-17)	WM	3/20/18	1300	15'	17'	C	SD	WM			11	X	X						001	1
FD-SB-A4 (05-23)	S	3/20/18	1510	21.5'	23'	C	SD	S			10	X								2
																				3
																				4
																				5
																				6
																				7
																				8
																				9
																				10

WO#: 10424250

10424250

Sampled By: Chris Pelusi | Sampler's Signature: Chris Pelusi | Phone #: 612-597-7254

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) Chris Pelusi Pace	3/20/18 1655	Pace	3/20/18 1655
			T = 8.1 ②

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: WO#: 10424250

PM: BM2 Due Date: 04/03/18

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☒ Other: PC **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 8.1 **Cooler Temp Corrected (°C):** 8.3

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

USDA Regulated Soil (☐ N/A, water sample) **Date and Initials of Person Examining Contents:** 3/20/18 DO

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	☒ Yes ☐ No	1.
Chain of Custody Filled Out?	☒ Yes ☐ No	2.
Chain of Custody Relinquished?	☒ Yes ☐ No	3.
Sampler Name and/or Signature on COC?	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes ☐ No	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No	6.
Rush Turn Around Time Requested?	☐ Yes ☒ No	7.
Sufficient Volume?	☒ Yes ☐ No	8.
Correct Containers Used?	☒ Yes ☐ No	9.
-Pace Containers Used?	☒ Yes ☐ No	
Containers Intact?	☒ Yes ☐ No	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes ☐ No ☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☒ Yes ☐ No	12.
-Includes Date/Time/ID/Analysis Matrix: SL		
All containers needing acid/base preservation have been checked?	☐ Yes ☐ No ☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes ☐ No ☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes ☐ No ☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present?	☐ Yes ☐ No ☒ N/A NEEDED	15.
Trip Blank Custody Seals Present?	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution: Received during cool down phase.

Project Manager Review: Date: 03/21/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-A5 (15-17)		
Lab Sample ID	10424250001		
Filename	Y180330B_05		
Injected By	BAL		
Total Amount Extracted	11.8 g	Matrix	Solid
% Moisture	32.2	Dilution	NA
Dry Weight Extracted	8.00 g	Collected	03/20/2018 13:00
ICAL ID	Y180204	Received	03/20/2018 16:55
CCal Filename(s)	Y180330B_01 & Y180330B_16	Extracted	03/22/2018 14:55
Method Blank ID	BLANK-61235	Analyzed	03/30/2018 16:39

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	19	-----	1.0	2,3,7,8-TCDD-13C	2.00	57
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	61

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61235	Matrix	Solid
Filename	Y180329A_10	Dilution	NA
Total Amount Extracted	75.2 g	Extracted	03/22/2018 14:55
ICAL ID	Y180204	Analyzed	03/29/2018 20:08
CCal Filename(s)	Y180329A_01 & Y180329A_16	Injected By	SMT

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	30 R
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	32

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range

REPORT OF LABORATORY ANALYSIS

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61236		
Filename	Y180329A_04	Matrix	Solid
Total Amount Extracted	75.5 g	Dilution	NA
ICAL ID	Y180204	Extracted	03/22/2018 14:55
CCal Filename(s)	Y180329A_01 & Y180329A_16	Analyzed	03/29/2018 15:35
Method Blank ID	BLANK-61235	Injected By	SMT

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.20	100	2,3,7,8-TCDD-13C	2.0	63
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	67

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-A5 (15-17)-MS		
Lab Sample ID	10424250001-MS		
Filename	Y180330B_02	Matrix	Solid
Total Amount Extracted	11.7 g	Dilution	NA
ICAL ID	Y180204	Extracted	03/22/2018 14:55
CCal Filename(s)	Y180330B_01 & Y180330B_16	Analyzed	03/30/2018 14:23
Method Blank ID	BLANK-61235	Injected By	BAL

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.29	144 R	2,3,7,8-TCDD-37Cl4	0.20	64
				2,3,7,8-TCDD-13C	2.00	59

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Method 8290 Spiked Sample Report

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-A5 (15-17)-MSD		
Lab Sample ID	10424250001-MSD		
Filename	Y180330B_03	Matrix	Solid
Total Amount Extracted	11.8 g	Dilution	NA
ICAL ID	Y180204	Extracted	03/22/2018 14:55
CCal Filename(s)	Y180330B_01 & Y180330B_16	Analyzed	03/30/2018 15:08
Method Blank ID	BLANK-61235	Injected By	BAL

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.37	186 R	2,3,7,8-TCDD-37Cl4	0.20	69
				2,3,7,8-TCDD-13C	2.00	60

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spike Sample Results

Client - PACE Minnesota Field

Client Sample ID	FD-SB-A5 (15-17)			Dry Weights	
Lab Sample ID	10424250001	Sample Filename	Y180330B_05	Sample Amount	8.00 g
MS ID	10424250001-MS	MS Filename	Y180330B_02	MS Amount	7.9 g
MSD ID	10424250001-MSD	MSD Filename	Y180330B_03	MSD Amount	8.0 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	Background Subtracted MSD % Rec.	Background Subtracted RPD
2,3,7,8-TCDD	18.718	0.20	0.29	0.37	25.3	70	111	45.4

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10424442
Sample Receipt Date: 03/21/2018
Client Project #: MPCA Freeway LF Soils
Client Sub PO #: 18-00383
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

April 10, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
April 10, 2018

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on three samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. The samples were received above the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 42-73%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained. In cases where the estimated detection limits (EDLs) were above the standard reporting limits, the EDLs were provided and flagged "A".

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of 2,3,7,8-TCDD at the reporting limit.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 95%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

WO# : 10424442

10424442

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number:

Turnaround Time:

Page: 1 of

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO

Facility Code: MPCA Freeway LF Soils

Program Code (MDH Lab Only):

Project Name: MPCA Freeway LF Soils

Project Task Code:

Project Manager:

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name:

Address: 18-00383

GPL Profile # 38716

Phone No:

SAMPLE DETAILS

ANALYSIS REQUESTED

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS	PRESERV.	See attached for soils/forests (+ dioxins)	+ Dioxins				Lab Sample No.	#
FD-WM-C5 (15-17.5 wm)	S	3/21/18	1005	15'	17.5'	C	SD	WM			13			X	X				001	1
FD-WM-B5 (3-16 wm)	S	3/21/18	1145	3'	16'	C	SD	WM			12			X						2
FD-WM-E5 (5-10 wm)	S	3/21/18	1300	5'	10'	C	SD	WM			13			X	X				002	3
FD-WM-F5 (3-11 wm)	S	3/21/18	1530	3'	11'	C	SD	WM			13			X						4
FD-WM-G5 (5-14 wm)	S	3/21/18	1620	5'	14'	C	SD	WM			13			X	X				003	5
FD-WM-F4 (5-10 wm)	S	3/21/18	1650	5'	10'	C	SD	WM			13			X						6
																				7
																				8
																				9
																				10

Sampled By: Chris Pelosi

Sampler's Signature: Chris Pelosi

Phone #: 612-597-7254

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) Chris Pelosi Pace	3/21/18 1811	Pace	3/21/18 1812

T= 6.7, 9.4, 9.3, 7.1, 9.0°C

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

JD

Sample Condition Upon Receipt

Client Name: Pasi Fld

Project #:

WO#: 10424442

PM: SCU **Due Date: 04/05/18**

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☒Pace ☐SpeeDee ☐Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☑No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☒Bubble Bags ☐None ☒Other: FS **Temp Blank?** ☑Yes ☐No

Thermometer Used: ☐151401163 ☒G87A9155100842 **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Cooler Temp Read (°C): 7 5.6 6.9,9.2,6.9 **Cooler Temp Corrected (°C):** 6.7,9.4,9.3,7.1 9.0

Biological Tissue Frozen? ☐Yes ☐No ☒N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** 3/21/18 SD

USDA Regulated Soil (☒N/A, water sample) ☒ 3/21/18

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☒No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☒No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	☒Yes ☐No	1.
Chain of Custody Filled Out?	☒Yes ☐No	2.
Chain of Custody Relinquished?	☒Yes ☐No	3.
Sampler Name and/or Signature on COC?	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time? 3/21/18 SD	☒Yes ☐No	5.
Short Hold Time Analysis (<72 hr)?	~~☐Yes~~ ☒No	6.
Rush Turn Around Time Requested?	☐Yes ☒No	7.
Sufficient Volume?	☒Yes ☐No	8.
Correct Containers Used? -Pace Containers Used?	☒Yes ☐No ☒Yes ☐No	9.
Containers Intact?	☒Yes ☐No	10.
Filtered Volume Received for Dissolved Tests?	☐Yes ☐No ☒N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒Yes ☐No	12.
All containers needing acid/base preservation have been checked? All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐Yes ☐No ☒N/A ☐Yes ☐No ☒N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N Sample # Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐Yes ☐No ☒N/A	14.
Trip Blank Present? Trip Blank Custody Seals Present? Pace Trip Blank Lot # (if purchased):	☐Yes ☒No ☐N/A ☐Yes ☐No ☒N/A	15.

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 03/22/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Received 3/19/18 / BG

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S

Metals	Methods
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluorine, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-WM-C5 (15-17.5wm)		
Lab Sample ID	10424442001		
Filename	U180402B_10		
Injected By	SMT		
Total Amount Extracted	13.1 g	Matrix	Solid
% Moisture	29.0	Dilution	NA
Dry Weight Extracted	9.30 g	Collected	03/21/2018 10:05
ICAL ID	U171222	Received	03/21/2018 18:12
CCal Filename(s)	U180402B_01 & U180402B_14	Extracted	03/23/2018 17:15
Method Blank ID	BLANK-61285	Analyzed	04/03/2018 00:26

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg		**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	3.3	-----	1.1	A	2,3,7,8-TCDD-13C	2.00	73
					Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
					Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	67

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
A = Reporting Limit based on signal to noise
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-WM-E5 (5-10wm)		
Lab Sample ID	10424442002		
Filename	U180408A_16		
Injected By	ZMS		
Total Amount Extracted	12.7 g	Matrix	Solid
% Moisture	30.4	Dilution	NA
Dry Weight Extracted	8.84 g	Collected	03/21/2018 13:00
ICAL ID	U180405	Received	03/21/2018 18:12
CCal Filename(s)	U180408A_06 & U180408A_20	Extracted	03/23/2018 17:15
Method Blank ID	BLANK-61285	Analyzed	04/09/2018 02:44

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD	1.5	-----	1.4	A	2,3,7,8-TCDD-13C	2.00	42
					Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
					Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	78

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
A = Reporting Limit based on signal to noise
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-WM-G5 (5-14wm)		
Lab Sample ID	10424442003		
Filename	U180409A_09		
Injected By	SMT		
Total Amount Extracted	13.1 g	Matrix	Solid
% Moisture	9.5	Dilution	NA
Dry Weight Extracted	11.9 g	Collected	03/21/2018 16:20
ICAL ID	U180405	Received	03/21/2018 18:12
CCal Filename(s)	U180409A_03 & U180409A_12	Extracted	03/23/2018 17:15
Method Blank ID	BLANK-61285	Analyzed	04/09/2018 19:53

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	1.2	-----	1.0	2,3,7,8-TCDD-13C	2.00	45
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	48

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61285	Matrix	Solid
Filename	U180408A_12	Dilution	NA
Total Amount Extracted	20.3 g	Extracted	03/23/2018 17:15
ICAL ID	U180405	Analyzed	04/08/2018 23:30
CCal Filename(s)	U180408A_06 & U180408A_20	Injected By	ZMS

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	59
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	64

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61286		
Filename	U180408A_07	Matrix	Solid
Total Amount Extracted	20.0 g	Dilution	NA
ICAL ID	U180405	Extracted	03/23/2018 17:15
CCal Filename(s)	U180408A_06 & U180408A_20	Analyzed	04/08/2018 19:25
Method Blank ID	BLANK-61285	Injected By	ZMS

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.19	95	2,3,7,8-TCDD-13C	2.0	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	68

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 09, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 21, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bob Michels
bob.michels@pacelabs.com
(612)607-6452
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Alaska Certification UST-107
California Certification #2973
California Certification #2973
Montana Certificate #CERT0103
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Nevada DCNR Certification #: MN000372018-1
Montana DHHS Certification #: CERT0102
Minnesota Dept of Health Certification #: 1382680
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10424443001	**FD-WM-C5 (15-17.5 wm)**	Solid	03/21/18 10:05	03/21/18 18:12
10424443002	**FD-WM-D5 (5-16 wm)**	Solid	03/21/18 11:45	03/21/18 18:12
10424443003	**FD-WM-E5 (5-10 wm)**	Solid	03/21/18 13:00	03/21/18 18:12
10424443004	**FD-WM-F5 (3-11 wm)**	Solid	03/21/18 15:30	03/21/18 18:12
10424443005	**FD-WM-G5 (5-14 wm)**	Solid	03/21/18 16:20	03/21/18 18:12
10424443006	**FD-WM-F4 (5-10 wm)**	Solid	03/21/18 16:50	03/21/18 18:12

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL

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(612)607-1700

SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-C5 (15-17.5 wm) **Lab ID: 10424443001** Collected: 03/21/18 10:05 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	14.5	1	03/30/18 11:35	04/02/18 16:06	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	309-00-2	
alpha-BHC	ND	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	319-84-6	
beta-BHC	ND	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	319-85-7	
delta-BHC	ND	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	58-89-9	
Chlordane (Technical)	ND	ug/kg	469	20	03/22/18 12:24	04/03/18 23:32	57-74-9	
alpha-Chlordane	**94.9**	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	5103-71-9	
gamma-Chlordane	**57.2**	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	5103-74-2	
4,4'-DDD	ND	ug/kg	93.5	20	03/22/18 12:24	04/03/18 23:32	72-54-8	
4,4'-DDE	ND	ug/kg	93.5	20	03/22/18 12:24	04/03/18 23:32	72-55-9	
4,4'-DDT	ND	ug/kg	93.5	20	03/22/18 12:24	04/03/18 23:32	50-29-3	
Dieldrin	ND	ug/kg	93.5	20	03/22/18 12:24	04/03/18 23:32	60-57-1	
Endosulfan I	ND	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	959-98-8	
Endosulfan II	ND	ug/kg	93.5	20	03/22/18 12:24	04/03/18 23:32	33213-65-9	
Endosulfan sulfate	ND	ug/kg	93.5	20	03/22/18 12:24	04/03/18 23:32	1031-07-8	
Endrin	ND	ug/kg	93.5	20	03/22/18 12:24	04/03/18 23:32	72-20-8	
Endrin aldehyde	ND	ug/kg	93.5	20	03/22/18 12:24	04/03/18 23:32	7421-93-4	
Endrin ketone	ND	ug/kg	93.5	20	03/22/18 12:24	04/03/18 23:32	53494-70-5	
Heptachlor	ND	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	76-44-8	
Heptachlor epoxide	ND	ug/kg	46.9	20	03/22/18 12:24	04/03/18 23:32	1024-57-3	
Methoxychlor	ND	ug/kg	469	20	03/22/18 12:24	04/03/18 23:32	72-43-5	
Toxaphene	ND	ug/kg	1400	20	03/22/18 12:24	04/03/18 23:32	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	03/22/18 12:24	04/03/18 23:32	877-09-8	6M,D4, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	03/22/18 12:24	04/03/18 23:32	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	11141-16-5	
PCB-1242 (Aroclor 1242)	**1120**	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	12672-29-6	
PCB-1254 (Aroclor 1254)	**1100**	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	37324-23-5	
PCB-1268 (Aroclor 1268)	**133**	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	11100-14-4	
PCB, Total	**2350**	ug/kg	46.3	1	03/23/18 09:26	03/26/18 14:22	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	83	%.	48-125	1	03/23/18 09:26	03/26/18 14:22	877-09-8	
Decachlorobiphenyl (S)	91	%.	30-134	1	03/23/18 09:26	03/26/18 14:22	2051-24-3	

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-C5 (15-17.5 wm) **Lab ID: 10424443001** Collected: 03/21/18 10:05 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**4630**	mg/kg	2690	20	03/22/18 16:48	03/23/18 09:23		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	03/22/18 16:48	03/23/18 09:23	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**122**	mg/kg	24.8	1	03/30/18 14:11	03/30/18 20:29		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	03/30/18 14:11	03/30/18 20:29	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**11900**	mg/kg	13.7	1	03/26/18 05:53	03/29/18 17:11	7429-90-5	P6,R1
Barium	**292**	mg/kg	0.68	1	03/26/18 05:53	03/29/18 17:11	7440-39-3	P6
Boron	**26.6**	mg/kg	10.3	1	03/26/18 05:53	03/29/18 17:11	7440-42-8	M1
Copper	**228**	mg/kg	6.8	10	03/26/18 05:53	03/30/18 09:45	7440-50-8	P6,R1
Iron	**15900**	mg/kg	34.2	10	03/26/18 05:53	03/30/18 09:45	7439-89-6	M6,R1
Manganese	**249**	mg/kg	0.34	1	03/26/18 05:53	03/29/18 17:11	7439-96-5	P6
Nickel	**112**	mg/kg	13.7	10	03/26/18 05:53	03/30/18 09:45	7440-02-0	M6,R1
Silver	**1.8**	mg/kg	0.68	1	03/26/18 05:53	03/29/18 17:11	7440-22-4	
Tin	**186**	mg/kg	5.1	1	03/26/18 05:53	03/29/18 17:11	7440-31-5	M1
Titanium	**275**	mg/kg	1.7	1	03/26/18 05:53	03/29/18 17:11	7440-32-6	M1,R1
Zinc	**86700**	mg/kg	27.3	20	03/26/18 05:53	03/30/18 11:03	7440-66-6	M6,R1
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**26.1**	mg/kg	1.3	5	03/30/18 09:43	03/31/18 05:37	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**3.0**	mg/kg	0.70	20	03/26/18 09:32	04/02/18 11:55	7440-36-0	M6
Arsenic	**14.3**	mg/kg	0.70	20	03/26/18 09:32	04/02/18 11:55	7440-38-2	
Beryllium	**0.36**	mg/kg	0.28	20	03/26/18 09:32	04/02/18 11:55	7440-41-7	
Cadmium	**4.6**	mg/kg	0.11	20	03/26/18 09:32	04/02/18 11:55	7440-43-9	
Cobalt	**37.4**	mg/kg	0.70	20	03/26/18 09:32	04/02/18 11:55	7440-48-4	M6,R1
Lead	**724**	mg/kg	0.14	20	03/26/18 09:32	04/02/18 11:55	7439-92-1	M6,R1
Lithium	**6.7**	mg/kg	0.70	20	03/26/18 09:32	04/02/18 11:55	7439-93-2	
Selenium	**0.82**	mg/kg	0.70	20	03/26/18 09:32	04/02/18 11:55	7782-49-2	
Strontium	**106**	mg/kg	0.70	20	03/26/18 09:32	04/02/18 11:55	7440-24-6	M6
Vanadium	**27.4**	mg/kg	1.4	20	03/26/18 09:32	04/02/18 11:55	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.76**	mg/kg	0.028	1	03/30/18 08:32	03/30/18 10:56	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**29.0**	%	0.10	1		03/22/18 11:43		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	83-32-9	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-C5 (15-17.5 wm) **Lab ID: 10424443001** Collected: 03/21/18 10:05 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	208-96-8	
Anthracene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	120-12-7	
Benzo(a)anthracene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	56-55-3	
Benzo(a)pyrene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	101-55-3	
Butylbenzylphthalate	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	85-68-7	
Carbazole	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	59-50-7	
4-Chloroaniline	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	108-60-1	
2-Chloronaphthalene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	91-58-7	
2-Chlorophenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	7005-72-3	
Chrysene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	53-70-3	
Dibenzofuran	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	120-83-2	
Diethylphthalate	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	105-67-9	
Dimethylphthalate	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	131-11-3	
Di-n-butylphthalate	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	23900	1	03/22/18 11:24	04/04/18 22:08	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	606-20-2	
Di-n-octylphthalate	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	122-66-7	
bis(2-Ethylhexyl)phthalate	**247000**	ug/kg	23200	5	03/22/18 11:24	04/05/18 12:39	117-81-7	
Fluoranthene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	206-44-0	
Fluorene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	87-68-3	
Hexachlorobenzene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	118-74-1	
Hexachloroethane	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	193-39-5	
Isophorone	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	78-59-1	
1-Methylnaphthalene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	90-12-0	
2-Methylnaphthalene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-C5 (15-17.5 wm) **Lab ID: 10424443001** Collected: 03/21/18 10:05 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	9290	1	03/22/18 11:24	04/04/18 22:08		
Naphthalene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	91-20-3	
2-Nitroaniline	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	88-74-4	
3-Nitroaniline	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	99-09-2	
4-Nitroaniline	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	100-01-6	
Nitrobenzene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	98-95-3	
2-Nitrophenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	88-75-5	
4-Nitrophenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	86-30-6	
Pentachlorophenol	ND	ug/kg	9430	1	03/22/18 11:24	04/04/18 22:08	87-86-5	
Phenanthrene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	85-01-8	
Phenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	108-95-2	
Pyrene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	4640	1	03/22/18 11:24	04/04/18 22:08	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	1	03/22/18 11:24	04/04/18 22:08	4165-60-0	D4,P3, S4
2-Fluorobiphenyl (S)	0	%.	30-132	1	03/22/18 11:24	04/04/18 22:08	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	62-125	1	03/22/18 11:24	04/04/18 22:08	1718-51-0	S4
Phenol-d6 (S)	0	%.	48-125	1	03/22/18 11:24	04/04/18 22:08	13127-88-3	S4
2-Fluorophenol (S)	0	%.	40-125	1	03/22/18 11:24	04/04/18 22:08	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	60-125	1	03/22/18 11:24	04/04/18 22:08	118-79-6	S4
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	83-32-9	
Acenaphthylene	ND	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	208-96-8	
Anthracene	ND	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	120-12-7	
Benzo(a)anthracene	**1420**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	56-55-3	
Benzo(a)pyrene	**1710**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	50-32-8	
Benzo(b)fluoranthene	**2170**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	205-99-2	
Benzo(g,h,i)perylene	**1080**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	191-24-2	
Benzo(k)fluoranthene	**787**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	207-08-9	
Chrysene	**1510**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	53-70-3	
Fluoranthene	**2870**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	206-44-0	
Fluorene	ND	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	86-73-7	
Indeno(1,2,3-cd)pyrene	**843**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	193-39-5	
Naphthalene	ND	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	91-20-3	
Phenanthrene	**1270**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	85-01-8	
Pyrene	**2240**	ug/kg	702	5	03/26/18 11:34	03/28/18 11:47	129-00-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-C5 (15-17.5 wm) **Lab ID: 10424443001** Collected: 03/21/18 10:05 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	5	03/26/18 11:34	03/28/18 11:47	321-60-8	D3,P3, S0
p-Terphenyl-d14 (S)	0	%.	57-125	5	03/26/18 11:34	03/28/18 11:47	1718-51-0	S0
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	25057-89-0	
2,4-D	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	94-75-7	
2,4-DB	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	94-82-6	
Dicamba	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	1918-00-9	
Dinoseb	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	88-85-7	
MCPA	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	94-74-6	
Pentachlorophenol	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	87-86-5	
Picloram	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	1918-02-1	
2,4,5-T	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	93-72-1	
Triclopyr	ND	mg/kg	0.46	10	03/23/18 07:54	03/29/18 17:10	55335-06-3	
Surrogates								
2,4-DCAA (S)	0	%.	46-125	10	03/23/18 07:54	03/29/18 17:10	19719-28-9	D3,S4
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1830	1	03/26/18 09:03	03/26/18 12:04	67-64-1	
Allyl chloride	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	107-05-1	
Benzene	ND	ug/kg	36.7	1	03/26/18 09:03	03/26/18 12:04	71-43-2	
Bromobenzene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	108-86-1	
Bromochloromethane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	74-97-5	
Bromodichloromethane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	75-27-4	
Bromoform	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	75-25-2	
Bromomethane	ND	ug/kg	917	1	03/26/18 09:03	03/26/18 12:04	74-83-9	
2-Butanone (MEK)	ND	ug/kg	458	1	03/26/18 09:03	03/26/18 12:04	78-93-3	
n-Butylbenzene	**614**	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	104-51-8	
sec-Butylbenzene	**372**	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	135-98-8	
tert-Butylbenzene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	98-06-6	
Carbon tetrachloride	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	56-23-5	
Chlorobenzene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	108-90-7	
Chloroethane	ND	ug/kg	917	1	03/26/18 09:03	03/26/18 12:04	75-00-3	
Chloroform	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	67-66-3	
Chloromethane	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	74-87-3	
2-Chlorotoluene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	95-49-8	
4-Chlorotoluene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	917	1	03/26/18 09:03	03/26/18 12:04	96-12-8	
Dibromochloromethane	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	106-93-4	
Dibromomethane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	541-73-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-C5 (15-17.5 wm) **Lab ID: 10424443001** Collected: 03/21/18 10:05 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,4-Dichlorobenzene	**469**	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	75-71-8	
1,1-Dichloroethane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	75-34-3	
1,2-Dichloroethane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	107-06-2	
1,1-Dichloroethene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	156-60-5	
Dichlorofluoromethane	ND	ug/kg	917	1	03/26/18 09:03	03/26/18 12:04	75-43-4	
1,2-Dichloropropane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	78-87-5	
1,3-Dichloropropane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	142-28-9	
2,2-Dichloropropane	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	594-20-7	
1,1-Dichloropropene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	60-29-7	
Ethylbenzene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	458	1	03/26/18 09:03	03/26/18 12:04	87-68-3	
Isopropylbenzene (Cumene)	**558**	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	98-82-8	
p-Isopropyltoluene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	99-87-6	
Methylene Chloride	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	458	1	03/26/18 09:03	03/26/18 12:04	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	1634-04-4	
Naphthalene	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	91-20-3	
n-Propylbenzene	**474**	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	103-65-1	
Styrene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	79-34-5	N2
Tetrachloroethene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	127-18-4	
Tetrahydrofuran	ND	ug/kg	3670	1	03/26/18 09:03	03/26/18 12:04	109-99-9	
Toluene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	79-00-5	
Trichloroethene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	367	1	03/26/18 09:03	03/26/18 12:04	76-13-1	
1,2,4-Trimethylbenzene	**123**	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	91.7	1	03/26/18 09:03	03/26/18 12:04	108-67-8	
Vinyl chloride	ND	ug/kg	36.7	1	03/26/18 09:03	03/26/18 12:04	75-01-4	
Xylene (Total)	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 12:04	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1	03/26/18 09:03	03/26/18 12:04	17060-07-0	
Toluene-d8 (S)	95	%.	75-125	1	03/26/18 09:03	03/26/18 12:04	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	03/26/18 09:03	03/26/18 12:04	460-00-4	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-C5 (15-17.5 wm) **Lab ID: 10424443001** Collected: 03/21/18 10:05 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	14.0	5	03/30/18 14:00	04/03/18 12:08	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**26.1**	mg/kg	1.0	1		04/05/18 07:42	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.39	1	03/29/18 10:55	03/29/18 13:00	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	03/30/18 14:00	03/31/18 04:44	16984-48-8	

Sample: FD-WM-D5 (5-16 wm) **Lab ID: 10424443002** Collected: 03/21/18 11:45 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	14.2	1	03/30/18 11:35	04/02/18 16:12	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	309-00-2	
alpha-BHC	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	319-84-6	
beta-BHC	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	319-85-7	
delta-BHC	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	58-89-9	
Chlordane (Technical)	ND	ug/kg	1020	50	03/22/18 12:24	04/03/18 23:14	57-74-9	
alpha-Chlordane	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	5103-71-9	
gamma-Chlordane	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	5103-74-2	
4,4'-DDD	ND	ug/kg	202	50	03/22/18 12:24	04/03/18 23:14	72-54-8	
4,4'-DDE	ND	ug/kg	202	50	03/22/18 12:24	04/03/18 23:14	72-55-9	
4,4'-DDT	ND	ug/kg	202	50	03/22/18 12:24	04/03/18 23:14	50-29-3	
Dieldrin	ND	ug/kg	202	50	03/22/18 12:24	04/03/18 23:14	60-57-1	
Endosulfan I	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	959-98-8	
Endosulfan II	ND	ug/kg	202	50	03/22/18 12:24	04/03/18 23:14	33213-65-9	
Endosulfan sulfate	ND	ug/kg	202	50	03/22/18 12:24	04/03/18 23:14	1031-07-8	
Endrin	ND	ug/kg	202	50	03/22/18 12:24	04/03/18 23:14	72-20-8	
Endrin aldehyde	ND	ug/kg	202	50	03/22/18 12:24	04/03/18 23:14	7421-93-4	
Endrin ketone	ND	ug/kg	202	50	03/22/18 12:24	04/03/18 23:14	53494-70-5	
Heptachlor	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	76-44-8	
Heptachlor epoxide	ND	ug/kg	102	50	03/22/18 12:24	04/03/18 23:14	1024-57-3	
Methoxychlor	ND	ug/kg	1020	50	03/22/18 12:24	04/03/18 23:14	72-43-5	
Toxaphene	ND	ug/kg	3040	50	03/22/18 12:24	04/03/18 23:14	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	50	03/22/18 12:24	04/03/18 23:14	877-09-8	4M, D3, S4

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-D5 (5-16 wm) **Lab ID: 10424443002** Collected: 03/21/18 11:45 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Surrogates								
Decachlorobiphenyl (S)	0	%.	30-150	50	03/22/18 12:24	04/03/18 23:14	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	11141-16-5	
PCB-1242 (Aroclor 1242)	**724**	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	12672-29-6	
PCB-1254 (Aroclor 1254)	**436**	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	11100-14-4	
PCB, Total	**1160**	ug/kg	40.1	1	03/23/18 09:26	03/26/18 13:21	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	85	%.	48-125	1	03/23/18 09:26	03/26/18 13:21	877-09-8	
Decachlorobiphenyl (S)	85	%.	30-134	1	03/23/18 09:26	03/26/18 13:21	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**1730**	mg/kg	496	20	03/22/18 16:48	03/23/18 09:16		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	03/22/18 16:48	03/23/18 09:16	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**40.9**	mg/kg	13.8	1	03/30/18 14:11	03/30/18 20:53		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	03/30/18 14:11	03/30/18 20:53	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**7130**	mg/kg	12.0	1	03/26/18 05:53	03/29/18 17:31	7429-90-5	
Barium	**191**	mg/kg	0.60	1	03/26/18 05:53	03/29/18 17:31	7440-39-3	
Boron	**58.6**	mg/kg	9.0	1	03/26/18 05:53	03/29/18 17:31	7440-42-8	
Copper	**23.7**	mg/kg	0.60	1	03/26/18 05:53	03/29/18 17:31	7440-50-8	
Iron	**17600**	mg/kg	15.0	5	03/26/18 05:53	03/30/18 10:04	7439-89-6	
Manganese	**263**	mg/kg	0.30	1	03/26/18 05:53	03/29/18 17:31	7439-96-5	
Nickel	**17.3**	mg/kg	1.2	1	03/26/18 05:53	03/29/18 17:31	7440-02-0	
Silver	ND	mg/kg	0.60	1	03/26/18 05:53	03/29/18 17:31	7440-22-4	
Tin	**5.7**	mg/kg	4.5	1	03/26/18 05:53	03/29/18 17:31	7440-31-5	
Titanium	**169**	mg/kg	1.5	1	03/26/18 05:53	03/29/18 17:31	7440-32-6	
Zinc	**268**	mg/kg	1.2	1	03/26/18 05:53	03/29/18 17:31	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**37.1**	mg/kg	1.1	5	03/30/18 09:43	03/31/18 05:42	7440-47-3	N2

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-D5 (5-16 wm) **Lab ID: 10424443002** Collected: 03/21/18 11:45 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**2.0**	mg/kg	0.61	20	03/26/18 09:32	04/02/18 10:56	7440-36-0	
Arsenic	**11.6**	mg/kg	0.61	20	03/26/18 09:32	04/02/18 10:56	7440-38-2	
Beryllium	**0.45**	mg/kg	0.24	20	03/26/18 09:32	04/02/18 10:56	7440-41-7	
Cadmium	**4.1**	mg/kg	0.098	20	03/26/18 09:32	04/02/18 10:56	7440-43-9	
Cobalt	**12.5**	mg/kg	0.61	20	03/26/18 09:32	04/02/18 10:56	7440-48-4	
Lead	**369**	mg/kg	0.12	20	03/26/18 09:32	04/02/18 10:56	7439-92-1	
Lithium	**5.0**	mg/kg	0.61	20	03/26/18 09:32	04/02/18 10:56	7439-93-2	
Selenium	**1.3**	mg/kg	0.61	20	03/26/18 09:32	04/02/18 10:56	7782-49-2	
Strontium	**53.8**	mg/kg	0.61	20	03/26/18 09:32	04/02/18 10:56	7440-24-6	
Vanadium	**25.7**	mg/kg	1.2	20	03/26/18 09:32	04/02/18 10:56	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.13**	mg/kg	0.022	1	03/30/18 08:32	03/30/18 10:58	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**18.0**	%	0.10	1		03/22/18 11:44		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	83-32-9	
Acenaphthylene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	208-96-8	
Anthracene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	120-12-7	
Benzo(a)anthracene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	56-55-3	
Benzo(a)pyrene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	101-55-3	
Butylbenzylphthalate	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	85-68-7	
Carbazole	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	59-50-7	
4-Chloroaniline	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	108-60-1	
2-Chloronaphthalene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	91-58-7	
2-Chlorophenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	7005-72-3	
Chrysene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	53-70-3	
Dibenzofuran	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	120-83-2	

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-D5 (5-16 wm) **Lab ID: 10424443002** Collected: 03/21/18 11:45 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Diethylphthalate	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	105-67-9	
Dimethylphthalate	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	131-11-3	
Di-n-butylphthalate	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	20700	1	03/22/18 11:24	04/04/18 22:37	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	606-20-2	
Di-n-octylphthalate	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	117-81-7	
Fluoranthene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	206-44-0	
Fluorene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	87-68-3	
Hexachlorobenzene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	118-74-1	
Hexachloroethane	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	193-39-5	
Isophorone	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	78-59-1	
1-Methylnaphthalene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	90-12-0	
2-Methylnaphthalene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	8030	1	03/22/18 11:24	04/04/18 22:37		
Naphthalene	**7710**	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	91-20-3	
2-Nitroaniline	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	88-74-4	
3-Nitroaniline	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	99-09-2	
4-Nitroaniline	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	100-01-6	
Nitrobenzene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	98-95-3	
2-Nitrophenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	88-75-5	
4-Nitrophenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	86-30-6	
Pentachlorophenol	ND	ug/kg	8150	1	03/22/18 11:24	04/04/18 22:37	87-86-5	
Phenanthrene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	85-01-8	
Phenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	108-95-2	
Pyrene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	4010	1	03/22/18 11:24	04/04/18 22:37	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	1	03/22/18 11:24	04/04/18 22:37	4165-60-0	P3,S4
2-Fluorobiphenyl (S)	0	%.	30-132	1	03/22/18 11:24	04/04/18 22:37	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	62-125	1	03/22/18 11:24	04/04/18 22:37	1718-51-0	S4
Phenol-d6 (S)	0	%.	48-125	1	03/22/18 11:24	04/04/18 22:37	13127-88-3	S4
2-Fluorophenol (S)	0	%.	40-125	1	03/22/18 11:24	04/04/18 22:37	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	60-125	1	03/22/18 11:24	04/04/18 22:37	118-79-6	S4

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-D5 (5-16 wm) **Lab ID: 10424443002** Collected: 03/21/18 11:45 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	83-32-9	
Acenaphthylene	ND	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	208-96-8	
Anthracene	ND	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	120-12-7	
Benzo(a)anthracene	**257**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	56-55-3	
Benzo(a)pyrene	**275**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	50-32-8	
Benzo(b)fluoranthene	**359**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	205-99-2	
Benzo(g,h,i)perylene	**203**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	191-24-2	
Benzo(k)fluoranthene	**124**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	207-08-9	
Chrysene	**315**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	53-70-3	
Fluoranthene	**567**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	206-44-0	
Fluorene	ND	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	86-73-7	
Indeno(1,2,3-cd)pyrene	**138**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	193-39-5	
Naphthalene	**1130**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	91-20-3	
Phenanthrene	**431**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	85-01-8	
Pyrene	**476**	ug/kg	122	10	03/26/18 11:34	03/27/18 18:40	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	10	03/26/18 11:34	03/27/18 18:40	321-60-8	D3,S4
p-Terphenyl-d14 (S)	0	%.	57-125	10	03/26/18 11:34	03/27/18 18:40	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	25057-89-0	
2,4-D	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	94-75-7	
2,4-DB	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	94-82-6	
Dicamba	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	1918-00-9	
Dinoseb	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	88-85-7	
MCPA	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	94-74-6	
Pentachlorophenol	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	87-86-5	
Picloram	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	1918-02-1	
2,4,5-T	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	93-72-1	
Triclopyr	ND	mg/kg	0.40	10	03/23/18 07:54	03/29/18 17:25	55335-06-3	
Surrogates								
2,4-DCAA (S)	0	%.	46-125	10	03/23/18 07:54	03/29/18 17:25	19719-28-9	D3,S4
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1240	1	03/26/18 09:03	03/26/18 12:21	67-64-1	
Allyl chloride	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	107-05-1	
Benzene	ND	ug/kg	24.8	1	03/26/18 09:03	03/26/18 12:21	71-43-2	
Bromobenzene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	108-86-1	
Bromochloromethane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	74-97-5	
Bromodichloromethane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	75-27-4	
Bromoform	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	75-25-2	
Bromomethane	ND	ug/kg	619	1	03/26/18 09:03	03/26/18 12:21	74-83-9	
2-Butanone (MEK)	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 12:21	78-93-3	
n-Butylbenzene	**154**	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	104-51-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-D5 (5-16 wm) **Lab ID: 10424443002** Collected: 03/21/18 11:45 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
sec-Butylbenzene	**91.6**	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	135-98-8	
tert-Butylbenzene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	98-06-6	
Carbon tetrachloride	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	56-23-5	
Chlorobenzene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	108-90-7	
Chloroethane	ND	ug/kg	619	1	03/26/18 09:03	03/26/18 12:21	75-00-3	
Chloroform	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	67-66-3	
Chloromethane	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	74-87-3	
2-Chlorotoluene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	95-49-8	
4-Chlorotoluene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	619	1	03/26/18 09:03	03/26/18 12:21	96-12-8	
Dibromochloromethane	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	106-93-4	
Dibromomethane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	541-73-1	
1,4-Dichlorobenzene	**137**	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	75-71-8	
1,1-Dichloroethane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	75-34-3	
1,2-Dichloroethane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	107-06-2	
1,1-Dichloroethene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	156-60-5	
Dichlorofluoromethane	ND	ug/kg	619	1	03/26/18 09:03	03/26/18 12:21	75-43-4	
1,2-Dichloropropane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	78-87-5	
1,3-Dichloropropane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	142-28-9	
2,2-Dichloropropane	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	594-20-7	
1,1-Dichloropropene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	60-29-7	
Ethylbenzene	**85.4**	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 12:21	87-68-3	
Isopropylbenzene (Cumene)	**131**	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	98-82-8	
p-Isopropyltoluene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	99-87-6	
Methylene Chloride	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	310	1	03/26/18 09:03	03/26/18 12:21	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	1634-04-4	
Naphthalene	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	91-20-3	
n-Propylbenzene	**197**	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	103-65-1	
Styrene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	79-34-5	N2
Tetrachloroethene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	127-18-4	
Tetrahydrofuran	ND	ug/kg	2480	1	03/26/18 09:03	03/26/18 12:21	109-99-9	
Toluene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	87-61-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-D5 (5-16 wm) **Lab ID: 10424443002** Collected: 03/21/18 11:45 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,2,4-Trichlorobenzene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	79-00-5	
Trichloroethene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	248	1	03/26/18 09:03	03/26/18 12:21	76-13-1	
1,2,4-Trimethylbenzene	**124**	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	61.9	1	03/26/18 09:03	03/26/18 12:21	108-67-8	
Vinyl chloride	ND	ug/kg	24.8	1	03/26/18 09:03	03/26/18 12:21	75-01-4	
Xylene (Total)	**534**	ug/kg	186	1	03/26/18 09:03	03/26/18 12:21	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	03/26/18 09:03	03/26/18 12:21	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/26/18 09:03	03/26/18 12:21	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1	03/26/18 09:03	03/26/18 12:21	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	24.4	10	03/30/18 14:00	04/03/18 12:08	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**37.1**	mg/kg	1.0	1		04/05/18 07:42	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.54**	mg/kg	0.28	1	03/29/18 10:55	03/29/18 13:01	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.98	1	03/30/18 14:00	04/02/18 20:17	16984-48-8	

Sample: FD-WM-E5 (5-10 wm) **Lab ID: 10424443003** Collected: 03/21/18 13:00 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.0	1	03/30/18 11:35	04/02/18 16:19	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	309-00-2	
alpha-BHC	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	319-84-6	
beta-BHC	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	319-85-7	
delta-BHC	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	58-89-9	
Chlordane (Technical)	ND	ug/kg	4790	200	03/22/18 12:24	04/03/18 22:37	57-74-9	
alpha-Chlordane	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	5103-71-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-E5 (5-10 wm) **Lab ID: 10424443003** Collected: 03/21/18 13:00 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
gamma-Chlordane	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	5103-74-2	
4,4'-DDD	ND	ug/kg	956	200	03/22/18 12:24	04/03/18 22:37	72-54-8	
4,4'-DDE	ND	ug/kg	956	200	03/22/18 12:24	04/03/18 22:37	72-55-9	
4,4'-DDT	ND	ug/kg	956	200	03/22/18 12:24	04/03/18 22:37	50-29-3	
Dieldrin	ND	ug/kg	956	200	03/22/18 12:24	04/03/18 22:37	60-57-1	
Endosulfan I	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	959-98-8	
Endosulfan II	ND	ug/kg	956	200	03/22/18 12:24	04/03/18 22:37	33213-65-9	
Endosulfan sulfate	ND	ug/kg	956	200	03/22/18 12:24	04/03/18 22:37	1031-07-8	
Endrin	ND	ug/kg	956	200	03/22/18 12:24	04/03/18 22:37	72-20-8	
Endrin aldehyde	ND	ug/kg	956	200	03/22/18 12:24	04/03/18 22:37	7421-93-4	
Endrin ketone	ND	ug/kg	956	200	03/22/18 12:24	04/03/18 22:37	53494-70-5	
Heptachlor	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	76-44-8	
Heptachlor epoxide	ND	ug/kg	479	200	03/22/18 12:24	04/03/18 22:37	1024-57-3	
Methoxychlor	ND	ug/kg	4790	200	03/22/18 12:24	04/03/18 22:37	72-43-5	
Toxaphene	ND	ug/kg	14400	200	03/22/18 12:24	04/03/18 22:37	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	200	03/22/18 12:24	04/03/18 22:37	877-09-8	5M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	200	03/22/18 12:24	04/03/18 22:37	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	47.4	1	03/23/18 09:26	03/26/18 13:36	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	47.4	1	03/23/18 09:26	03/26/18 13:36	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	47.4	1	03/23/18 09:26	03/26/18 13:36	11141-16-5	
PCB-1242 (Aroclor 1242)	**4460**	ug/kg	947	20	03/23/18 09:26	03/27/18 08:51	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	47.4	1	03/23/18 09:26	03/26/18 13:36	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	47.4	1	03/23/18 09:26	03/26/18 13:36	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	47.4	1	03/23/18 09:26	03/26/18 13:36	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	47.4	1	03/23/18 09:26	03/26/18 13:36	37324-23-5	
PCB-1268 (Aroclor 1268)	**13500**	ug/kg	947	20	03/23/18 09:26	03/27/18 08:51	11100-14-4	
PCB, Total	**17900**	ug/kg	947	20	03/23/18 09:26	03/27/18 08:51	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	84	%.	48-125	1	03/23/18 09:26	03/26/18 13:36	877-09-8	
Decachlorobiphenyl (S)	253	%.	30-134	1	03/23/18 09:26	03/26/18 13:36	2051-24-3	S5
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**29.5**	mg/kg	13.8	1	03/22/18 16:48	03/23/18 10:13		T6
Surrogates								
n-Triacontane (S)	93	%.	50-150	1	03/22/18 16:48	03/23/18 10:13	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**35.5**	mg/kg	19.1	1	03/30/18 14:11	03/30/18 21:18		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	03/30/18 14:11	03/30/18 21:18	98-08-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-E5 (5-10 wm) **Lab ID: 10424443003** Collected: 03/21/18 13:00 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**8650**	mg/kg	13.9	1	03/26/18 05:53	03/29/18 17:35	7429-90-5	
Barium	**435**	mg/kg	0.70	1	03/26/18 05:53	03/29/18 17:35	7440-39-3	
Boron	**89.4**	mg/kg	10.5	1	03/26/18 05:53	03/29/18 17:35	7440-42-8	
Copper	**55.0**	mg/kg	0.70	1	03/26/18 05:53	03/29/18 17:35	7440-50-8	
Iron	**48700**	mg/kg	17.4	5	03/26/18 05:53	03/30/18 10:08	7439-89-6	
Manganese	**521**	mg/kg	0.35	1	03/26/18 05:53	03/29/18 17:35	7439-96-5	
Nickel	**105**	mg/kg	1.4	1	03/26/18 05:53	03/29/18 17:35	7440-02-0	
Silver	ND	mg/kg	0.70	1	03/26/18 05:53	03/29/18 17:35	7440-22-4	
Tin	**12.0**	mg/kg	5.2	1	03/26/18 05:53	03/29/18 17:35	7440-31-5	
Titanium	**330**	mg/kg	1.7	1	03/26/18 05:53	03/29/18 17:35	7440-32-6	
Zinc	**249**	mg/kg	1.4	1	03/26/18 05:53	03/29/18 17:35	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**59.4**	mg/kg	1.4	5	03/30/18 09:43	03/31/18 05:46	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**0.91**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:01	7440-36-0	
Arsenic	**11.3**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:01	7440-38-2	
Beryllium	**0.77**	mg/kg	0.28	20	03/26/18 09:32	04/02/18 11:01	7440-41-7	
Cadmium	**1.5**	mg/kg	0.11	20	03/26/18 09:32	04/02/18 11:01	7440-43-9	
Cobalt	**16.4**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:01	7440-48-4	
Lead	**1010**	mg/kg	0.14	20	03/26/18 09:32	04/02/18 11:01	7439-92-1	
Lithium	**7.7**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:01	7439-93-2	
Selenium	**1.9**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:01	7782-49-2	
Strontium	**92.8**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:01	7440-24-6	
Vanadium	**39.0**	mg/kg	1.4	20	03/26/18 09:32	04/02/18 11:01	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.65**	mg/kg	0.025	1	03/30/18 08:32	03/30/18 11:00	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**30.4**	%	0.10	1		03/22/18 11:44		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	83-32-9	
Acenaphthylene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	208-96-8	
Anthracene	**7540**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	120-12-7	
Benzo(a)anthracene	**12800**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	56-55-3	
Benzo(a)pyrene	**10600**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	50-32-8	
Benzo(b)fluoranthene	**14200**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	205-99-2	
Benzo(g,h,i)perylene	**5660**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	101-55-3	
Butylbenzylphthalate	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	85-68-7	
Carbazole	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	86-74-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-E5 (5-10 wm) **Lab ID: 10424443003** Collected: 03/21/18 13:00 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
4-Chloro-3-methylphenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	59-50-7	
4-Chloroaniline	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	108-60-1	
2-Chloronaphthalene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	91-58-7	
2-Chlorophenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	7005-72-3	
Chrysene	**12100**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	53-70-3	
Dibenzofuran	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	120-83-2	
Diethylphthalate	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	105-67-9	
Dimethylphthalate	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	131-11-3	
Di-n-butylphthalate	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	24400	1	03/22/18 11:24	04/04/18 23:05	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	606-20-2	
Di-n-octylphthalate	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	122-66-7	
bis(2-Ethylhexyl)phthalate	**19700**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	117-81-7	
Fluoranthene	**35700**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	206-44-0	
Fluorene	**5980**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	87-68-3	
Hexachlorobenzene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	118-74-1	
Hexachloroethane	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	67-72-1	
Indeno(1,2,3-cd)pyrene	**4980**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	193-39-5	
Isophorone	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	78-59-1	
1-Methylnaphthalene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	90-12-0	
2-Methylnaphthalene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	9470	1	03/22/18 11:24	04/04/18 23:05		
Naphthalene	**10800**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	91-20-3	
2-Nitroaniline	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	88-74-4	
3-Nitroaniline	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	99-09-2	
4-Nitroaniline	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	100-01-6	
Nitrobenzene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	98-95-3	
2-Nitrophenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	88-75-5	
4-Nitrophenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	62-75-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-E5 (5-10 wm) **Lab ID: 10424443003** Collected: 03/21/18 13:00 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
N-Nitroso-di-n-propylamine	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	86-30-6	
Pentachlorophenol	ND	ug/kg	9620	1	03/22/18 11:24	04/04/18 23:05	87-86-5	
Phenanthrene	**39900**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	85-01-8	
Phenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	108-95-2	
Pyrene	**27700**	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	4740	1	03/22/18 11:24	04/04/18 23:05	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	1	03/22/18 11:24	04/04/18 23:05	4165-60-0	P3,S4
2-Fluorobiphenyl (S)	0	%.	30-132	1	03/22/18 11:24	04/04/18 23:05	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	62-125	1	03/22/18 11:24	04/04/18 23:05	1718-51-0	S4
Phenol-d6 (S)	0	%.	48-125	1	03/22/18 11:24	04/04/18 23:05	13127-88-3	S4
2-Fluorophenol (S)	0	%.	40-125	1	03/22/18 11:24	04/04/18 23:05	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	60-125	1	03/22/18 11:24	04/04/18 23:05	118-79-6	S4
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**4170**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	83-32-9	
Acenaphthylene	**1660**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	208-96-8	
Anthracene	**10600**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	120-12-7	
Benzo(a)anthracene	**16400**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	56-55-3	
Benzo(a)pyrene	**13900**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	50-32-8	
Benzo(b)fluoranthene	**17500**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	205-99-2	
Benzo(g,h,i)perylene	**8530**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	191-24-2	
Benzo(k)fluoranthene	**5500**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	207-08-9	
Chrysene	**16300**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	218-01-9	
Dibenz(a,h)anthracene	**2050**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	53-70-3	
Fluoranthene	**41200**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	206-44-0	
Fluorene	**6010**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	86-73-7	
Indeno(1,2,3-cd)pyrene	**6940**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	193-39-5	
Naphthalene	**19600**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	91-20-3	
Phenanthrene	**33500**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	85-01-8	
Pyrene	**29600**	ug/kg	1430	10	03/26/18 11:34	03/27/18 19:02	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	10	03/26/18 11:34	03/27/18 19:02	321-60-8	D3,P3, S4
p-Terphenyl-d14 (S)	0	%.	57-125	10	03/26/18 11:34	03/27/18 19:02	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	25057-89-0	
2,4-D	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	94-75-7	
2,4-DB	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	94-82-6	
Dicamba	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	1918-00-9	
Dinoseb	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	88-85-7	
MCPA	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	94-74-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-E5 (5-10 wm) **Lab ID: 10424443003** Collected: 03/21/18 13:00 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Pentachlorophenol	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	87-86-5	
Picloram	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	1918-02-1	
2,4,5-T	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	93-72-1	
Triclopyr	ND	mg/kg	0.47	10	03/23/18 07:54	03/29/18 17:39	55335-06-3	
Surrogates								
2,4-DCAA (S)	0	%.	46-125	10	03/23/18 07:54	03/29/18 17:39	19719-28-9	D3,S4
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1650	1	03/26/18 09:03	03/26/18 12:37	67-64-1	
Allyl chloride	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	107-05-1	
Benzene	ND	ug/kg	33.0	1	03/26/18 09:03	03/26/18 12:37	71-43-2	
Bromobenzene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	108-86-1	
Bromochloromethane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	74-97-5	
Bromodichloromethane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	75-27-4	
Bromoform	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	75-25-2	
Bromomethane	ND	ug/kg	825	1	03/26/18 09:03	03/26/18 12:37	74-83-9	
2-Butanone (MEK)	ND	ug/kg	413	1	03/26/18 09:03	03/26/18 12:37	78-93-3	
n-Butylbenzene	**136**	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	104-51-8	
sec-Butylbenzene	**104**	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	135-98-8	
tert-Butylbenzene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	98-06-6	
Carbon tetrachloride	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	56-23-5	
Chlorobenzene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	108-90-7	
Chloroethane	ND	ug/kg	825	1	03/26/18 09:03	03/26/18 12:37	75-00-3	
Chloroform	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	67-66-3	
Chloromethane	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	74-87-3	
2-Chlorotoluene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	95-49-8	
4-Chlorotoluene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	825	1	03/26/18 09:03	03/26/18 12:37	96-12-8	
Dibromochloromethane	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	106-93-4	
Dibromomethane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	541-73-1	
1,4-Dichlorobenzene	**433**	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	75-71-8	
1,1-Dichloroethane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	75-34-3	
1,2-Dichloroethane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	107-06-2	
1,1-Dichloroethene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	156-60-5	
Dichlorofluoromethane	ND	ug/kg	825	1	03/26/18 09:03	03/26/18 12:37	75-43-4	
1,2-Dichloropropane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	78-87-5	
1,3-Dichloropropane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	142-28-9	
2,2-Dichloropropane	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	594-20-7	
1,1-Dichloropropene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	563-58-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-E5 (5-10 wm) **Lab ID: 10424443003** Collected: 03/21/18 13:00 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
cis-1,3-Dichloropropene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	60-29-7	
Ethylbenzene	**247**	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	413	1	03/26/18 09:03	03/26/18 12:37	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	98-82-8	
p-Isopropyltoluene	**179**	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	99-87-6	
Methylene Chloride	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	413	1	03/26/18 09:03	03/26/18 12:37	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	1634-04-4	
Naphthalene	**2370**	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	91-20-3	
n-Propylbenzene	**115**	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	103-65-1	
Styrene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	79-34-5	N2
Tetrachloroethene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	127-18-4	
Tetrahydrofuran	ND	ug/kg	3300	1	03/26/18 09:03	03/26/18 12:37	109-99-9	
Toluene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	79-00-5	
Trichloroethene	ND	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	330	1	03/26/18 09:03	03/26/18 12:37	76-13-1	
1,2,4-Trimethylbenzene	**390**	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	95-63-6	
1,3,5-Trimethylbenzene	**92.5**	ug/kg	82.5	1	03/26/18 09:03	03/26/18 12:37	108-67-8	
Vinyl chloride	ND	ug/kg	33.0	1	03/26/18 09:03	03/26/18 12:37	75-01-4	
Xylene (Total)	**596**	ug/kg	248	1	03/26/18 09:03	03/26/18 12:37	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1	03/26/18 09:03	03/26/18 12:37	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/26/18 09:03	03/26/18 12:37	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	03/26/18 09:03	03/26/18 12:37	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	287	100	03/30/18 14:00	04/03/18 12:08	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**59.4**	mg/kg	1.0	1		04/05/18 07:42	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.44	1	03/29/18 10:55	03/29/18 13:01	57-12-5	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-E5 (5-10 wm) **Lab ID: 10424443003** Collected: 03/21/18 13:00 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.98	1	03/30/18 14:00	03/31/18 04:25	16984-48-8	

Sample: FD-WM-F5 (3-11 wm) **Lab ID: 10424443004** Collected: 03/21/18 15:30 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.8	1	03/30/18 11:35	04/02/18 16:26	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	309-00-2	
alpha-BHC	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	319-84-6	
beta-BHC	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	319-85-7	
delta-BHC	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	58-89-9	
Chlordane (Technical)	ND	ug/kg	486	20	03/22/18 12:24	04/03/18 23:51	57-74-9	
alpha-Chlordane	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	5103-71-9	
gamma-Chlordane	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	5103-74-2	
4,4'-DDD	ND	ug/kg	96.8	20	03/22/18 12:24	04/03/18 23:51	72-54-8	
4,4'-DDE	ND	ug/kg	96.8	20	03/22/18 12:24	04/03/18 23:51	72-55-9	
4,4'-DDT	ND	ug/kg	96.8	20	03/22/18 12:24	04/03/18 23:51	50-29-3	
Dieldrin	ND	ug/kg	96.8	20	03/22/18 12:24	04/03/18 23:51	60-57-1	
Endosulfan I	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	959-98-8	
Endosulfan II	ND	ug/kg	96.8	20	03/22/18 12:24	04/03/18 23:51	33213-65-9	
Endosulfan sulfate	ND	ug/kg	96.8	20	03/22/18 12:24	04/03/18 23:51	1031-07-8	
Endrin	ND	ug/kg	96.8	20	03/22/18 12:24	04/03/18 23:51	72-20-8	
Endrin aldehyde	ND	ug/kg	96.8	20	03/22/18 12:24	04/03/18 23:51	7421-93-4	
Endrin ketone	ND	ug/kg	96.8	20	03/22/18 12:24	04/03/18 23:51	53494-70-5	
Heptachlor	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	76-44-8	
Heptachlor epoxide	ND	ug/kg	48.6	20	03/22/18 12:24	04/03/18 23:51	1024-57-3	
Methoxychlor	ND	ug/kg	486	20	03/22/18 12:24	04/03/18 23:51	72-43-5	
Toxaphene	ND	ug/kg	1450	20	03/22/18 12:24	04/03/18 23:51	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	03/22/18 12:24	04/03/18 23:51	877-09-8	6M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	03/22/18 12:24	04/03/18 23:51	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	47.9	1	03/23/18 09:26	03/26/18 13:51	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	47.9	1	03/23/18 09:26	03/26/18 13:51	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	47.9	1	03/23/18 09:26	03/26/18 13:51	11141-16-5	
PCB-1242 (Aroclor 1242)	**8060**	ug/kg	240	5	03/23/18 09:26	03/27/18 08:06	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	47.9	1	03/23/18 09:26	03/26/18 13:51	12672-29-6	
PCB-1254 (Aroclor 1254)	**449**	ug/kg	47.9	1	03/23/18 09:26	03/26/18 13:51	11097-69-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F5 (3-11 wm) **Lab ID: 10424443004** Collected: 03/21/18 15:30 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1260 (Aroclor 1260)	ND	ug/kg	47.9	1	03/23/18 09:26	03/26/18 13:51	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	47.9	1	03/23/18 09:26	03/26/18 13:51	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	47.9	1	03/23/18 09:26	03/26/18 13:51	11100-14-4	
PCB, Total	**8510**	ug/kg	240	5	03/23/18 09:26	03/27/18 08:06	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	96	%.	48-125	1	03/23/18 09:26	03/26/18 13:51	877-09-8	
Decachlorobiphenyl (S)	110	%.	30-134	1	03/23/18 09:26	03/26/18 13:51	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**4600**	mg/kg	2290	20	03/22/18 16:48	03/23/18 09:30		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	03/22/18 16:48	03/23/18 09:30	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**135**	mg/kg	24.3	1	03/30/18 14:11	03/30/18 21:42		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	03/30/18 14:11	03/30/18 21:42	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**10500**	mg/kg	14.6	1	03/26/18 05:53	03/29/18 17:39	7429-90-5	
Barium	**136**	mg/kg	0.73	1	03/26/18 05:53	03/29/18 17:39	7440-39-3	
Boron	**120**	mg/kg	10.9	1	03/26/18 05:53	03/29/18 17:39	7440-42-8	
Copper	**26.2**	mg/kg	0.73	1	03/26/18 05:53	03/29/18 17:39	7440-50-8	
Iron	**31000**	mg/kg	18.2	5	03/26/18 05:53	03/30/18 10:12	7439-89-6	
Manganese	**174**	mg/kg	0.36	1	03/26/18 05:53	03/29/18 17:39	7439-96-5	
Nickel	**28.3**	mg/kg	1.5	1	03/26/18 05:53	03/29/18 17:39	7440-02-0	
Silver	ND	mg/kg	0.73	1	03/26/18 05:53	03/29/18 17:39	7440-22-4	
Tin	ND	mg/kg	5.5	1	03/26/18 05:53	03/29/18 17:39	7440-31-5	
Titanium	**509**	mg/kg	1.8	1	03/26/18 05:53	03/29/18 17:39	7440-32-6	
Zinc	**160**	mg/kg	1.5	1	03/26/18 05:53	03/29/18 17:39	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**39.6**	mg/kg	1.3	5	03/30/18 09:43	03/31/18 05:51	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**0.90**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:06	7440-36-0	
Arsenic	**21.9**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:06	7440-38-2	
Beryllium	**2.7**	mg/kg	0.28	20	03/26/18 09:32	04/02/18 11:06	7440-41-7	
Cadmium	**2.3**	mg/kg	0.11	20	03/26/18 09:32	04/02/18 11:06	7440-43-9	
Cobalt	**8.5**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:06	7440-48-4	
Lead	**23.2**	mg/kg	0.14	20	03/26/18 09:32	04/02/18 11:06	7439-92-1	
Lithium	**9.2**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:06	7439-93-2	
Selenium	**6.2**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:06	7782-49-2	
Strontium	**62.3**	mg/kg	0.71	20	03/26/18 09:32	04/02/18 11:06	7440-24-6	
Vanadium	**83.8**	mg/kg	1.4	20	03/26/18 09:32	04/02/18 11:06	7440-62-2	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F5 (3-11 wm) **Lab ID: 10424443004** Collected: 03/21/18 15:30 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.19**	mg/kg	0.028	1	03/30/18 08:32	03/30/18 11:02	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**31.3**	%	0.10	1		03/22/18 11:44		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	83-32-9	
Acenaphthylene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	208-96-8	
Anthracene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	120-12-7	
Benzo(a)anthracene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	56-55-3	
Benzo(a)pyrene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	101-55-3	
Butylbenzylphthalate	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	85-68-7	
Carbazole	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	59-50-7	
4-Chloroaniline	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	108-60-1	
2-Chloronaphthalene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	91-58-7	
2-Chlorophenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	7005-72-3	
Chrysene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	53-70-3	
Dibenzofuran	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	120-83-2	
Diethylphthalate	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	105-67-9	
Dimethylphthalate	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	131-11-3	
Di-n-butylphthalate	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	24700	1	03/22/18 11:24	04/04/18 23:34	534-52-1	M1
2,4-Dinitrophenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	51-28-5	M1
2,4-Dinitrotoluene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	606-20-2	
Di-n-octylphthalate	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	117-81-7	
Fluoranthene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	206-44-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F5 (3-11 wm) **Lab ID: 10424443004** Collected: 03/21/18 15:30 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Fluorene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	87-68-3	
Hexachlorobenzene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	118-74-1	
Hexachloroethane	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	67-72-1	M1
Indeno(1,2,3-cd)pyrene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	193-39-5	
Isophorone	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	78-59-1	
1-Methylnaphthalene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	90-12-0	
2-Methylnaphthalene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	9590	1	03/22/18 11:24	04/04/18 23:34		
Naphthalene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	91-20-3	M1
2-Nitroaniline	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	88-74-4	
3-Nitroaniline	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	99-09-2	
4-Nitroaniline	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	100-01-6	
Nitrobenzene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	98-95-3	
2-Nitrophenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	88-75-5	
4-Nitrophenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	86-30-6	
Pentachlorophenol	ND	ug/kg	9740	1	03/22/18 11:24	04/04/18 23:34	87-86-5	
Phenanthrene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	85-01-8	
Phenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	108-95-2	
Pyrene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	4800	1	03/22/18 11:24	04/04/18 23:34	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	1	03/22/18 11:24	04/04/18 23:34	4165-60-0	P3,S4
2-Fluorobiphenyl (S)	0	%.	30-132	1	03/22/18 11:24	04/04/18 23:34	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	62-125	1	03/22/18 11:24	04/04/18 23:34	1718-51-0	S4
Phenol-d6 (S)	0	%.	48-125	1	03/22/18 11:24	04/04/18 23:34	13127-88-3	S4
2-Fluorophenol (S)	0	%.	40-125	1	03/22/18 11:24	04/04/18 23:34	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	60-125	1	03/22/18 11:24	04/04/18 23:34	118-79-6	S4
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	83-32-9	
Acenaphthylene	ND	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	208-96-8	
Anthracene	ND	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	120-12-7	
Benzo(a)anthracene	**31.1**	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	56-55-3	
Benzo(a)pyrene	ND	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	50-32-8	
Benzo(b)fluoranthene	**33.5**	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	207-08-9	
Chrysene	**33.2**	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	53-70-3	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F5 (3-11 wm) **Lab ID: 10424443004** Collected: 03/21/18 15:30 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Fluoranthene	**68.8**	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	206-44-0	
Fluorene	ND	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	193-39-5	
Naphthalene	**178**	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	91-20-3	
Phenanthrene	**61.6**	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	85-01-8	
Pyrene	**54.1**	ug/kg	29.1	2	03/26/18 11:34	03/28/18 12:53	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	62	%.	42-125	2	03/26/18 11:34	03/28/18 12:53	321-60-8	D3
p-Terphenyl-d14 (S)	69	%.	57-125	2	03/26/18 11:34	03/28/18 12:53	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	25057-89-0	
2,4-D	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	94-75-7	
2,4-DB	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	94-82-6	
Dicamba	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	1918-00-9	
Dinoseb	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	88-85-7	
MCPA	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	94-74-6	
Pentachlorophenol	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	87-86-5	
Picloram	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	1918-02-1	
2,4,5-T	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	93-72-1	
Triclopyr	ND	mg/kg	0.24	5	03/23/18 07:54	03/29/18 16:55	55335-06-3	
Surrogates								
2,4-DCAA (S)	67	%.	46-125	5	03/23/18 07:54	03/29/18 16:55	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2550	1	03/26/18 09:03	03/26/18 12:54	67-64-1	
Allyl chloride	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	107-05-1	
Benzene	ND	ug/kg	51.0	1	03/26/18 09:03	03/26/18 12:54	71-43-2	
Bromobenzene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	108-86-1	
Bromochloromethane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	74-97-5	
Bromodichloromethane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	75-27-4	
Bromoform	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	75-25-2	
Bromomethane	ND	ug/kg	1270	1	03/26/18 09:03	03/26/18 12:54	74-83-9	
2-Butanone (MEK)	ND	ug/kg	637	1	03/26/18 09:03	03/26/18 12:54	78-93-3	
n-Butylbenzene	**889**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	104-51-8	
sec-Butylbenzene	**440**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	135-98-8	
tert-Butylbenzene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	98-06-6	
Carbon tetrachloride	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	56-23-5	
Chlorobenzene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	108-90-7	
Chloroethane	ND	ug/kg	1270	1	03/26/18 09:03	03/26/18 12:54	75-00-3	
Chloroform	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	67-66-3	
Chloromethane	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	74-87-3	
2-Chlorotoluene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	95-49-8	
4-Chlorotoluene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1270	1	03/26/18 09:03	03/26/18 12:54	96-12-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F5 (3-11 wm) **Lab ID: 10424443004** Collected: 03/21/18 15:30 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Dibromochloromethane	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	106-93-4	
Dibromomethane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	74-95-3	
1,2-Dichlorobenzene	**173**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	95-50-1	
1,3-Dichlorobenzene	**128**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	541-73-1	
1,4-Dichlorobenzene	**547**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	75-71-8	
1,1-Dichloroethane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	75-34-3	
1,2-Dichloroethane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	107-06-2	
1,1-Dichloroethene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1270	1	03/26/18 09:03	03/26/18 12:54	75-43-4	
1,2-Dichloropropane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	78-87-5	
1,3-Dichloropropane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	142-28-9	
2,2-Dichloropropane	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	594-20-7	
1,1-Dichloropropene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	60-29-7	
Ethylbenzene	**890**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	637	1	03/26/18 09:03	03/26/18 12:54	87-68-3	
Isopropylbenzene (Cumene)	**755**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	98-82-8	
p-Isopropyltoluene	**1160**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	99-87-6	
Methylene Chloride	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	637	1	03/26/18 09:03	03/26/18 12:54	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	1634-04-4	
Naphthalene	**11200**	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	91-20-3	
n-Propylbenzene	**491**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	103-65-1	
Styrene	**182**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	79-34-5	N2
Tetrachloroethene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	127-18-4	
Tetrahydrofuran	ND	ug/kg	5100	1	03/26/18 09:03	03/26/18 12:54	109-99-9	
Toluene	**345**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	87-61-6	
1,2,4-Trichlorobenzene	**470**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	79-00-5	
Trichloroethene	ND	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	510	1	03/26/18 09:03	03/26/18 12:54	76-13-1	
1,2,4-Trimethylbenzene	**3200**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	95-63-6	
1,3,5-Trimethylbenzene	**774**	ug/kg	127	1	03/26/18 09:03	03/26/18 12:54	108-67-8	
Vinyl chloride	ND	ug/kg	51.0	1	03/26/18 09:03	03/26/18 12:54	75-01-4	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F5 (3-11 wm) **Lab ID: 10424443004** Collected: 03/21/18 15:30 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Xylene (Total)	**1180**	ug/kg	382	1	03/26/18 09:03	03/26/18 12:54	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1	03/26/18 09:03	03/26/18 12:54	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/26/18 09:03	03/26/18 12:54	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1	03/26/18 09:03	03/26/18 12:54	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	288	100	03/30/18 14:00	04/03/18 12:09	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**39.6**	mg/kg	1.0	1		04/05/18 07:42	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.50	1	03/29/18 10:55	03/29/18 13:04	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**2.9**	mg/kg	0.99	1	03/30/18 14:00	03/31/18 01:09	16984-48-8	M1

Sample: FD-WM-G5 (5-14 wm) **Lab ID: 10424443005** Collected: 03/21/18 16:20 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	6.94	1	03/30/18 11:35	04/02/18 16:32	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	309-00-2	
alpha-BHC	ND	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	319-84-6	
beta-BHC	ND	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	319-85-7	
delta-BHC	ND	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	58-89-9	
Chlordane (Technical)	ND	ug/kg	184	10	03/22/18 12:24	04/03/18 19:16	57-74-9	
alpha-Chlordane	**41.9**	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	5103-71-9	M6,R1
gamma-Chlordane	**23.4**	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	5103-74-2	M6,R1
4,4'-DDD	**41.9**	ug/kg	36.7	10	03/22/18 12:24	04/03/18 19:16	72-54-8	M6
4,4'-DDE	ND	ug/kg	36.7	10	03/22/18 12:24	04/03/18 19:16	72-55-9	M6,R1
4,4'-DDT	ND	ug/kg	36.7	10	03/22/18 12:24	04/03/18 19:16	50-29-3	
Dieldrin	ND	ug/kg	36.7	10	03/22/18 12:24	04/03/18 19:16	60-57-1	
Endosulfan I	ND	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	959-98-8	
Endosulfan II	ND	ug/kg	36.7	10	03/22/18 12:24	04/03/18 19:16	33213-65-9	
Endosulfan sulfate	ND	ug/kg	36.7	10	03/22/18 12:24	04/03/18 19:16	1031-07-8	
Endrin	ND	ug/kg	36.7	10	03/22/18 12:24	04/03/18 19:16	72-20-8	
Endrin aldehyde	ND	ug/kg	36.7	10	03/22/18 12:24	04/03/18 19:16	7421-93-4	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-G5 (5-14 wm) **Lab ID: 10424443005** Collected: 03/21/18 16:20 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Endrin ketone	**106**	ug/kg	36.7	10	03/22/18 12:24	04/03/18 19:16	53494-70-5	M6
Heptachlor	ND	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	76-44-8	
Heptachlor epoxide	ND	ug/kg	18.4	10	03/22/18 12:24	04/03/18 19:16	1024-57-3	
Methoxychlor	ND	ug/kg	184	10	03/22/18 12:24	04/03/18 19:16	72-43-5	
Toxaphene	ND	ug/kg	551	10	03/22/18 12:24	04/03/18 19:16	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	10	03/22/18 12:24	04/03/18 19:16	877-09-8	7M,D4, S4
Decachlorobiphenyl (S)	0	%.	30-150	10	03/22/18 12:24	04/03/18 19:16	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	36.4	1	03/23/18 09:26	03/26/18 14:07	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	36.4	1	03/23/18 09:26	03/26/18 14:07	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	36.4	1	03/23/18 09:26	03/26/18 14:07	11141-16-5	
PCB-1242 (Aroclor 1242)	**14200**	ug/kg	364	10	03/23/18 09:26	03/27/18 08:21	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	36.4	1	03/23/18 09:26	03/26/18 14:07	12672-29-6	
PCB-1254 (Aroclor 1254)	**998**	ug/kg	36.4	1	03/23/18 09:26	03/26/18 14:07	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	36.4	1	03/23/18 09:26	03/26/18 14:07	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	36.4	1	03/23/18 09:26	03/26/18 14:07	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	36.4	1	03/23/18 09:26	03/26/18 14:07	11100-14-4	
PCB, Total	**15200**	ug/kg	364	10	03/23/18 09:26	03/27/18 08:21	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	88	%.	48-125	1	03/23/18 09:26	03/26/18 14:07	877-09-8	
Decachlorobiphenyl (S)	103	%.	30-134	1	03/23/18 09:26	03/26/18 14:07	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**40.3**	mg/kg	8.5	1	03/22/18 16:48	03/23/18 10:06		T6
Surrogates								
n-Triacontane (S)	98	%.	50-150	1	03/22/18 16:48	03/23/18 10:06	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.5	1	03/30/18 14:11	03/30/18 20:05		C0,M1
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	03/30/18 14:11	03/30/18 20:05	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**4040**	mg/kg	10.5	1	03/26/18 05:53	03/29/18 17:51	7429-90-5	
Barium	**91.1**	mg/kg	0.53	1	03/26/18 05:53	03/29/18 17:51	7440-39-3	
Boron	**114**	mg/kg	7.9	1	03/26/18 05:53	03/29/18 17:51	7440-42-8	
Copper	**244**	mg/kg	0.53	1	03/26/18 05:53	03/29/18 17:51	7440-50-8	
Iron	**168000**	mg/kg	52.6	20	03/26/18 05:53	03/30/18 10:16	7439-89-6	
Manganese	**804**	mg/kg	0.26	1	03/26/18 05:53	03/29/18 17:51	7439-96-5	
Nickel	**42.9**	mg/kg	1.1	1	03/26/18 05:53	03/29/18 17:51	7440-02-0	
Silver	ND	mg/kg	0.53	1	03/26/18 05:53	03/29/18 17:51	7440-22-4	
Tin	**319**	mg/kg	3.9	1	03/26/18 05:53	03/29/18 17:51	7440-31-5	
Titanium	**148**	mg/kg	1.3	1	03/26/18 05:53	03/29/18 17:51	7440-32-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-G5 (5-14 wm) **Lab ID: 10424443005** Collected: 03/21/18 16:20 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Zinc	**150**	mg/kg	1.1	1	03/26/18 05:53	03/29/18 17:51	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**15.4**	mg/kg	1.1	5	03/30/18 09:43	03/31/18 05:56	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.54	20	03/26/18 09:32	04/02/18 11:11	7440-36-0	
Arsenic	**5.2**	mg/kg	0.54	20	03/26/18 09:32	04/02/18 11:11	7440-38-2	
Beryllium	**0.39**	mg/kg	0.22	20	03/26/18 09:32	04/02/18 11:11	7440-41-7	
Cadmium	**0.64**	mg/kg	0.087	20	03/26/18 09:32	04/02/18 11:11	7440-43-9	
Cobalt	**5.2**	mg/kg	0.54	20	03/26/18 09:32	04/02/18 11:11	7440-48-4	
Lead	**44.3**	mg/kg	0.11	20	03/26/18 09:32	04/02/18 11:11	7439-92-1	
Lithium	**4.7**	mg/kg	0.54	20	03/26/18 09:32	04/02/18 11:11	7439-93-2	
Selenium	**0.95**	mg/kg	0.54	20	03/26/18 09:32	04/02/18 11:11	7782-49-2	
Strontium	**28.4**	mg/kg	0.54	20	03/26/18 09:32	04/02/18 11:11	7440-24-6	
Vanadium	**20.2**	mg/kg	1.1	20	03/26/18 09:32	04/02/18 11:11	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**1.5**	mg/kg	0.10	5	03/30/18 08:32	03/30/18 11:12	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**9.5**	%	0.10	1		03/22/18 11:44		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	83-32-9	
Acenaphthylene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	208-96-8	
Anthracene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	120-12-7	
Benzo(a)anthracene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	56-55-3	
Benzo(a)pyrene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	101-55-3	
Butylbenzylphthalate	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	85-68-7	
Carbazole	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	59-50-7	
4-Chloroaniline	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	108-60-1	
2-Chloronaphthalene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	91-58-7	
2-Chlorophenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	7005-72-3	
Chrysene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	53-70-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-G5 (5-14 wm) **Lab ID: 10424443005** Collected: 03/21/18 16:20 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Dibenzofuran	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	120-83-2	
Diethylphthalate	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	105-67-9	
Dimethylphthalate	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	131-11-3	
Di-n-butylphthalate	**592**	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	1880	1	03/22/18 11:24	04/05/18 00:03	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	606-20-2	
Di-n-octylphthalate	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	122-66-7	
bis(2-Ethylhexyl)phthalate	**830**	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	117-81-7	
Fluoranthene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	206-44-0	
Fluorene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	87-68-3	
Hexachlorobenzene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	118-74-1	
Hexachloroethane	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	193-39-5	
Isophorone	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	78-59-1	
1-Methylnaphthalene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	90-12-0	
2-Methylnaphthalene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	729	1	03/22/18 11:24	04/05/18 00:03		
Naphthalene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	91-20-3	
2-Nitroaniline	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	88-74-4	
3-Nitroaniline	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	99-09-2	
4-Nitroaniline	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	100-01-6	
Nitrobenzene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	98-95-3	
2-Nitrophenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	88-75-5	
4-Nitrophenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	86-30-6	
Pentachlorophenol	ND	ug/kg	740	1	03/22/18 11:24	04/05/18 00:03	87-86-5	
Phenanthrene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	85-01-8	
Phenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	108-95-2	
Pyrene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	364	1	03/22/18 11:24	04/05/18 00:03	88-06-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-G5 (5-14 wm) **Lab ID: 10424443005** Collected: 03/21/18 16:20 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Surrogates								
Nitrobenzene-d5 (S)	58	%.	43-125	1	03/22/18 11:24	04/05/18 00:03	4165-60-0	
2-Fluorobiphenyl (S)	64	%.	30-132	1	03/22/18 11:24	04/05/18 00:03	321-60-8	
p-Terphenyl-d14 (S)	71	%.	62-125	1	03/22/18 11:24	04/05/18 00:03	1718-51-0	
Phenol-d6 (S)	62	%.	48-125	1	03/22/18 11:24	04/05/18 00:03	13127-88-3	
2-Fluorophenol (S)	64	%.	40-125	1	03/22/18 11:24	04/05/18 00:03	367-12-4	
2,4,6-Tribromophenol (S)	63	%.	60-125	1	03/22/18 11:24	04/05/18 00:03	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**158**	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	83-32-9	
Acenaphthylene	ND	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	208-96-8	
Anthracene	ND	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	120-12-7	
Benzo(a)anthracene	ND	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	56-55-3	
Benzo(a)pyrene	**111**	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	205-99-2	
Benzo(g,h,i)perylene	**167**	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	207-08-9	
Chrysene	**144**	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	53-70-3	
Fluoranthene	**174**	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	206-44-0	
Fluorene	**118**	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	193-39-5	
Naphthalene	**1690**	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	91-20-3	
Phenanthrene	**415**	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	85-01-8	
Pyrene	**300**	ug/kg	110	10	03/26/18 11:34	03/27/18 19:46	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	10	03/26/18 11:34	03/27/18 19:46	321-60-8	D3,S4
p-Terphenyl-d14 (S)	0	%.	57-125	10	03/26/18 11:34	03/27/18 19:46	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	25057-89-0	
2,4-D	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	94-75-7	
2,4-DB	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	94-82-6	
Dicamba	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	1918-00-9	
Dinoseb	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	88-85-7	
MCPA	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	94-74-6	
Pentachlorophenol	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	87-86-5	
Picloram	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	1918-02-1	
2,4,5-T	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	93-72-1	
Triclopyr	ND	mg/kg	0.36	10	03/23/18 07:54	03/29/18 17:54	55335-06-3	
Surrogates								
2,4-DCAA (S)	0	%.	46-125	10	03/23/18 07:54	03/29/18 17:54	19719-28-9	D3,S4
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1060	1	03/26/18 09:03	03/26/18 13:11	67-64-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-G5 (5-14 wm) **Lab ID: 10424443005** Collected: 03/21/18 16:20 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Allyl chloride	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	107-05-1	
Benzene	ND	ug/kg	21.1	1	03/26/18 09:03	03/26/18 13:11	71-43-2	
Bromobenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	108-86-1	
Bromochloromethane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	74-97-5	
Bromodichloromethane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	75-27-4	
Bromoform	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	75-25-2	
Bromomethane	ND	ug/kg	528	1	03/26/18 09:03	03/26/18 13:11	74-83-9	
2-Butanone (MEK)	ND	ug/kg	264	1	03/26/18 09:03	03/26/18 13:11	78-93-3	
n-Butylbenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	104-51-8	
sec-Butylbenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	135-98-8	
tert-Butylbenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	98-06-6	
Carbon tetrachloride	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	56-23-5	
Chlorobenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	108-90-7	
Chloroethane	ND	ug/kg	528	1	03/26/18 09:03	03/26/18 13:11	75-00-3	
Chloroform	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	67-66-3	
Chloromethane	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	74-87-3	
2-Chlorotoluene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	95-49-8	
4-Chlorotoluene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	528	1	03/26/18 09:03	03/26/18 13:11	96-12-8	
Dibromochloromethane	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	106-93-4	
Dibromomethane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	75-71-8	
1,1-Dichloroethane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	75-34-3	
1,2-Dichloroethane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	107-06-2	
1,1-Dichloroethene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	156-60-5	
Dichlorofluoromethane	ND	ug/kg	528	1	03/26/18 09:03	03/26/18 13:11	75-43-4	
1,2-Dichloropropane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	78-87-5	
1,3-Dichloropropane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	142-28-9	
2,2-Dichloropropane	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	594-20-7	
1,1-Dichloropropene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	60-29-7	
Ethylbenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	264	1	03/26/18 09:03	03/26/18 13:11	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	98-82-8	
p-Isopropyltoluene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	99-87-6	
Methylene Chloride	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	264	1	03/26/18 09:03	03/26/18 13:11	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	1634-04-4	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-G5 (5-14 wm) **Lab ID: 10424443005** Collected: 03/21/18 16:20 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Naphthalene	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	91-20-3	
n-Propylbenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	103-65-1	
Styrene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	79-34-5	N2
Tetrachloroethene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	127-18-4	
Tetrahydrofuran	ND	ug/kg	2110	1	03/26/18 09:03	03/26/18 13:11	109-99-9	
Toluene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	79-00-5	
Trichloroethene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	211	1	03/26/18 09:03	03/26/18 13:11	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	52.8	1	03/26/18 09:03	03/26/18 13:11	108-67-8	
Vinyl chloride	ND	ug/kg	21.1	1	03/26/18 09:03	03/26/18 13:11	75-01-4	
Xylene (Total)	ND	ug/kg	158	1	03/26/18 09:03	03/26/18 13:11	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1	03/26/18 09:03	03/26/18 13:11	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	03/26/18 09:03	03/26/18 13:11	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	03/26/18 09:03	03/26/18 13:11	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	22.0	10	03/30/18 14:00	04/03/18 12:09	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**15.4**	mg/kg	1.0	1		04/05/18 07:42	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.42	1	03/29/18 10:55	03/29/18 13:04	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.97	1	03/30/18 14:00	03/31/18 03:26	16984-48-8	

Sample: FD-WM-F4 (5-10 wm) **Lab ID: 10424443006** Collected: 03/21/18 16:50 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	15.6	1	03/30/18 11:35	04/02/18 16:39	7439-97-6	N3

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F4 (5-10 wm) **Lab ID: 10424443006** Collected: 03/21/18 16:50 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	309-00-2	
alpha-BHC	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	319-84-6	
beta-BHC	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	319-85-7	
delta-BHC	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	58-89-9	
Chlordane (Technical)	ND	ug/kg	4500	200	03/22/18 12:24	04/03/18 22:56	57-74-9	
alpha-Chlordane	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	5103-71-9	
gamma-Chlordane	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	5103-74-2	
4,4'-DDD	ND	ug/kg	898	200	03/22/18 12:24	04/03/18 22:56	72-54-8	
4,4'-DDE	ND	ug/kg	898	200	03/22/18 12:24	04/03/18 22:56	72-55-9	
4,4'-DDT	ND	ug/kg	898	200	03/22/18 12:24	04/03/18 22:56	50-29-3	
Dieldrin	ND	ug/kg	898	200	03/22/18 12:24	04/03/18 22:56	60-57-1	
Endosulfan I	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	959-98-8	
Endosulfan II	ND	ug/kg	898	200	03/22/18 12:24	04/03/18 22:56	33213-65-9	
Endosulfan sulfate	ND	ug/kg	898	200	03/22/18 12:24	04/03/18 22:56	1031-07-8	
Endrin	ND	ug/kg	898	200	03/22/18 12:24	04/03/18 22:56	72-20-8	
Endrin aldehyde	ND	ug/kg	898	200	03/22/18 12:24	04/03/18 22:56	7421-93-4	
Endrin ketone	ND	ug/kg	898	200	03/22/18 12:24	04/03/18 22:56	53494-70-5	
Heptachlor	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	76-44-8	
Heptachlor epoxide	ND	ug/kg	450	200	03/22/18 12:24	04/03/18 22:56	1024-57-3	
Methoxychlor	ND	ug/kg	4500	200	03/22/18 12:24	04/03/18 22:56	72-43-5	
Toxaphene	ND	ug/kg	13500	200	03/22/18 12:24	04/03/18 22:56	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	200	03/22/18 12:24	04/03/18 22:56	877-09-8	5M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	200	03/22/18 12:24	04/03/18 22:56	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.5	1	03/23/18 09:26	03/26/18 13:06	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.5	1	03/23/18 09:26	03/26/18 13:06	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.5	1	03/23/18 09:26	03/26/18 13:06	11141-16-5	
PCB-1242 (Aroclor 1242)	**2110**	ug/kg	89.0	2	03/23/18 09:26	03/27/18 08:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.5	1	03/23/18 09:26	03/26/18 13:06	12672-29-6	
PCB-1254 (Aroclor 1254)	**457**	ug/kg	44.5	1	03/23/18 09:26	03/26/18 13:06	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	44.5	1	03/23/18 09:26	03/26/18 13:06	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.5	1	03/23/18 09:26	03/26/18 13:06	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	44.5	1	03/23/18 09:26	03/26/18 13:06	11100-14-4	
PCB, Total	**2570**	ug/kg	89.0	2	03/23/18 09:26	03/27/18 08:36	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	105	%.	48-125	1	03/23/18 09:26	03/26/18 13:06	877-09-8	
Decachlorobiphenyl (S)	96	%.	30-134	1	03/23/18 09:26	03/26/18 13:06	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**6590**	mg/kg	2230	20	03/22/18 16:48	03/23/18 09:09		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	03/22/18 16:48	03/23/18 09:09	638-68-6	S4

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F4 (5-10 wm) **Lab ID: 10424443006** Collected: 03/21/18 16:50 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**28.4**	mg/kg	14.1	1	03/30/18 14:11	03/30/18 22:07		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	03/30/18 14:11	03/30/18 22:07	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**3700**	mg/kg	13.5	1	03/26/18 05:53	03/29/18 17:55	7429-90-5	
Barium	**294**	mg/kg	0.67	1	03/26/18 05:53	03/29/18 17:55	7440-39-3	
Boron	**128**	mg/kg	10.1	1	03/26/18 05:53	03/29/18 17:55	7440-42-8	
Copper	**334**	mg/kg	0.67	1	03/26/18 05:53	03/29/18 17:55	7440-50-8	
Iron	**162000**	mg/kg	67.5	20	03/26/18 05:53	03/30/18 10:20	7439-89-6	
Manganese	**1060**	mg/kg	0.34	1	03/26/18 05:53	03/29/18 17:55	7439-96-5	
Nickel	**57.9**	mg/kg	1.3	1	03/26/18 05:53	03/29/18 17:55	7440-02-0	
Silver	ND	mg/kg	0.67	1	03/26/18 05:53	03/29/18 17:55	7440-22-4	
Tin	**19.3**	mg/kg	5.1	1	03/26/18 05:53	03/29/18 17:55	7440-31-5	
Titanium	**219**	mg/kg	1.7	1	03/26/18 05:53	03/29/18 17:55	7440-32-6	
Zinc	**483**	mg/kg	1.3	1	03/26/18 05:53	03/29/18 17:55	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**59.7**	mg/kg	1.3	5	03/30/18 09:43	03/31/18 06:00	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**3.0**	mg/kg	0.66	20	03/26/18 09:32	04/02/18 11:31	7440-36-0	
Arsenic	**12.1**	mg/kg	0.66	20	03/26/18 09:32	04/02/18 11:31	7440-38-2	
Beryllium	**0.35**	mg/kg	0.26	20	03/26/18 09:32	04/02/18 11:31	7440-41-7	
Cadmium	**1.3**	mg/kg	0.10	20	03/26/18 09:32	04/02/18 11:31	7440-43-9	
Cobalt	**8.2**	mg/kg	0.66	20	03/26/18 09:32	04/02/18 11:31	7440-48-4	
Lead	**424**	mg/kg	0.13	20	03/26/18 09:32	04/02/18 11:31	7439-92-1	
Lithium	**4.5**	mg/kg	0.66	20	03/26/18 09:32	04/02/18 11:31	7439-93-2	
Selenium	ND	mg/kg	0.66	20	03/26/18 09:32	04/02/18 11:31	7782-49-2	
Strontium	**148**	mg/kg	0.66	20	03/26/18 09:32	04/02/18 11:31	7440-24-6	
Vanadium	**14.9**	mg/kg	1.3	20	03/26/18 09:32	04/02/18 11:31	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**1.5**	mg/kg	0.13	5	03/30/18 08:32	03/30/18 11:20	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**25.9**	%	0.10	1		03/22/18 11:45		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	83-32-9	
Acenaphthylene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	208-96-8	
Anthracene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	120-12-7	
Benzo(a)anthracene	**10900**	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	56-55-3	
Benzo(a)pyrene	**7440**	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	50-32-8	
Benzo(b)fluoranthene	**9450**	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	205-99-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F4 (5-10 wm) **Lab ID: 10424443006** Collected: 03/21/18 16:50 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Benzo(g,h,i)perylene	**5870**	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	101-55-3	
Butylbenzylphthalate	**468000**	ug/kg	88800	20	03/22/18 11:24	04/05/18 12:10	85-68-7	
Carbazole	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	59-50-7	
4-Chloroaniline	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	108-60-1	
2-Chloronaphthalene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	91-58-7	
2-Chlorophenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	7005-72-3	
Chrysene	**12800**	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	53-70-3	
Dibenzofuran	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	120-83-2	
Diethylphthalate	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	105-67-9	
Dimethylphthalate	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	131-11-3	
Di-n-butylphthalate	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	22900	1	03/22/18 11:24	04/05/18 00:31	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	606-20-2	
Di-n-octylphthalate	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	122-66-7	
bis(2-Ethylhexyl)phthalate	**10700**	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	117-81-7	
Fluoranthene	**25000**	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	206-44-0	
Fluorene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	87-68-3	
Hexachlorobenzene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	118-74-1	
Hexachloroethane	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	193-39-5	
Isophorone	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	78-59-1	
1-Methylnaphthalene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	90-12-0	
2-Methylnaphthalene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	8880	1	03/22/18 11:24	04/05/18 00:31		
Naphthalene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	91-20-3	
2-Nitroaniline	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	88-74-4	
3-Nitroaniline	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	99-09-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F4 (5-10 wm) **Lab ID: 10424443006** Collected: 03/21/18 16:50 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
4-Nitroaniline	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	100-01-6	
Nitrobenzene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	98-95-3	
2-Nitrophenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	88-75-5	
4-Nitrophenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	86-30-6	
Pentachlorophenol	ND	ug/kg	9020	1	03/22/18 11:24	04/05/18 00:31	87-86-5	
Phenanthrene	**14600**	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	85-01-8	
Phenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	108-95-2	
Pyrene	**25000**	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	4440	1	03/22/18 11:24	04/05/18 00:31	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	1	03/22/18 11:24	04/05/18 00:31	4165-60-0	D4,P3, S4
2-Fluorobiphenyl (S)	0	%.	30-132	1	03/22/18 11:24	04/05/18 00:31	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	62-125	1	03/22/18 11:24	04/05/18 00:31	1718-51-0	S4
Phenol-d6 (S)	0	%.	48-125	1	03/22/18 11:24	04/05/18 00:31	13127-88-3	S4
2-Fluorophenol (S)	0	%.	40-125	1	03/22/18 11:24	04/05/18 00:31	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	60-125	1	03/22/18 11:24	04/05/18 00:31	118-79-6	S4
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	83-32-9	
Acenaphthylene	ND	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	208-96-8	
Anthracene	ND	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	120-12-7	
Benzo(a)anthracene	**5430**	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	56-55-3	
Benzo(a)pyrene	**2310**	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	50-32-8	
Benzo(b)fluoranthene	**2470**	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	207-08-9	
Chrysene	**5470**	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	53-70-3	
Fluoranthene	**12000**	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	206-44-0	
Fluorene	ND	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	193-39-5	
Naphthalene	ND	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	91-20-3	
Phenanthrene	**3750**	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	85-01-8	
Pyrene	**11900**	ug/kg	1350	10	03/26/18 11:34	03/27/18 20:08	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	10	03/26/18 11:34	03/27/18 20:08	321-60-8	D3,P3, S4
p-Terphenyl-d14 (S)	0	%.	57-125	10	03/26/18 11:34	03/27/18 20:08	1718-51-0	S4

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F4 (5-10 wm) **Lab ID: 10424443006** Collected: 03/21/18 16:50 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	25057-89-0	
2,4-D	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	94-75-7	
2,4-DB	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	94-82-6	
Dicamba	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	1918-00-9	
Dinoseb	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	88-85-7	
MCPA	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	94-74-6	
Pentachlorophenol	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	87-86-5	
Picloram	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	1918-02-1	
2,4,5-T	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	93-72-1	
Triclopyr	ND	mg/kg	1.2	10	03/23/18 07:54	03/29/18 18:09	55335-06-3	
Surrogates								
2,4-DCAA (S)	0	%.	46-125	10	03/23/18 07:54	03/29/18 18:09	19719-28-9	D3,S4
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1460	1	03/26/18 09:03	03/26/18 13:27	67-64-1	
Allyl chloride	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	107-05-1	
Benzene	ND	ug/kg	29.2	1	03/26/18 09:03	03/26/18 13:27	71-43-2	
Bromobenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	108-86-1	
Bromochloromethane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	74-97-5	
Bromodichloromethane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	75-27-4	
Bromoform	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	75-25-2	
Bromomethane	ND	ug/kg	730	1	03/26/18 09:03	03/26/18 13:27	74-83-9	
2-Butanone (MEK)	ND	ug/kg	365	1	03/26/18 09:03	03/26/18 13:27	78-93-3	
n-Butylbenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	104-51-8	
sec-Butylbenzene	**80.4**	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	135-98-8	
tert-Butylbenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	98-06-6	
Carbon tetrachloride	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	56-23-5	
Chlorobenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	108-90-7	
Chloroethane	ND	ug/kg	730	1	03/26/18 09:03	03/26/18 13:27	75-00-3	
Chloroform	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	67-66-3	
Chloromethane	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	74-87-3	
2-Chlorotoluene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	95-49-8	
4-Chlorotoluene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	730	1	03/26/18 09:03	03/26/18 13:27	96-12-8	
Dibromochloromethane	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	106-93-4	
Dibromomethane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	75-71-8	
1,1-Dichloroethane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	75-34-3	
1,2-Dichloroethane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	107-06-2	
1,1-Dichloroethene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	156-59-2	

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F4 (5-10 wm) **Lab ID: 10424443006** Collected: 03/21/18 16:50 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
trans-1,2-Dichloroethene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	156-60-5	
Dichlorofluoromethane	ND	ug/kg	730	1	03/26/18 09:03	03/26/18 13:27	75-43-4	
1,2-Dichloropropane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	78-87-5	
1,3-Dichloropropane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	142-28-9	
2,2-Dichloropropane	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	594-20-7	
1,1-Dichloropropene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	60-29-7	
Ethylbenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	365	1	03/26/18 09:03	03/26/18 13:27	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	98-82-8	
p-Isopropyltoluene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	99-87-6	
Methylene Chloride	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	365	1	03/26/18 09:03	03/26/18 13:27	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	1634-04-4	
Naphthalene	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	91-20-3	
n-Propylbenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	103-65-1	
Styrene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	79-34-5	N2
Tetrachloroethene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	127-18-4	
Tetrahydrofuran	ND	ug/kg	2920	1	03/26/18 09:03	03/26/18 13:27	109-99-9	
Toluene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	79-00-5	
Trichloroethene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	292	1	03/26/18 09:03	03/26/18 13:27	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	73.0	1	03/26/18 09:03	03/26/18 13:27	108-67-8	
Vinyl chloride	ND	ug/kg	29.2	1	03/26/18 09:03	03/26/18 13:27	75-01-4	
Xylene (Total)	ND	ug/kg	219	1	03/26/18 09:03	03/26/18 13:27	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1	03/26/18 09:03	03/26/18 13:27	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	03/26/18 09:03	03/26/18 13:27	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	75-125	1	03/26/18 09:03	03/26/18 13:27	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	27.2	10	04/02/18 15:00	04/04/18 12:49	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**59.7**	mg/kg	1.0	1		04/05/18 07:42	16065-83-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Sample: FD-WM-F4 (5-10 wm) **Lab ID: 10424443006** Collected: 03/21/18 16:50 Received: 03/21/18 18:12 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.65	1	03/29/18 10:55	03/29/18 13:05	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	03/30/18 14:00	03/31/18 06:02	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 139779 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 553598 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.16	04/02/18 14:39	N3

METHOD BLANK: 553599 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.14	04/02/18 14:46	N3

METHOD BLANK: 553600 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.19	04/02/18 14:52	N3

LABORATORY CONTROL SAMPLE: 553601

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	104	109	105	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553602 553603

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	22.5	480	482	389	390	76	76	65-135	0	35	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553604 553605

Parameter	Units	10424609001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	1000	932	788	743	79	80	65-135	6	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 529815 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2875655 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	03/30/18 17:39	
a,a,a-Trifluorotoluene (S)	%.	100	80-150	03/30/18 17:39	

LABORATORY CONTROL SAMPLE & LCSD: 2875656 2875657

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	46.3	44.7	93	89	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%.				99	99	80-150			

MATRIX SPIKE SAMPLE: 2876408

Parameter	Units	10424443005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	60.8	115	187	80-120	C0,M1
a,a,a-Trifluorotoluene (S)	%.				98	80-150	

SAMPLE DUPLICATE: 2876409

Parameter	Units	10424609003 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	104	107	3	20	
a,a,a-Trifluorotoluene (S)	%.	99	99	0		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 529743 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2875322 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	03/30/18 10:50	

LABORATORY CONTROL SAMPLE: 2875323

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.44	0.51	115	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875635 2875636

Parameter	Units	10424609001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	ND	1.5	1.5	1.7	1.6	110	109	80-120	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528915 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2870798 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	9.8	03/29/18 17:03	
Barium	mg/kg	ND	0.49	03/29/18 17:03	
Boron	mg/kg	ND	7.4	03/29/18 17:03	
Copper	mg/kg	ND	0.49	03/29/18 17:03	
Iron	mg/kg	ND	2.5	03/29/18 17:03	
Manganese	mg/kg	ND	0.25	03/29/18 17:03	
Nickel	mg/kg	ND	0.98	03/29/18 17:03	
Silver	mg/kg	ND	0.49	03/29/18 17:03	
Tin	mg/kg	ND	3.7	03/29/18 17:03	
Titanium	mg/kg	ND	1.2	03/29/18 17:03	
Zinc	mg/kg	ND	0.98	03/29/18 17:03	

LABORATORY CONTROL SAMPLE: 2870799

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	980	929	95	80-120	
Barium	mg/kg	49	49.2	100	80-120	
Boron	mg/kg	49	46.3	94	80-120	
Copper	mg/kg	49	47.6	97	80-120	
Iron	mg/kg	980	964	98	80-120	
Manganese	mg/kg	49	49.0	100	80-120	
Nickel	mg/kg	49	48.2	98	80-120	
Silver	mg/kg	24.5	23.0	94	80-120	
Tin	mg/kg	49	49.7	101	80-120	
Titanium	mg/kg	49	48.8	100	80-120	
Zinc	mg/kg	49	48.1	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2870800 2870801

Parameter	Units	10424443001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	11900	1370	1380	26800	10300	1090	-120	75-125	89	20	P6,R1
Barium	mg/kg	292	68.3	69	388	431	140	202	75-125	11	20	P6
Boron	mg/kg	26.6	68.3	69	122	132	140	152	75-125	7	20	M1
Copper	mg/kg	228	68.3	69	6980	1110	9880	1280	75-125	145	20	M6,R1
Iron	mg/kg	15900	1370	1380	60900	98200	3290	5960	75-125	47	20	M6,R1
Manganese	mg/kg	249	68.3	69	729	664	703	601	75-125	9	20	P6
Nickel	mg/kg	112	68.3	69	2360	141	3290	41	75-125	177	20	M6,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2870800 2870801

Parameter	Units	10424443001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	1.8	34.2	34.5	34.1	34.9	94	96	75-125	2	20	
Tin	mg/kg	186	68.3	69	237	238	74	76	75-125	1	20	M1
Titanium	mg/kg	275	68.3	69	265	560	-14	413	75-125	71	20	M1,R1
Zinc	mg/kg	86700	68.3	69	3680	9550	-121000	-112000	75-125	89	20	M6,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 434613 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2007430 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.18	03/31/18 04:29	N2

LABORATORY CONTROL SAMPLE: 2007431

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.6	97	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2007432 2007433

Parameter	Units	10424609003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	31.2	4.74	4.74	36.1	22.7	103	-179	75-125	46	20	1M, M0, N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528917 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2870806 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.50	04/02/18 10:52	
Arsenic	mg/kg	ND	0.50	04/02/18 10:52	
Beryllium	mg/kg	ND	0.20	04/02/18 10:52	
Cadmium	mg/kg	ND	0.079	04/02/18 10:52	
Cobalt	mg/kg	ND	0.50	04/02/18 10:52	
Lead	mg/kg	ND	0.099	04/02/18 10:52	
Lithium	mg/kg	ND	0.50	04/02/18 10:52	
Selenium	mg/kg	ND	0.50	04/02/18 10:52	
Strontium	mg/kg	ND	0.50	04/02/18 10:52	
Vanadium	mg/kg	ND	0.99	04/02/18 10:52	

LABORATORY CONTROL SAMPLE: 2870807

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	49.5	51.0	103	80-120	
Arsenic	mg/kg	49.5	50.2	101	80-120	
Beryllium	mg/kg	49.5	50.1	101	80-120	
Cadmium	mg/kg	49.5	51.4	104	80-120	
Cobalt	mg/kg	49.5	52.1	105	80-120	
Lead	mg/kg	49.5	51.3	104	80-120	
Lithium	mg/kg	49.5	50.5	102	80-120	
Selenium	mg/kg	49.5	49.8	101	80-120	
Strontium	mg/kg	49.5	51.6	104	80-120	
Vanadium	mg/kg	49.5	52.6	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2870808 2870809

Parameter	Units	10424443001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	3.0	67	67.7	45.3	52.2	63	73	75-125	14	20	M6
Arsenic	mg/kg	14.3	67	67.7	84.2	84.6	104	104	75-125	1	20	
Beryllium	mg/kg	0.36	67	67.7	67.8	70.7	101	104	75-125	4	20	
Cadmium	mg/kg	4.6	67	67.7	78.7	77.4	110	107	75-125	2	20	
Cobalt	mg/kg	37.4	67	67.7	80.0	109	63	106	75-125	31	20	M6,R1
Lead	mg/kg	724	67	67.7	971	483	368	-356	75-125	67	20	M6,R1
Lithium	mg/kg	6.7	67	67.7	74.4	78.1	101	105	75-125	5	20	
Selenium	mg/kg	0.82	67	67.7	64.9	71.0	96	104	75-125	9	20	
Strontium	mg/kg	106	67	67.7	182	192	114	127	75-125	5	20	M6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2870808 2870809

Parameter	Units	10424443001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vanadium	mg/kg	27.4	67	67.7	104	101	114	108	75-125	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528579 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

SAMPLE DUPLICATE: 2868679

Parameter	Units	10424440001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	9.3	11.2	19	30	

SAMPLE DUPLICATE: 2868680

Parameter	Units	10424443005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	9.5	9.5	0	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528973 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2871002 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1,1-Trichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	03/26/18 10:56	N2
1,1,2-Trichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	03/26/18 10:56	
1,1-Dichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1-Dichloroethene	ug/kg	ND	50.0	03/26/18 10:56	
1,1-Dichloropropene	ug/kg	ND	50.0	03/26/18 10:56	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2,3-Trichloropropane	ug/kg	ND	200	03/26/18 10:56	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	03/26/18 10:56	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dichloropropane	ug/kg	ND	50.0	03/26/18 10:56	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,3-Dichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,3-Dichloropropane	ug/kg	ND	50.0	03/26/18 10:56	
1,4-Dichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
2,2-Dichloropropane	ug/kg	ND	200	03/26/18 10:56	
2-Butanone (MEK)	ug/kg	ND	250	03/26/18 10:56	
2-Chlorotoluene	ug/kg	ND	50.0	03/26/18 10:56	
4-Chlorotoluene	ug/kg	ND	50.0	03/26/18 10:56	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	03/26/18 10:56	
Acetone	ug/kg	ND	1000	03/26/18 10:56	
Allyl chloride	ug/kg	ND	200	03/26/18 10:56	
Benzene	ug/kg	ND	20.0	03/26/18 10:56	
Bromobenzene	ug/kg	ND	50.0	03/26/18 10:56	
Bromochloromethane	ug/kg	ND	50.0	03/26/18 10:56	
Bromodichloromethane	ug/kg	ND	50.0	03/26/18 10:56	
Bromoform	ug/kg	ND	200	03/26/18 10:56	
Bromomethane	ug/kg	ND	500	03/26/18 10:56	
Carbon tetrachloride	ug/kg	ND	50.0	03/26/18 10:56	
Chlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
Chloroethane	ug/kg	ND	500	03/26/18 10:56	
Chloroform	ug/kg	ND	50.0	03/26/18 10:56	
Chloromethane	ug/kg	ND	200	03/26/18 10:56	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	03/26/18 10:56	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	03/26/18 10:56	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

METHOD BLANK: 2871002 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	03/26/18 10:56	
Dibromomethane	ug/kg	ND	50.0	03/26/18 10:56	
Dichlorodifluoromethane	ug/kg	ND	200	03/26/18 10:56	
Dichlorofluoromethane	ug/kg	ND	500	03/26/18 10:56	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	03/26/18 10:56	
Ethylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Hexachloro-1,3-butadiene	ug/kg	ND	250	03/26/18 10:56	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	03/26/18 10:56	
Methyl-tert-butyl ether	ug/kg	ND	50.0	03/26/18 10:56	
Methylene Chloride	ug/kg	ND	200	03/26/18 10:56	
n-Butylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
n-Propylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Naphthalene	ug/kg	ND	200	03/26/18 10:56	
p-Isopropyltoluene	ug/kg	ND	50.0	03/26/18 10:56	
sec-Butylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Styrene	ug/kg	ND	50.0	03/26/18 10:56	
tert-Butylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Tetrachloroethene	ug/kg	ND	50.0	03/26/18 10:56	
Tetrahydrofuran	ug/kg	ND	2000	03/26/18 10:56	
Toluene	ug/kg	ND	50.0	03/26/18 10:56	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	03/26/18 10:56	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	03/26/18 10:56	
Trichloroethene	ug/kg	ND	50.0	03/26/18 10:56	N2
Trichlorofluoromethane	ug/kg	ND	200	03/26/18 10:56	
Vinyl chloride	ug/kg	ND	20.0	03/26/18 10:56	
Xylene (Total)	ug/kg	ND	150	03/26/18 10:56	
1,2-Dichloroethane-d4 (S)	%.	90	75-125	03/26/18 10:56	
4-Bromofluorobenzene (S)	%.	99	75-125	03/26/18 10:56	
Toluene-d8 (S)	%.	98	75-125	03/26/18 10:56	

LABORATORY CONTROL SAMPLE & LCSD: 2871003 2871004

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	828	958	83	96	59-125	15	20	
1,1,1-Trichloroethane	ug/kg	1000	802	933	80	93	59-125	15	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	803	971	80	97	58-125	19	20	N2
1,1,2-Trichloroethane	ug/kg	1000	778	897	78	90	64-125	14	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	776	922	78	92	65-125	17	20	
1,1-Dichloroethane	ug/kg	1000	754	861	75	86	63-125	13	20	
1,1-Dichloroethene	ug/kg	1000	790	968	79	97	59-125	20	20	
1,1-Dichloropropene	ug/kg	1000	799	946	80	95	64-125	17	20	
1,2,3-Trichlorobenzene	ug/kg	1000	776	965	78	97	55-126	22	20	R1
1,2,3-Trichloropropane	ug/kg	1000	736	872	74	87	62-125	17	20	
1,2,4-Trichlorobenzene	ug/kg	1000	804	961	80	96	62-125	18	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

LABORATORY CONTROL SAMPLE & LCSD: 2871003 2871004

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	793	931	79	93	59-125	16	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	1890	2200	76	88	54-125	15	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	781	899	78	90	64-125	14	20	
1,2-Dichlorobenzene	ug/kg	1000	765	890	76	89	63-125	15	20	
1,2-Dichloroethane	ug/kg	1000	684	807	68	81	57-125	17	20	
1,2-Dichloropropane	ug/kg	1000	779	896	78	90	67-125	14	20	
1,3,5-Trimethylbenzene	ug/kg	1000	811	936	81	94	59-125	14	20	
1,3-Dichlorobenzene	ug/kg	1000	738	884	74	88	64-125	18	20	
1,3-Dichloropropane	ug/kg	1000	757	878	76	88	64-125	15	20	
1,4-Dichlorobenzene	ug/kg	1000	766	874	77	87	63-125	13	20	
2,2-Dichloropropane	ug/kg	1000	860	973	86	97	37-126	12	20	
2-Butanone (MEK)	ug/kg	5000	3740	4230	75	85	48-125	12	20	
2-Chlorotoluene	ug/kg	1000	777	890	78	89	62-125	13	20	
4-Chlorotoluene	ug/kg	1000	763	893	76	89	63-125	16	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	3630	4290	73	86	52-135	17	20	
Acetone	ug/kg	5000	5390	6150	108	123	65-125	13	20	
Allyl chloride	ug/kg	1000	747	873	75	87	52-125	16	20	
Benzene	ug/kg	1000	765	859	76	86	61-125	12	20	
Bromobenzene	ug/kg	1000	794	916	79	92	64-125	14	20	
Bromochloromethane	ug/kg	1000	791	915	79	91	65-125	15	20	
Bromodichloromethane	ug/kg	1000	832	969	83	97	57-125	15	20	
Bromoform	ug/kg	1000	784	903	78	90	57-125	14	20	
Bromomethane	ug/kg	1000	777	845	78	85	60-125	8	20	
Carbon tetrachloride	ug/kg	1000	848	960	85	96	58-125	12	20	
Chlorobenzene	ug/kg	1000	782	883	78	88	66-125	12	20	
Chloroethane	ug/kg	1000	825	870	83	87	62-125	5	20	
Chloroform	ug/kg	1000	701	786	70	79	59-125	11	20	
Chloromethane	ug/kg	1000	733	791	73	79	50-125	8	20	
cis-1,2-Dichloroethene	ug/kg	1000	761	895	76	89	61-125	16	20	
cis-1,3-Dichloropropene	ug/kg	1000	794	937	79	94	61-125	17	20	
Dibromochloromethane	ug/kg	1000	790	890	79	89	60-125	12	20	
Dibromomethane	ug/kg	1000	808	948	81	95	69-125	16	20	
Dichlorodifluoromethane	ug/kg	1000	672	702	67	70	38-125	4	20	
Dichlorofluoromethane	ug/kg	1000	765	803	76	80	67-125	5	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1390	1250	139	125	60-125	11	20	L3
Ethylbenzene	ug/kg	1000	775	906	78	91	62-125	16	20	
Hexachloro-1,3-butadiene	ug/kg	1000	810	968	81	97	56-125	18	20	
Isopropylbenzene (Cumene)	ug/kg	1000	836	962	84	96	65-125	14	20	
Methyl-tert-butyl ether	ug/kg	1000	731	855	73	86	59-125	16	20	
Methylene Chloride	ug/kg	1000	774	888	77	89	64-125	14	20	
n-Butylbenzene	ug/kg	1000	802	976	80	98	59-125	20	20	
n-Propylbenzene	ug/kg	1000	808	931	81	93	61-125	14	20	
Naphthalene	ug/kg	1000	818	982	82	98	53-125	18	20	
p-Isopropyltoluene	ug/kg	1000	794	949	79	95	63-125	18	20	
sec-Butylbenzene	ug/kg	1000	819	960	82	96	62-125	16	20	
Styrene	ug/kg	1000	816	950	82	95	66-125	15	20	
tert-Butylbenzene	ug/kg	1000	806	939	81	94	64-125	15	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

LABORATORY CONTROL SAMPLE & LCSD: 2871003 2871004

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	810	941	81	94	67-125	15	20	
Tetrahydrofuran	ug/kg	10000	11200	12700	112	127	62-125	12	20	L3
Toluene	ug/kg	1000	798	905	80	91	61-125	13	20	
trans-1,2-Dichloroethene	ug/kg	1000	807	948	81	95	64-125	16	20	
trans-1,3-Dichloropropene	ug/kg	1000	809	946	81	95	56-125	16	20	
Trichloroethene	ug/kg	1000	767	896	77	90	67-125	15	20	N2
Trichlorofluoromethane	ug/kg	1000	782	818	78	82	65-125	5	20	
Vinyl chloride	ug/kg	1000	805	843	81	84	57-125	5	20	
Xylene (Total)	ug/kg	3000	2420	2790	81	93	62-125	14	20	
1,2-Dichloroethane-d4 (S)	%.				91	91	75-125			
4-Bromofluorobenzene (S)	%.				101	100	75-125			
Toluene-d8 (S)	%.				99	98	75-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528619 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2868814 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/03/18 18:39	
4,4'-DDE	ug/kg	ND	3.3	04/03/18 18:39	
4,4'-DDT	ug/kg	ND	3.3	04/03/18 18:39	
Aldrin	ug/kg	ND	1.7	04/03/18 18:39	
alpha-BHC	ug/kg	ND	1.7	04/03/18 18:39	
alpha-Chlordane	ug/kg	ND	1.7	04/03/18 18:39	
beta-BHC	ug/kg	ND	1.7	04/03/18 18:39	
Chlordane (Technical)	ug/kg	ND	16.7	04/03/18 18:39	
delta-BHC	ug/kg	ND	1.7	04/03/18 18:39	
Dieldrin	ug/kg	ND	3.3	04/03/18 18:39	
Endosulfan I	ug/kg	ND	1.7	04/03/18 18:39	
Endosulfan II	ug/kg	ND	3.3	04/03/18 18:39	
Endosulfan sulfate	ug/kg	ND	3.3	04/03/18 18:39	
Endrin	ug/kg	ND	3.3	04/03/18 18:39	
Endrin aldehyde	ug/kg	ND	3.3	04/03/18 18:39	
Endrin ketone	ug/kg	ND	3.3	04/03/18 18:39	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/03/18 18:39	
gamma-Chlordane	ug/kg	ND	1.7	04/03/18 18:39	
Heptachlor	ug/kg	ND	1.7	04/03/18 18:39	
Heptachlor epoxide	ug/kg	ND	1.7	04/03/18 18:39	
Methoxychlor	ug/kg	ND	16.7	04/03/18 18:39	
Toxaphene	ug/kg	ND	50.0	04/03/18 18:39	
Decachlorobiphenyl (S)	%.	92	30-150	04/03/18 18:39	
Tetrachloro-m-xylene (S)	%.	92	30-150	04/03/18 18:39	

LABORATORY CONTROL SAMPLE: 2868815

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	31.8	96	62-127	
4,4'-DDE	ug/kg	33.3	30.9	93	66-125	
4,4'-DDT	ug/kg	33.3	32.1	96	67-128	
Aldrin	ug/kg	16.7	14.0	84	66-125	
alpha-BHC	ug/kg	16.7	15.0	90	64-125	
alpha-Chlordane	ug/kg	16.7	14.8	89	68-125	
beta-BHC	ug/kg	16.7	14.8	89	69-125	
delta-BHC	ug/kg	16.7	14.7	88	42-133	
Dieldrin	ug/kg	33.3	32.5	97	69-126	
Endosulfan I	ug/kg	16.7	13.7	82	63-125	
Endosulfan II	ug/kg	33.3	31.7	95	69-125	
Endosulfan sulfate	ug/kg	33.3	29.0	87	56-137	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

LABORATORY CONTROL SAMPLE: 2868815

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	30.0	90	69-125	
Endrin aldehyde	ug/kg	33.3	30.3	91	65-125	
Endrin ketone	ug/kg	33.3	32.6	98	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	15.0	90	67-125	
gamma-Chlordane	ug/kg	16.7	13.3	80	63-125	
Heptachlor	ug/kg	16.7	14.8	89	69-125	
Heptachlor epoxide	ug/kg	16.7	14.9	89	68-125	
Methoxychlor	ug/kg	167	158	95	65-134	
Decachlorobiphenyl (S)	%.			88	30-150	
Tetrachloro-m-xylene (S)	%.			86	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2868816 2868817

Parameter	Units	10424443005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	41.9	36.8	36.7	51.6	49.2	26	20	56-125	5	20	M6
4,4'-DDE	ug/kg	ND	36.8	36.7	57.3	45.8	156	125	32-150	22	20	M6,R1
4,4'-DDT	ug/kg	ND	36.8	36.7	47.6	42.7	129	116	60-132	11	20	
Aldrin	ug/kg	ND	18.3	18.3	15.7J	15.8J	85	86	56-125		20	
alpha-BHC	ug/kg	ND	18.3	18.3	18.5	20.4	100	111	54-136	10	20	
alpha-Chlordane	ug/kg	41.9	18.3	18.3	54.2	29.1	67	-69	54-133	60	20	M6,R1
beta-BHC	ug/kg	ND	18.3	18.3	23.2	21.2	126	115	30-150	9	20	
delta-BHC	ug/kg	ND	18.3	18.3	18.3J	18.3J	100	100	45-145		20	
Dieldrin	ug/kg	ND	36.8	36.7	47.4	40.2	129	110	47-150	16	20	
Endosulfan I	ug/kg	ND	18.3	18.3	16.7J	21.4	91	116	35-145		20	
Endosulfan II	ug/kg	ND	36.8	36.7	38.6	37.9	105	103	50-147	2	20	
Endosulfan sulfate	ug/kg	ND	36.8	36.7	36.9	36.9	100	101	54-132	0	20	
Endrin	ug/kg	ND	36.8	36.7	35.9J	33.9J	98	92	62-125		20	
Endrin aldehyde	ug/kg	ND	36.8	36.7	36.2J	36.4J	99	99	33-150		20	
Endrin ketone	ug/kg	106	36.8	36.7	40.1	40.0	-179	-179	56-144	0	20	M6
gamma-BHC (Lindane)	ug/kg	ND	18.3	18.3	21.6	13.5J	117	73	63-125		20	
gamma-Chlordane	ug/kg	23.4	18.3	18.3	34.3	19.7	59	-21	45-132	54	20	M6,R1
Heptachlor	ug/kg	ND	18.3	18.3	18.3J	18.7	100	102	51-142		20	
Heptachlor epoxide	ug/kg	ND	18.3	18.3	18.9	19.3	103	105	50-142	2	20	
Methoxychlor	ug/kg	ND	183	183	202	199	110	109	58-139	1	20	
Decachlorobiphenyl (S)	%.						0	0	30-150			S4
Tetrachloro-m-xylene (S)	%.						0	0	30-150			7M,D4,S4

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528752 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2869601 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	03/26/18 09:48	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	03/26/18 09:48	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	03/26/18 09:48	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	03/26/18 09:48	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	03/26/18 09:48	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	03/26/18 09:48	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	03/26/18 09:48	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	03/26/18 09:48	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	03/26/18 09:48	
Decachlorobiphenyl (S)	%.	100	30-134	03/26/18 09:48	
Tetrachloro-m-xylene (S)	%.	100	48-125	03/26/18 09:48	

LABORATORY CONTROL SAMPLE: 2869602

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	617	93	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	622	93	62-125	
Decachlorobiphenyl (S)	%.			101	30-134	
Tetrachloro-m-xylene (S)	%.			102	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2869603 2869604

Parameter	Units	10424555001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	750	749	697	669	93	89	30-150	4	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	750	749	697	677	93	90	30-138	3	30	
Decachlorobiphenyl (S)	%.						102	99	30-134			
Tetrachloro-m-xylene (S)	%.						103	99	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528591 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2868737 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/04/18 18:45	
1,2-Dichlorobenzene	ug/kg	ND	330	04/04/18 18:45	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/04/18 18:45	
1,3-Dichlorobenzene	ug/kg	ND	330	04/04/18 18:45	
1,4-Dichlorobenzene	ug/kg	ND	330	04/04/18 18:45	
1-Methylnaphthalene	ug/kg	ND	330	04/04/18 18:45	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/04/18 18:45	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/04/18 18:45	
2,4-Dichlorophenol	ug/kg	ND	330	04/04/18 18:45	
2,4-Dimethylphenol	ug/kg	ND	330	04/04/18 18:45	
2,4-Dinitrophenol	ug/kg	ND	330	04/04/18 18:45	
2,4-Dinitrotoluene	ug/kg	ND	330	04/04/18 18:45	
2,6-Dinitrotoluene	ug/kg	ND	330	04/04/18 18:45	
2-Chloronaphthalene	ug/kg	ND	330	04/04/18 18:45	
2-Chlorophenol	ug/kg	ND	330	04/04/18 18:45	
2-Methylnaphthalene	ug/kg	ND	330	04/04/18 18:45	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/04/18 18:45	
2-Nitroaniline	ug/kg	ND	330	04/04/18 18:45	
2-Nitrophenol	ug/kg	ND	330	04/04/18 18:45	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/04/18 18:45	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/04/18 18:45	
3-Nitroaniline	ug/kg	ND	330	04/04/18 18:45	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/04/18 18:45	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/04/18 18:45	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/04/18 18:45	
4-Chloroaniline	ug/kg	ND	330	04/04/18 18:45	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/04/18 18:45	
4-Nitroaniline	ug/kg	ND	330	04/04/18 18:45	
4-Nitrophenol	ug/kg	ND	330	04/04/18 18:45	
Acenaphthene	ug/kg	ND	330	04/04/18 18:45	
Acenaphthylene	ug/kg	ND	330	04/04/18 18:45	
Anthracene	ug/kg	ND	330	04/04/18 18:45	
Benzo(a)anthracene	ug/kg	ND	330	04/04/18 18:45	
Benzo(a)pyrene	ug/kg	ND	330	04/04/18 18:45	
Benzo(b)fluoranthene	ug/kg	ND	330	04/04/18 18:45	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/04/18 18:45	
Benzo(k)fluoranthene	ug/kg	ND	330	04/04/18 18:45	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/04/18 18:45	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/04/18 18:45	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/04/18 18:45	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/04/18 18:45	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

METHOD BLANK: 2868737 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/04/18 18:45	
Carbazole	ug/kg	ND	330	04/04/18 18:45	
Chrysene	ug/kg	ND	330	04/04/18 18:45	
Di-n-butylphthalate	ug/kg	ND	330	04/04/18 18:45	
Di-n-octylphthalate	ug/kg	ND	330	04/04/18 18:45	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/04/18 18:45	
Dibenzofuran	ug/kg	ND	330	04/04/18 18:45	
Diethylphthalate	ug/kg	ND	330	04/04/18 18:45	
Dimethylphthalate	ug/kg	ND	330	04/04/18 18:45	
Fluoranthene	ug/kg	ND	330	04/04/18 18:45	
Fluorene	ug/kg	ND	330	04/04/18 18:45	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/04/18 18:45	
Hexachlorobenzene	ug/kg	ND	330	04/04/18 18:45	
Hexachloroethane	ug/kg	ND	330	04/04/18 18:45	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/04/18 18:45	
Isophorone	ug/kg	ND	330	04/04/18 18:45	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/04/18 18:45	
N-Nitrosodimethylamine	ug/kg	ND	330	04/04/18 18:45	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/04/18 18:45	
Naphthalene	ug/kg	ND	330	04/04/18 18:45	
Nitrobenzene	ug/kg	ND	330	04/04/18 18:45	
Pentachlorophenol	ug/kg	ND	670	04/04/18 18:45	
Phenanthrene	ug/kg	ND	330	04/04/18 18:45	
Phenol	ug/kg	ND	330	04/04/18 18:45	
Pyrene	ug/kg	ND	330	04/04/18 18:45	
2,4,6-Tribromophenol (S)	%.	84	60-125	04/04/18 18:45	
2-Fluorobiphenyl (S)	%.	98	30-132	04/04/18 18:45	
2-Fluorophenol (S)	%.	101	40-125	04/04/18 18:45	
Nitrobenzene-d5 (S)	%.	90	43-125	04/04/18 18:45	
p-Terphenyl-d14 (S)	%.	117	62-125	04/04/18 18:45	
Phenol-d6 (S)	%.	99	48-125	04/04/18 18:45	

LABORATORY CONTROL SAMPLE: 2868738

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1320	79	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1310	79	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1300	78	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1320	79	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1310	78	39-125	
1-Methylnaphthalene	ug/kg	1670	1360	82	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1390	84	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1380	83	61-125	
2,4-Dichlorophenol	ug/kg	1670	1360	82	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

LABORATORY CONTROL SAMPLE: 2868738

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1230	74	51-125	
2,4-Dinitrophenol	ug/kg	1670	1190	71	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1390	83	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1390	83	63-125	
2-Chloronaphthalene	ug/kg	1670	1380	83	61-125	
2-Chlorophenol	ug/kg	1670	1350	81	46-125	
2-Methylnaphthalene	ug/kg	1670	1370	82	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1270	76	50-125	
2-Nitroaniline	ug/kg	1670	1280	77	61-125	
2-Nitrophenol	ug/kg	1670	1380	83	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1320	79	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1510	90	47-125	
3-Nitroaniline	ug/kg	1670	1350	81	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1380J	83	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1420	85	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1350	81	64-125	
4-Chloroaniline	ug/kg	1670	1230	74	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1380	83	64-125	
4-Nitroaniline	ug/kg	1670	1310	79	59-125	
4-Nitrophenol	ug/kg	1670	1220	73	54-125	
Acenaphthene	ug/kg	1670	1350	81	62-125	
Acenaphthylene	ug/kg	1670	1400	84	61-125	
Anthracene	ug/kg	1670	1450	87	66-125	
Benzo(a)anthracene	ug/kg	1670	1460	88	69-125	
Benzo(a)pyrene	ug/kg	1670	1450	87	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1480	89	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1450	87	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1460	87	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1300	78	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1240	74	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1200	72	37-125	
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1370	82	69-131	
Butylbenzylphthalate	ug/kg	1670	1410	84	69-129	
Carbazole	ug/kg	1670	1420	85	66-125	
Chrysene	ug/kg	1670	1490	89	68-125	
Di-n-butylphthalate	ug/kg	1670	1370	82	69-125	
Di-n-octylphthalate	ug/kg	1670	1400	84	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1430	86	64-125	
Dibenzofuran	ug/kg	1670	1410	85	65-125	
Diethylphthalate	ug/kg	1670	1370	82	67-125	
Dimethylphthalate	ug/kg	1670	1410	85	67-125	
Fluoranthene	ug/kg	1670	1420	85	66-125	
Fluorene	ug/kg	1670	1390	83	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1280	77	40-125	
Hexachlorobenzene	ug/kg	1670	1400	84	62-125	
Hexachloroethane	ug/kg	1670	1240	74	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1440	87	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

LABORATORY CONTROL SAMPLE: 2868738

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1310	79	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1300	78	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1330	80	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1400	84	65-125	
Naphthalene	ug/kg	1670	1360	82	48-125	
Nitrobenzene	ug/kg	1670	1250	75	48-125	
Pentachlorophenol	ug/kg	1670	1180	71	41-125	
Phenanthrene	ug/kg	1670	1450	87	66-125	
Phenol	ug/kg	1670	1350	81	46-125	
Pyrene	ug/kg	1670	1510	90	69-125	
2,4,6-Tribromophenol (S)	%.			91	60-125	
2-Fluorobiphenyl (S)	%.			95	30-132	
2-Fluorophenol (S)	%.			92	40-125	
Nitrobenzene-d5 (S)	%.			83	43-125	
p-Terphenyl-d14 (S)	%.			103	62-125	
Phenol-d6 (S)	%.			91	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2868743 2868744

Parameter	Units	10424443004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	2420	2420	1530J	1520J	63	63	30-127		30	
1,2-Dichlorobenzene	ug/kg	ND	2420	2420	1330J	1390J	55	58	30-125		30	
1,2-Diphenylhydrazine	ug/kg	ND	2420	2420	1360J	1390J	56	57	30-150		30	
1,3-Dichlorobenzene	ug/kg	ND	2420	2420	1270J	1320J	53	54	30-125		30	
1,4-Dichlorobenzene	ug/kg	ND	2420	2420	1330J	1380J	55	57	30-125		30	
1-Methylnaphthalene	ug/kg	ND	2420	2420	1620J	1690J	60	64	42-125		30	
2,4,5-Trichlorophenol	ug/kg	ND	2420	2420	1770J	1750J	73	72	30-150		30	
2,4,6-Trichlorophenol	ug/kg	ND	2420	2420	1860J	1840J	77	76	30-150		30	
2,4-Dichlorophenol	ug/kg	ND	2420	2420	1680J	1670J	69	69	30-135		30	
2,4-Dimethylphenol	ug/kg	ND	2420	2420	ND	ND	68	67	30-148		30	
2,4-Dinitrophenol	ug/kg	ND	2420	2420	ND	ND	0	0	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	ND	2420	2420	1080J	1230J	44	51	30-150		30	
2,6-Dinitrotoluene	ug/kg	ND	2420	2420	1250J	1280J	52	53	30-150		30	
2-Chloronaphthalene	ug/kg	ND	2420	2420	1580J	1610J	65	67	30-138		30	
2-Chlorophenol	ug/kg	ND	2420	2420	1530J	1550J	63	64	30-130		30	
2-Methylnaphthalene	ug/kg	ND	2420	2420	1610J	1690J	57	61	46-125		30	
2-Methylphenol(o-Cresol)	ug/kg	ND	2420	2420	1470J	1550J	61	64	30-133		30	
2-Nitroaniline	ug/kg	ND	2420	2420	2010J	1930J	83	80	30-150		30	
2-Nitrophenol	ug/kg	ND	2420	2420	989J	941J	41	39	30-134		30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	2420	2420	2280J	2090J	94	86	30-138		30	
3,3'-Dichlorobenzidine	ug/kg	ND	2420	2420	2320J	2510J	96	104	30-149		30	
3-Nitroaniline	ug/kg	ND	2420	2420	2560J	2400J	106	99	30-150		30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	2420	2420	ND	ND	0	0	30-133		30	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2868743 2868744

Parameter	Units	10424443004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	2420	2420	1670J	1640J	69	68	44-125		30	
4-Chloro-3-methylphenol	ug/kg	ND	2420	2420	1760J	1970J	73	81	30-150		30	
4-Chloroaniline	ug/kg	ND	2420	2420	1610J	1800J	66	74	30-125		30	
4-Chlorophenylphenyl ether	ug/kg	ND	2420	2420	1860J	1810J	77	75	44-125		30	
4-Nitroaniline	ug/kg	ND	2420	2420	2270J	2230J	94	92	30-150		30	
4-Nitrophenol	ug/kg	ND	2420	2420	1480J	ND	61	56	30-150		30	
Acenaphthene	ug/kg	ND	2420	2420	1630J	1600J	67	66	40-125		30	
Acenaphthylene	ug/kg	ND	2420	2420	1630J	1630J	67	68	30-150		30	
Anthracene	ug/kg	ND	2420	2420	1690J	1640J	70	68	30-150		30	
Benzo(a)anthracene	ug/kg	ND	2420	2420	1870J	1930J	77	80	30-150		30	
Benzo(a)pyrene	ug/kg	ND	2420	2420	1870J	1940J	77	80	30-150		30	
Benzo(b)fluoranthene	ug/kg	ND	2420	2420	1890J	1960J	78	81	30-150		30	
Benzo(g,h,i)perylene	ug/kg	ND	2420	2420	1890J	1960J	78	81	30-150		30	
Benzo(k)fluoranthene	ug/kg	ND	2420	2420	1740J	1790J	72	74	30-150		30	
bis(2-Chloroethoxy)methane	ug/kg	ND	2420	2420	1450J	1510J	60	63	30-134		30	
bis(2-Chloroethyl) ether	ug/kg	ND	2420	2420	1250J	1250J	52	52	30-125		30	
bis(2-Chloroisopropyl) ether	ug/kg	ND	2420	2420	1280J	1290J	53	53	30-125		30	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	2420	2420	2350J	2990J	97	124	30-150		30	
Butylbenzylphthalate	ug/kg	ND	2420	2420	2090J	2140J	86	89	30-150		30	
Carbazole	ug/kg	ND	2420	2420	1660J	1690J	69	70	41-125		30	
Chrysene	ug/kg	ND	2420	2420	1740J	1760J	72	73	30-150		30	
Di-n-butylphthalate	ug/kg	ND	2420	2420	3200J	3250J	132	134	30-150		30	
Di-n-octylphthalate	ug/kg	ND	2420	2420	1900J	1990J	78	82	30-150		30	
Dibenz(a,h)anthracene	ug/kg	ND	2420	2420	1950J	1910J	80	79	30-150		30	
Dibenzofuran	ug/kg	ND	2420	2420	1710J	1710J	71	71	45-125		30	
Diethylphthalate	ug/kg	ND	2420	2420	1780J	1720J	74	71	30-150		30	
Dimethylphthalate	ug/kg	ND	2420	2420	1740J	1750J	72	72	30-150		30	
Fluoranthene	ug/kg	ND	2420	2420	1850J	1860J	76	77	30-150		30	
Fluorene	ug/kg	ND	2420	2420	1720J	1730J	71	72	30-150		30	
Hexachloro-1,3-butadiene	ug/kg	ND	2420	2420	1410J	1510J	58	63	30-128		30	
Hexachlorobenzene	ug/kg	ND	2420	2420	1700J	1730J	70	72	30-150		30	
Hexachloroethane	ug/kg	ND	2420	2420	ND	ND	29	33	30-125		30	M1
Indeno(1,2,3-cd)pyrene	ug/kg	ND	2420	2420	1880J	1910J	78	79	30-150		30	
Isophorone	ug/kg	ND	2420	2420	1420J	1470J	59	61	30-140		30	
N-Nitroso-di-n-propylamine	ug/kg	ND	2420	2420	1540J	1640J	64	68	30-147		30	
N-Nitrosodimethylamine	ug/kg	ND	2420	2420	ND	ND	49	48	30-125		30	
N-Nitrosodiphenylamine	ug/kg	ND	2420	2420	1610J	1580J	66	65	30-150		30	
Naphthalene	ug/kg	ND	2420	2420	1480J	1690J	38	47	44-125		30	M1
Nitrobenzene	ug/kg	ND	2420	2420	1350J	1390J	56	58	30-136		30	
Pentachlorophenol	ug/kg	ND	2420	2420	3430J	3370J	142	139	30-150		30	
Phenanthrene	ug/kg	ND	2420	2420	1780J	1790J	74	74	30-150		30	
Phenol	ug/kg	ND	2420	2420	1510J	1500J	62	62	30-129		30	
Pyrene	ug/kg	ND	2420	2420	1880J	1980J	78	82	30-150		30	
2,4,6-Tribromophenol (S)	%.						0	0	60-125			S4
2-Fluorobiphenyl (S)	%.						0	0	30-132			S4
2-Fluorophenol (S)	%.						0	0	40-125			S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2868743 2868744

Parameter	Units	10424443004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						0	0	43-125			P3, S4
p-Terphenyl-d14 (S)	%.						0	0	62-125			S4
Phenol-d6 (S)	%.						0	0	48-125			S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528955 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2870959 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	03/27/18 13:28	
Acenaphthylene	ug/kg	ND	10.0	03/27/18 13:28	
Anthracene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(a)anthracene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(a)pyrene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(b)fluoranthene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(k)fluoranthene	ug/kg	ND	10.0	03/27/18 13:28	
Chrysene	ug/kg	ND	10.0	03/27/18 13:28	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	03/27/18 13:28	
Fluoranthene	ug/kg	ND	10.0	03/27/18 13:28	
Fluorene	ug/kg	ND	10.0	03/27/18 13:28	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	03/27/18 13:28	
Naphthalene	ug/kg	ND	10.0	03/27/18 13:28	
Phenanthrene	ug/kg	ND	10.0	03/27/18 13:28	
Pyrene	ug/kg	ND	10.0	03/27/18 13:28	
2-Fluorobiphenyl (S)	%.	78	42-125	03/27/18 13:28	
p-Terphenyl-d14 (S)	%.	87	57-125	03/27/18 13:28	

LABORATORY CONTROL SAMPLE: 2870960

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	22.8	68	52-125	
Acenaphthylene	ug/kg	33.3	24.9	75	50-125	
Anthracene	ug/kg	33.3	29.1	87	65-125	
Benzo(a)anthracene	ug/kg	33.3	30.7	92	60-125	
Benzo(a)pyrene	ug/kg	33.3	30.7	92	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	31.4	94	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	24.5	73	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	27.4	82	67-125	
Chrysene	ug/kg	33.3	28.3	85	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	22.8	68	63-125	
Fluoranthene	ug/kg	33.3	30.9	93	75-125	
Fluorene	ug/kg	33.3	23.1	69	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	23.9	72	63-125	
Naphthalene	ug/kg	33.3	25.1	75	49-125	
Phenanthrene	ug/kg	33.3	23.8	71	65-125	
Pyrene	ug/kg	33.3	29.6	89	64-125	
2-Fluorobiphenyl (S)	%.			73	42-125	
p-Terphenyl-d14 (S)	%.			89	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2871138 2871139

Parameter	Units	10424835001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	34.2	34.2	22.3	22.6	65	66	30-125	1	30	
Acenaphthylene	ug/kg	ND	34.2	34.2	23.2	23.2	68	68	30-133	0	30	
Anthracene	ug/kg	ND	34.2	34.2	28.2	26.5	83	77	30-150	6	30	
Benzo(a)anthracene	ug/kg	ND	34.2	34.2	28.8	28.3	84	83	30-150	2	30	
Benzo(a)pyrene	ug/kg	ND	34.2	34.2	29.2	28.1	85	82	30-150	4	30	
Benzo(b)fluoranthene	ug/kg	ND	34.2	34.2	27.5	27.1	80	79	30-150	1	30	
Benzo(g,h,i)perylene	ug/kg	ND	34.2	34.2	28.6	27.6	84	81	30-150	4	30	
Benzo(k)fluoranthene	ug/kg	ND	34.2	34.2	25.8	24.0	75	70	30-150	7	30	
Chrysene	ug/kg	ND	34.2	34.2	27.3	26.0	80	76	30-150	5	30	
Dibenz(a,h)anthracene	ug/kg	ND	34.2	34.2	23.7	23.3	69	68	30-131	2	30	
Fluoranthene	ug/kg	ND	34.2	34.2	28.6	27.7	84	81	30-150	3	30	
Fluorene	ug/kg	ND	34.2	34.2	24.0	22.4	70	66	30-147	7	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	34.2	34.2	26.5	25.3	78	74	30-150	5	30	
Naphthalene	ug/kg	ND	34.2	34.2	21.6	22.6	63	66	30-131	4	30	
Phenanthrene	ug/kg	ND	34.2	34.2	23.6	22.8	69	67	30-150	3	30	
Pyrene	ug/kg	ND	34.2	34.2	28.6	27.3	84	80	30-150	5	30	
2-Fluorobiphenyl (S)	%.						66	65	42-125			
p-Terphenyl-d14 (S)	%.						82	81	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528725 Analysis Method: EPA 8270D
QC Batch Method: EPA 3546 Analysis Description: MDA2 Solid MSSV
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2869530 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,5-T	mg/kg	ND	0.033	03/29/18 15:27	
2,4,5-TP (Silvex)	mg/kg	ND	0.033	03/29/18 15:27	
2,4-D	mg/kg	ND	0.033	03/29/18 15:27	
2,4-DB	mg/kg	ND	0.033	03/29/18 15:27	
Bentazon	mg/kg	ND	0.033	03/29/18 15:27	
Dicamba	mg/kg	ND	0.033	03/29/18 15:27	
Dinoseb	mg/kg	ND	0.033	03/29/18 15:27	
MCPA	mg/kg	ND	0.033	03/29/18 15:27	
Pentachlorophenol	mg/kg	ND	0.033	03/29/18 15:27	
Picloram	mg/kg	ND	0.033	03/29/18 15:27	
Triclopyr	mg/kg	ND	0.033	03/29/18 15:27	
2,4-DCAA (S)	%.	81	46-125	03/29/18 15:27	

LABORATORY CONTROL SAMPLE: 2869531

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-T	mg/kg	.33	0.27	81	60-125	
2,4,5-TP (Silvex)	mg/kg	.33	0.26	77	61-125	
2,4-D	mg/kg	.33	0.28	83	63-125	
2,4-DB	mg/kg	.33	0.26	79	59-125	
Bentazon	mg/kg	.33	0.24	73	58-125	
Dicamba	mg/kg	.33	0.26	78	52-125	
Dinoseb	mg/kg	.33	0.23	68	35-126	
MCPA	mg/kg	.33	0.26	78	57-125	
Pentachlorophenol	mg/kg	.33	0.27	81	48-125	
Picloram	mg/kg	.33	0.22	65	47-125	
Triclopyr	mg/kg	.33	0.27	80	68-125	
2,4-DCAA (S)	%.			87	46-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2869532 2869533

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2,4,5-T	mg/kg	ND	.97	.97	0.49	.42J	50	43	30-145		20	
2,4,5-TP (Silvex)	mg/kg	ND	.97	.97	0.69	0.57	70	58	30-130	19	20	
2,4-D	mg/kg	ND	.97	.97	1.7	.3J	176	31	30-150		20	M1
2,4-DB	mg/kg	ND	.97	.97	0.69	0.60	71	61	45-126	15	20	
Bentazon	mg/kg	ND	.97	.97	0.87	0.66	89	67	30-133	28	20	R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2869532 2869533

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Dicamba	mg/kg	ND	.97	.97	.42J	.36J	43	37	30-140		20	
Dinoseb	mg/kg	ND	.97	.97	0.91	0.82	93	84	30-136	10	20	
MCPA	mg/kg	ND	.97	.97	0.55	0.55	56	57	30-136	0	20	
Pentachlorophenol	mg/kg	ND	.97	.97	0.63	0.70	64	71	44-125	11	20	
Picloram	mg/kg	ND	.97	.97	ND	ND	0	0	30-125		20	M1
Triclopyr	mg/kg	ND	.97	.97	0.59	0.52	60	54	30-149	12	20	
2,4-DCAA (S)	%.						78	68	46-125			D3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 528667 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 2869187 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	03/23/18 08:55	
n-Triacontane (S)	%.	81	50-150	03/23/18 08:55	

LABORATORY CONTROL SAMPLE & LCSD: 2869188 2869189

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	71.6	68.4	89	86	70-120	4	20	
n-Triacontane (S)	%.				90	91	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 434844 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005

METHOD BLANK: 2008420 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/03/18 11:09	

LABORATORY CONTROL SAMPLE: 2008421

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1090	929	85	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2008432 2008433

Parameter	Units	50193104001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	2190	2230	ND	ND	0	0	75-125		20	3M,M3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2008434 2008435

Parameter	Units	50193104001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	79.1	80.9	4.7J	6.3J	2	4	75-125		20	M3

SAMPLE DUPLICATE: 2008431

Parameter	Units	469837006 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 435086 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10424443006

METHOD BLANK: 2009757 Matrix: Solid
Associated Lab Samples: 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/04/18 12:49	

LABORATORY CONTROL SAMPLE: 2009758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	981	901	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2009842 2009843

Parameter	Units	10424937001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1420	1360	ND	ND	0	0	75-125		20	2M,M3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2009844 2009845

Parameter	Units	10424937001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	54.8	54.3	ND	ND	12	18	75-125		20	M3

SAMPLE DUPLICATE: 2009846

Parameter	Units	50193299003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 284583 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 1665486 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443002, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	03/29/18 12:56	

LABORATORY CONTROL SAMPLE: 1665487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665488 1665489

Parameter	Units	10424609003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	ND	3.62	3.62	2.8	3.2	66	77	80-120	13	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665490 1665491

Parameter	Units	10424937006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.56	4.11	4.26	4.2	4.0	89	81	80-120	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 139650 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10424443002

METHOD BLANK: 553027 Matrix: Solid
Associated Lab Samples: 10424443002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	1.0	04/02/18 14:06	

LABORATORY CONTROL SAMPLE: 553026

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	50	51.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553028 553029

Parameter	Units	12106345001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.6	50.2	49.5	39.2	45.6	73	87	80-120	15	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553030 553031

Parameter	Units	12106346001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.9	50.2	49.3	50.6	47.0	95	90	80-120	7	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

QC Batch: 139654 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10424443001, 10424443003, 10424443004, 10424443005, 10424443006

METHOD BLANK: 553043 Matrix: Solid
Associated Lab Samples: 10424443001, 10424443003, 10424443004, 10424443005, 10424443006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.98	03/31/18 00:49	

LABORATORY CONTROL SAMPLE: 553042

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	48.9	50.2	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553044 553045

Parameter	Units	10424443004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.9	50.3	50.2	28.2	28.6	50	51	80-120	1	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553046 553047

Parameter	Units	10424937003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	3.5	49.3	49	14.1	15.9	21	25	80-120	12	20	M1

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QUALIFIERS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10424443

[1]	Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

BATCH QUALIFIERS

Batch: 529212

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	RPD value is outside control limits due to sample non-homogeneity.
2M	Redox (174 mv) and pH (8.13) values indicate a naturally reducing matrix. This accounts for poor recovery values on the sample per method Eh/pH phase diagram.
3M	Redox (25 mv) and pH (7.84) values indicate a naturally reducing matrix. This accounts for poor recovery values on the sample per method Eh/pH phase diagram.

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QUALIFIERS

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

ANALYTE QUALIFIERS

4M	Sample was black in color and slightly viscous. Sample needed to be centrifuged and decanted prior to analysis.
5M	Sample was black in color and very viscous and grainy. Sample needed to be centrifuged and decanted prior to analysis.
6M	Sample was black in color. Sample needed to be centrifuged and decanted prior to analysis.
7M	Sample was dark brown in color.
C0	Result confirmed by second analysis.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 3550	528619	EPA 8081B	530202
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 3550	528619	EPA 8081B	530202
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 3550	528619	EPA 8081B	530202
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 3550	528619	EPA 8081B	530202
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 3550	528619	EPA 8081B	530202
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 3550	528619	EPA 8081B	530202
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 3550	528752	EPA 8082A	528963
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 3550	528752	EPA 8082A	528963
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 3550	528752	EPA 8082A	528963
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 3550	528752	EPA 8082A	528963
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 3550	528752	EPA 8082A	528963
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 3550	528752	EPA 8082A	528963
10424443001	**FD-WM-C5 (15-17.5 wm)**	WI MOD DRO	528667	WI MOD DRO	528730
10424443002	**FD-WM-D5 (5-16 wm)**	WI MOD DRO	528667	WI MOD DRO	528730
10424443003	**FD-WM-E5 (5-10 wm)**	WI MOD DRO	528667	WI MOD DRO	528730
10424443004	**FD-WM-F5 (3-11 wm)**	WI MOD DRO	528667	WI MOD DRO	528730
10424443005	**FD-WM-G5 (5-14 wm)**	WI MOD DRO	528667	WI MOD DRO	528730
10424443006	**FD-WM-F4 (5-10 wm)**	WI MOD DRO	528667	WI MOD DRO	528730
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 3050	528915	EPA 6010C	528992
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 3050	528915	EPA 6010C	528992
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 3050	528915	EPA 6010C	528992
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 3050	528915	EPA 6010C	528992
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 3050	528915	EPA 6010C	528992
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 3050	528915	EPA 6010C	528992
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 3050B	434613	EPA 6020	434971
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 3050B	434613	EPA 6020	434971
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 3050B	434613	EPA 6020	434971
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 3050B	434613	EPA 6020	434971
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 3050B	434613	EPA 6020	434971
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 3050B	434613	EPA 6020	434971
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 3050	528917	EPA 6020A	529111
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 3050	528917	EPA 6020A	529111
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 3050	528917	EPA 6020A	529111

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 3050	528917	EPA 6020A	529111
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 3050	528917	EPA 6020A	529111
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 3050	528917	EPA 6020A	529111
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 7471	529743	EPA 7471	529845
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 7471	529743	EPA 7471	529845
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 7471	529743	EPA 7471	529845
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 7471	529743	EPA 7471	529845
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 7471	529743	EPA 7471	529845
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 7471	529743	EPA 7471	529845
10424443001	**FD-WM-C5 (15-17.5 wm)**	ASTM D2974	528579		
10424443002	**FD-WM-D5 (5-16 wm)**	ASTM D2974	528579		
10424443003	**FD-WM-E5 (5-10 wm)**	ASTM D2974	528579		
10424443004	**FD-WM-F5 (3-11 wm)**	ASTM D2974	528579		
10424443005	**FD-WM-G5 (5-14 wm)**	ASTM D2974	528579		
10424443006	**FD-WM-F4 (5-10 wm)**	ASTM D2974	528579		
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 3550	528591	EPA 8270D	530714
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 3550	528591	EPA 8270D	530714
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 3550	528591	EPA 8270D	530714
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 3550	528591	EPA 8270D	530714
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 3550	528591	EPA 8270D	530714
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 3550	528591	EPA 8270D	530714
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 3546	528725	EPA 8270D	529735
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 3546	528725	EPA 8270D	529735
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 3546	528725	EPA 8270D	529735
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 3546	528725	EPA 8270D	529735
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 3546	528725	EPA 8270D	529735
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 3546	528725	EPA 8270D	529735
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 3060A	434844	EPA 7196A	435162
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 3060A	434844	EPA 7196A	435162
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 3060A	434844	EPA 7196A	435162
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 3060A	434844	EPA 7196A	435162
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 3060A	434844	EPA 7196A	435162
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 3060A	435086	EPA 7196A	435521

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Soils
Pace Project No.: 10424443

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424443001	**FD-WM-C5 (15-17.5 wm)**	Trivalent Chromium Calculation	435702		
10424443002	**FD-WM-D5 (5-16 wm)**	Trivalent Chromium Calculation	435702		
10424443003	**FD-WM-E5 (5-10 wm)**	Trivalent Chromium Calculation	435702		
10424443004	**FD-WM-F5 (3-11 wm)**	Trivalent Chromium Calculation	435702		
10424443005	**FD-WM-G5 (5-14 wm)**	Trivalent Chromium Calculation	435702		
10424443006	**FD-WM-F4 (5-10 wm)**	Trivalent Chromium Calculation	435702		
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 9012A	284583	EPA 9012	284661
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 9012A	284583	EPA 9012	284661
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 9012A	284583	EPA 9012	284661
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 9012A	284583	EPA 9012	284661
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 9012A	284583	EPA 9012	284661
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 9012A	284583	EPA 9012	284661
10424443001	**FD-WM-C5 (15-17.5 wm)**	EPA 300.0	139654	EPA 9056A	139672
10424443002	**FD-WM-D5 (5-16 wm)**	EPA 300.0	139650	EPA 9056A	139673
10424443003	**FD-WM-E5 (5-10 wm)**	EPA 300.0	139654	EPA 9056A	139672
10424443004	**FD-WM-F5 (3-11 wm)**	EPA 300.0	139654	EPA 9056A	139672
10424443005	**FD-WM-G5 (5-14 wm)**	EPA 300.0	139654	EPA 9056A	139672
10424443006	**FD-WM-F4 (5-10 wm)**	EPA 300.0	139654	EPA 9056A	139672

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WO#: 10424443

10424443

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number: COC

Turnaround Time: COC ID:

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO

Facility Code: MPCA Freeway LF Soils

Program Code (MDH Lab Only):

Project Name: MPCA Freeway LF Soils

Project Task Code:

Project Manager:

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name:

Address: 18-00383

GPL Profile # 38716

Phone No:

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: See attached (for soils/sands (- dioxins))	ANALYSIS: + Dioxins	Lab Sample No.	#	
FD-WM-C5 (15-17.5 wm)	S	3/21/18	1005	15'	17.5'	C	SD	WM			13		X	X		1	001
FD-WM-B5 (3-16wm)	S	3/21/18	1145	3'	16'	C	SD	WM			12		X			2	002
FD-WM-E5 (5-10wm)	S	3/21/18	1300	5'	10'	C	SD	WM			13		X	X		3	003
FD-WM-F5 (3-11wm)	S	3/21/18	1530	3'	11'	C	SD	WM			13		X			4	004
FD-WM-G5 (5-14wm)	S	3/21/18	1620	5'	14'	C	SD	WM			13		X	X		5	005
FD-WM-F4 (5-10wm)	S	3/21/18	1650	5'	10'	C	SD	WM			13		X			6	006
																7	
																8	
																9	
																10	

Sampled By: Chris Pelosi

Sampler's Signature: Chris Pelosi

Phone #: 612-597-7254

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) Chris Pelosi Pace	3/21/18 1811	Pace	3/21/18 1812

T= 6.7, 9.4, 9.3, 7.1, 9.0°c

Received 3/19/18 / BGS

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluorine, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace Field

Project #: WO#: 10424443
PM: BM2 Due Date: 04/05/18
CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☒ Other: PB **Temp Blank?** ☒ Yes ☐ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 6.5, 9.1, 9.2, 6.9 → 8.5 **Cooler Temp Corrected (°C):** 6.7, 9.4, 9.3, 7.1 → 9.0

Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** 3/21/18 SD

USDA Regulated Soil (☒ N/A, water sample) 3/21/18

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☒ Yes	☐ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☒ Yes	☐ No		12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: BM **Date:** 3/22/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Chain of Custody

40146402

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424443 **Workorder Name:** 18-00383 MPCA Freeway LF Soils **Owner Received Date:** 3/21/2018 **Results Requested By:** 4/5/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Cyanide by EPA 9012	LAB USE ONLY
1	FD-WM-C5 (15-17.5 wm) 001	PS	3/21/2018 10:05	10424443001	Solid	1	X	
2	FD-WM-D5 (5-16 wm) 002	PS	3/21/2018 11:45	10424443002	Solid	1	X	
3	FD-WM-E5 (5-10 wm) 003	PS	3/21/2018 13:00	10424443003	Solid	1	X	
4	FD-WM-F5 (3-11 wm) 004	PS	3/21/2018 15:30	10424443004	Solid	1	X	
5	FD-WM-G5 (5-14 wm) 005	PS	3/21/2018 16:20	10424443005	Solid	1	X	
6	FD-WM-F4 (5-10 wm) 006	PS	3/21/2018 16:50	10424443006	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	PACE	3/23/18 1730		
2	Walton	3/24/18 0805		3/24/18 0805
3				

Comments

Cooler Temperature on Receipt 2 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace MN

Project #: WO#: 40166402

40166402

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other:

Tracking #: 1674108-1

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 75 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 2 /Corr: 2

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 3/24/18
Initials: SSh

Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☐No	☒N/A	4. JRWO SSh 3/24/18
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes	☐No		Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume: ☒Yes ☐No ☐N/A MS/MSD	☐Yes	☐No	☒N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☐No	☒N/A	
-Pace IR Containers Used:	☒Yes	☐No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☐Yes	☒No	☐N/A	12. 005- client collect time "1610"
-Includes date/time/ID/Analysis Matrix: S				006- no client collect time SSh 3/24/18
Trip Blank Present:	☐Yes	☐No	☒N/A	13.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: UC **Date:** 3/26/18

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424443 **Workorder Name:** 18-00383 MPCA Freeway LF Soils **Owner Received Date:** 3/21/2018 **Results Requested By:** 4/5/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Chromium III	Chromium VI	Total Cr by 6020	LAB USE ONLY: 5019 3165
1	FD-WM-C5 (15-17.5 wm)	PS	3/21/2018 10:05	10424443001	Solid	1	X	X	X	001
2	FD-WM-D5 (5-16 wm)	PS	3/21/2018 11:45	10424443002	Solid	1	X	X	X	002
3	FD-WM-E5 (5-10 wm)	PS	3/21/2018 13:00	10424443003	Solid	1	X	X	X	003
4	FD-WM-F5 (3-11 wm)	PS	3/21/2018 15:30	10424443004	Solid	1	X	X	X	004
5	FD-WM-G5 (5-14 wm)	PS	3/21/2018 16:20	10424443005	Solid	1	X	X	X	005
6	FD-WM-F4 (5-10 wm)	PS	3/21/2018 16:50	10424443006	Solid	1	X	X	X	006

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	FED EX	3/22/18 1645	FED EX	
2				3/23/18 0910
3				

Cooler Temperature on Receipt 1.0 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50193165

Date/Time and Initials of person examining contents: 3/28/18 1415 DA

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9831 7405

Custody Seal on Cooler/Box Present: ☒ Yes ☐ No **Seals Intact:** ☒ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Thermometer: (1) 2 3 4 5 6 A B C D E F Ice Type: ☒ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☒ N/A

Cooler Temperature: 0.8/1.0 Ice Visible in Sample Containers?: ☐ Yes ☒ No ☐ N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☒ N/A

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		1	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		1				
Chain of Custody Present:	1		Dissolved Metals field filtered?:			
Chain of Custody Filled Out:	1					
Short Hold Time Analysis (<72hr)?: Analysis:		1	Headspace Wisconsin Sulfide			
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			
Rush TAT Requested:		1	Headspace in VOA Vials (>6mm):			
Containers Intact?:	1		Trip Blank Present?:		1	
Sample Labels Match COC?: Except TCs, which only require sample ID	1		Trip Blank Custody Seals?:		1	

Comments:

Sample Container Count

WO# : 50193165

50193165

CLIENT: Pace MN

COC PAGE 1 of 1

COC ID# _____

Project # 50193165

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	SBS DI Bulk Kit R				Matrix (Soil/W Aqueo	pH <2	pH >9	pH>12
1							1														Soil			
2							1																	
3							1																	
4							1																	
5							1																	
6							1																	
7																								
8																								
9																								
10																								
11																								
12																								

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
WGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic
BP1N	1 liter HNO3 plastic
BP1S	1 liter H2SO4 plastic
BP1U	1 liter unpreserved plastic
BP1Z	1 liter NaOH, Zn, Ac
BP2A	500mL NaOH, Asc Acid plastic
BP2N	500mL HNO3 plastic
BP2O	500mL NaOH plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Ac
BP3B	250mL NaOH plastic
BP3N	250mL HNO3 plastic
BP3S	250mL H2SO4 plastic
BP3U	250mL unpreserved plastic
BP3Z	250mL NaOH, Zn Ac plastic

AF	Air Filter
C	Air Cassettes
R	Terra core kit
SP5T	120mL Coliform Na Thiosulfate
U	Summa Can
ZPLC	Ziploc Bag

Chain of Custody

WO# : 12106226

PM: HRZ Due Date: 04/05/18

CLIENT: PACE MPLS

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424443 Workorder Name: 18-00383 MPCA Freeway LF Soils Owner Received Date: 3/21/2018 Results Requested By: 4/5/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

						Preserved Containers						Requested Analysis													
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved						Methyl Mercury EPA 1630													LAB USE ONLY
1	FD-WM-C5 (15-17.5 wm)	PS	3/21/2018 10:05	10424443001	Solid	1						X													
2	FD-WM-D5 (5-16 wm)	PS	3/21/2018 11:45	10424443002	Solid	1						X													
3	FD-WM-E5 (5-10 wm)	PS	3/21/2018 13:00	10424443003	Solid	1						X													
4	FD-WM-F5 (3-11 wm)	PS	3/21/2018 15:30	10424443004	Solid	1						X													
5	FD-WM-G5 (5-14 wm)	PS	3/21/2018 16:20	10424443005	Solid	1						X													
6	FD-WM-F4 (5-10 wm)	PS	3/21/2018 16:50	10424443006	Solid	1						X													

Transfers	Released By	Date/Time	Received By	Date/Time
1	Amy Hus PACE	3/22/18 1810	RJ Clapp	3-22-18 1915
2	RJ Clapp	3-22-18 2100	KBHoff	3/23/18 0800
3				

Comments

Cooler Temperature on Receipt 3.4 °C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: WO#: 12106226

PM: HRZ Due Date: 04/05/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☐ Yes ☐ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☑ Yes ☐ No

Thermometer Used: ☑ 01339252/1710 ☐ IR-1 **Type of Ice:** ☐ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.4 **Cooler Temp Corrected °C:** 3.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: True **Date and Initials of Person Examining Contents:** 3-22-18 DC

If temperature is ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☒ NA

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☒ N/A	4.

issolved containers.

preservation documentation

uired? ☐ Yes ☐ No

Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the d
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☐ N/A	See pH log for results and additional
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☐ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):_____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Req**

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: _____ **Date:** _____

DEHNR Certification Office (i.e out of

Angela Loisel

screpancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina I

out of temp, incorrect containers)

3/23/18

Chain of Custody

WO#: 12106226

12106226

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin:

Workorder: 10424443 Workorder Name: 18-00383 MPCA Freeway LF Soils Owner Received Date: 3/21/2018 Results Requested By: 4/5/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

						Preserved Containers						Requested Analysis													
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved						Fluoride by 9056													LAB USE ONLY
1	FD-WM-C5 (15-17.5 wm)	PS	3/21/2018 10:05	10424443001	Solid	1						X													
2	FD-WM-D5 (5-16 wm)	PS	3/21/2018 11:45	10424443002	Solid	1						X													
3	FD-WM-E5 (5-10 wm)	PS	3/21/2018 13:00	10424443003	Solid	1						X													
4	FD-WM-F5 (3-11 wm)	PS	3/21/2018 15:30	10424443004	Solid	1						X													
5	FD-WM-G5 (5-14 wm)	PS	3/21/2018 16:20	10424443005	Solid	1						X													
6	FD-WM-F4 (5-10 wm)	PS	3/21/2018 16:50	10424443006	Solid	1						X													

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	3/21/18 1800	CB	3/21/18 1845
2	CB	3/21/18 2230	[signature]	3/22/18 1110
3				

Comments

Cooler Temperature on Receipt 4.0 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace - Mpls. Project #: WO#: 12106226

PM: HRZ Due Date: 04/05/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.7 Cooler Temp Corrected °C: 4.0 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 3/27/18 CAB

Comments: 3/28/18

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☒ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☒ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Heather Stotts Date: 3/28/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO# : 12106226

PM: HRZ Due Date: 04/05/18
CLIENT: PACE MPLS

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory. State Of Origin: MN

Workorder: 10424443 Workorder Name: 18-00383 MPCA Freeway LF Soils Owner Received Date: 3/21/2018 Results Requested By: 4/5/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

WO# : 10424443

10424443

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury EPA 1630	LAB USE ONLY
1	FD-WM-C5 (15-17.5 wm)	PS	3/21/2018 10:05	10424443001	Solid	1	X	
2	FD-WM-D5 (5-16 wm)	PS	3/21/2018 11:45	10424443002	Solid	1	X	
3	FD-WM-E5 (5-10 wm)	PS	3/21/2018 13:00	10424443003	Solid	1	X	
4	FD-WM-F5 (3-11 wm)	PS	3/21/2018 15:30	10424443004	Solid	1	X	
5	FD-WM-G5 (5-14 wm)	PS	3/21/2018 16:20	10424443005	Solid	1	X	
6	FD-WM-F4 (5-10 wm)	PS	3/21/2018 16:50	10424443006	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[signature] PACE	3/22/18 1810	DJ Chapp	3-22-18 1815	
2	DJ Chapp	3-23-18 0100	KS Hoff	3/23/18 0800	
3	DJ Chapp	3/23/18 1900	[signature] PACE	3/26/18 1900	T= 4.3°C, CUSTODY SEALED, ON ICE, & INTACT

Cooler Temperature on Receipt 3.4 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Returning sample -002
KS Hoff 3/28/18

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: PACE-Duluth 3/28/18 SD MPLS

Project #: **WO#: 10424443**

PM: BM2 **Due Date: 04/05/18**

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☑ Yes ☐ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 4.1 **Cooler Temp Corrected (°C):** 4.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** BT 3/28/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑ Yes	☐ No		1.
Chain of Custody Filled Out?	☑ Yes	☐ No		2.
Chain of Custody Relinquished?	☑ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☐ Yes	☐ No	☑ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		6.
Rush Turn Around Time Requested?	☑ Yes	☐ No		7. ORIGINAL REQUEST FOR 4/5/18 BUT PACE DULUTH SENT SAMPLE RETURN TO US.
Sufficient Volume?	☑ Yes	☐ No		8.
Correct Containers Used?	☑ Yes	☐ No		9.
-Pace Containers Used?	☑ Yes	☐ No		
Containers Intact?	☑ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No		12. SAMPLE 002 RETURNED FROM WO: 1042443 TO US.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☑ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: **Date:**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 03, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 22, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This report was revised on May 3, 2018 to exlude results for magnesium and include results for manganese by method 6010.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bob Michels
bob.michels@pacelabs.com
(612)709-5046
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
California Certification #2973
California Certification #2973
Alaska Certification UST-107
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Montana DHHS Certification #: CERT0102
Minnesota Dept of Health Certification #: 1382680
Nevada DCNR Certification #: MN000372018-1
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10424609001	**FD-SB-A4 (26-32.5)**	Solid	03/22/18 11:25	03/22/18 17:40
10424609002	**FD-SB-B4-WM (3-20 WM)**	Solid	03/22/18 13:20	03/22/18 17:40
10424609003	**FD-SB-C4-WM (5-20 WM)**	Solid	03/22/18 15:00	03/22/18 17:40
10424609004	**FD-SB-D4-WM (5-20)**	Solid	03/22/18 15:50	03/22/18 17:40
10424609005	**FD-SB-E4-WM (3-21)**	Solid	03/22/18 16:30	03/22/18 17:40

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10424609001	**FD-SB-A4 (26-32.5)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JRH	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JRH	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424609004	**FD-SB-D4-WM (5-20)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424609005	**FD-SB-E4-WM (3-21)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-A4 (26-32.5) **Lab ID: 10424609001** Collected: 03/22/18 11:25 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	26.3	1	03/30/18 11:35	04/02/18 15:06	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	309-00-2	
alpha-BHC	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	319-84-6	
beta-BHC	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	319-85-7	
delta-BHC	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	58-89-9	
Chlordane (Technical)	ND	ug/kg	51.4	1	03/26/18 07:27	04/04/18 00:45	57-74-9	
alpha-Chlordane	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	5103-71-9	
gamma-Chlordane	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	5103-74-2	
4,4'-DDD	ND	ug/kg	10.2	1	03/26/18 07:27	04/04/18 00:45	72-54-8	
4,4'-DDE	ND	ug/kg	10.2	1	03/26/18 07:27	04/04/18 00:45	72-55-9	
4,4'-DDT	ND	ug/kg	10.2	1	03/26/18 07:27	04/04/18 00:45	50-29-3	
Dieldrin	ND	ug/kg	10.2	1	03/26/18 07:27	04/04/18 00:45	60-57-1	
Endosulfan I	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	959-98-8	
Endosulfan II	ND	ug/kg	10.2	1	03/26/18 07:27	04/04/18 00:45	33213-65-9	
Endosulfan sulfate	ND	ug/kg	10.2	1	03/26/18 07:27	04/04/18 00:45	1031-07-8	
Endrin	ND	ug/kg	10.2	1	03/26/18 07:27	04/04/18 00:45	72-20-8	
Endrin aldehyde	ND	ug/kg	10.2	1	03/26/18 07:27	04/04/18 00:45	7421-93-4	
Endrin ketone	ND	ug/kg	10.2	1	03/26/18 07:27	04/04/18 00:45	53494-70-5	
Heptachlor	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	76-44-8	
Heptachlor epoxide	ND	ug/kg	5.1	1	03/26/18 07:27	04/04/18 00:45	1024-57-3	
Methoxychlor	ND	ug/kg	51.4	1	03/26/18 07:27	04/04/18 00:45	72-43-5	
Toxaphene	ND	ug/kg	154	1	03/26/18 07:27	04/04/18 00:45	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	99	%.	30-150	1	03/26/18 07:27	04/04/18 00:45	877-09-8	
Decachlorobiphenyl (S)	85	%.	30-150	1	03/26/18 07:27	04/04/18 00:45	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	11100-14-4	
PCB, Total	ND	ug/kg	105	1	03/23/18 16:00	03/26/18 18:44	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	46	%.	48-125	1	03/23/18 16:00	03/26/18 18:44	877-09-8	S0
Decachlorobiphenyl (S)	40	%.	30-134	1	03/23/18 16:00	03/26/18 18:44	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**166**	mg/kg	97.6	1	03/28/18 12:37	03/29/18 12:21		T6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-A4 (26-32.5) **Lab ID: 10424609001** Collected: 03/22/18 11:25 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	79	%.	50-150	1	03/28/18 12:37	03/29/18 12:21	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	90.7	1	03/30/18 14:11	03/31/18 00:08		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	03/30/18 14:11	03/31/18 00:08	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**2190**	mg/kg	30.5	1	03/26/18 05:53	03/29/18 17:58	7429-90-5	
Barium	**140**	mg/kg	1.5	1	03/26/18 05:53	03/29/18 17:58	7440-39-3	
Boron	**742**	mg/kg	22.9	1	03/26/18 05:53	03/29/18 17:58	7440-42-8	
Copper	**4.3**	mg/kg	1.5	1	03/26/18 05:53	03/29/18 17:58	7440-50-8	
Iron	**3870**	mg/kg	7.6	1	03/26/18 05:53	03/29/18 17:58	7439-89-6	
Manganese	**310**	mg/kg	0.76	1	03/26/18 05:53	03/29/18 17:58	7439-96-5	
Nickel	**3.6**	mg/kg	3.1	1	03/26/18 05:53	03/29/18 17:58	7440-02-0	
Silver	ND	mg/kg	1.5	1	03/26/18 05:53	03/29/18 17:58	7440-22-4	
Tin	ND	mg/kg	11.5	1	03/26/18 05:53	03/29/18 17:58	7440-31-5	
Titanium	**62.0**	mg/kg	3.8	1	03/26/18 05:53	03/29/18 17:58	7440-32-6	
Zinc	**12.7**	mg/kg	3.1	1	03/26/18 05:53	03/29/18 17:58	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	ND	mg/kg	2.8	5	03/30/18 09:43	03/31/18 04:47	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	1.5	20	03/26/18 09:32	04/02/18 11:36	7440-36-0	
Arsenic	ND	mg/kg	1.5	20	03/26/18 09:32	04/02/18 11:36	7440-38-2	
Beryllium	ND	mg/kg	0.60	20	03/26/18 09:32	04/02/18 11:36	7440-41-7	
Cadmium	**0.37**	mg/kg	0.24	20	03/26/18 09:32	04/02/18 11:36	7440-43-9	
Cobalt	**1.9**	mg/kg	1.5	20	03/26/18 09:32	04/02/18 11:36	7440-48-4	
Lead	**4.2**	mg/kg	0.30	20	03/26/18 09:32	04/02/18 11:36	7439-92-1	
Lithium	**3.9**	mg/kg	1.5	20	03/26/18 09:32	04/02/18 11:36	7439-93-2	
Selenium	ND	mg/kg	1.5	20	03/26/18 09:32	04/02/18 11:36	7782-49-2	
Strontium	**65.9**	mg/kg	1.5	20	03/26/18 09:32	04/02/18 11:36	7440-24-6	
Vanadium	**7.1**	mg/kg	3.0	20	03/26/18 09:32	04/02/18 11:36	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.058	1	03/30/18 08:32	03/30/18 11:22	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**67.6**	%	0.10	1		03/26/18 14:26		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	83-32-9	
Acenaphthylene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-A4 (26-32.5) **Lab ID: 10424609001** Collected: 03/22/18 11:25 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	120-12-7	
Benzo(a)anthracene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	56-55-3	
Benzo(a)pyrene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	101-55-3	
Butylbenzylphthalate	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	85-68-7	
Carbazole	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	59-50-7	
4-Chloroaniline	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	108-60-1	
2-Chloronaphthalene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	91-58-7	
2-Chlorophenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	7005-72-3	
Chrysene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	53-70-3	
Dibenzofuran	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	120-83-2	
Diethylphthalate	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	105-67-9	
Dimethylphthalate	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	131-11-3	
Di-n-butylphthalate	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	15400	1	03/27/18 12:47	03/30/18 13:18	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	606-20-2	
Di-n-octylphthalate	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	117-81-7	
Fluoranthene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	206-44-0	
Fluorene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	87-68-3	
Hexachlorobenzene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	118-74-1	
Hexachloroethane	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	193-39-5	
Isophorone	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	78-59-1	
1-Methylnaphthalene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	90-12-0	
2-Methylnaphthalene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-A4 (26-32.5) **Lab ID: 10424609001** Collected: 03/22/18 11:25 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	5960	1	03/27/18 12:47	03/30/18 13:18		
Naphthalene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	91-20-3	
2-Nitroaniline	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	88-74-4	
3-Nitroaniline	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	99-09-2	
4-Nitroaniline	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	100-01-6	
Nitrobenzene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	98-95-3	
2-Nitrophenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	88-75-5	
4-Nitrophenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	86-30-6	
Pentachlorophenol	ND	ug/kg	6050	1	03/27/18 12:47	03/30/18 13:18	87-86-5	
Phenanthrene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	85-01-8	
Phenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	108-95-2	
Pyrene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	2980	1	03/27/18 12:47	03/30/18 13:18	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	78	%.	43-125	1	03/27/18 12:47	03/30/18 13:18	4165-60-0	
2-Fluorobiphenyl (S)	81	%.	30-132	1	03/27/18 12:47	03/30/18 13:18	321-60-8	
p-Terphenyl-d14 (S)	100	%.	62-125	1	03/27/18 12:47	03/30/18 13:18	1718-51-0	
Phenol-d6 (S)	79	%.	48-125	1	03/27/18 12:47	03/30/18 13:18	13127-88-3	
2-Fluorophenol (S)	74	%.	40-125	1	03/27/18 12:47	03/30/18 13:18	367-12-4	
2,4,6-Tribromophenol (S)	92	%.	60-125	1	03/27/18 12:47	03/30/18 13:18	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	83-32-9	
Acenaphthylene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	208-96-8	
Anthracene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	120-12-7	
Benzo(a)anthracene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	56-55-3	
Benzo(a)pyrene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	207-08-9	
Chrysene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	53-70-3	
Fluoranthene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	206-44-0	
Fluorene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	193-39-5	
Naphthalene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	91-20-3	
Phenanthrene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	85-01-8	
Pyrene	ND	ug/kg	30.8	1	03/26/18 11:34	03/27/18 17:56	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	63	%.	42-125	1	03/26/18 11:34	03/27/18 17:56	321-60-8	
p-Terphenyl-d14 (S)	78	%.	57-125	1	03/26/18 11:34	03/27/18 17:56	1718-51-0	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-A4 (26-32.5) **Lab ID: 10424609001** Collected: 03/22/18 11:25 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	25057-89-0	
2,4-D	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	94-75-7	
2,4-DB	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	94-82-6	
Dicamba	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	1918-00-9	
Dinoseb	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	88-85-7	
MCPA	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	94-74-6	
Pentachlorophenol	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	87-86-5	
Picloram	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	1918-02-1	
2,4,5-T	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	93-72-1	
Triclopyr	ND	mg/kg	0.20	1	03/29/18 07:30	04/04/18 15:04	55335-06-3	
Surrogates								
2,4-DCAA (S)	65	%.	46-125	1	03/29/18 07:30	04/04/18 15:04	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	7400	1	03/26/18 10:26	03/26/18 11:14	67-64-1	
Allyl chloride	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	107-05-1	
Benzene	**1370**	ug/kg	148	1	03/26/18 10:26	03/26/18 11:14	71-43-2	
Bromobenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	108-86-1	
Bromochloromethane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	74-97-5	
Bromodichloromethane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	75-27-4	
Bromoform	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	75-25-2	
Bromomethane	ND	ug/kg	3700	1	03/26/18 10:26	03/26/18 11:14	74-83-9	
2-Butanone (MEK)	ND	ug/kg	1850	1	03/26/18 10:26	03/26/18 11:14	78-93-3	
n-Butylbenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	104-51-8	
sec-Butylbenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	135-98-8	
tert-Butylbenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	98-06-6	
Carbon tetrachloride	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	56-23-5	
Chlorobenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	108-90-7	
Chloroethane	ND	ug/kg	3700	1	03/26/18 10:26	03/26/18 11:14	75-00-3	
Chloroform	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	67-66-3	
Chloromethane	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	74-87-3	
2-Chlorotoluene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	95-49-8	
4-Chlorotoluene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	3700	1	03/26/18 10:26	03/26/18 11:14	96-12-8	
Dibromochloromethane	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	106-93-4	
Dibromomethane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	75-71-8	
1,1-Dichloroethane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	75-34-3	
1,2-Dichloroethane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	107-06-2	
1,1-Dichloroethene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	156-59-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-A4 (26-32.5) **Lab ID: 10424609001** Collected: 03/22/18 11:25 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
trans-1,2-Dichloroethene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	156-60-5	
Dichlorofluoromethane	ND	ug/kg	3700	1	03/26/18 10:26	03/26/18 11:14	75-43-4	
1,2-Dichloropropane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	78-87-5	
1,3-Dichloropropane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	142-28-9	
2,2-Dichloropropane	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	594-20-7	
1,1-Dichloropropene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	60-29-7	
Ethylbenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	1850	1	03/26/18 10:26	03/26/18 11:14	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	98-82-8	
p-Isopropyltoluene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	99-87-6	
Methylene Chloride	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	1850	1	03/26/18 10:26	03/26/18 11:14	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	1634-04-4	
Naphthalene	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	91-20-3	
n-Propylbenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	103-65-1	
Styrene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	79-34-5	N2
Tetrachloroethene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	127-18-4	
Tetrahydrofuran	ND	ug/kg	14800	1	03/26/18 10:26	03/26/18 11:14	109-99-9	
Toluene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	79-00-5	
Trichloroethene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	1480	1	03/26/18 10:26	03/26/18 11:14	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	370	1	03/26/18 10:26	03/26/18 11:14	108-67-8	
Vinyl chloride	ND	ug/kg	148	1	03/26/18 10:26	03/26/18 11:14	75-01-4	
Xylene (Total)	ND	ug/kg	1110	1	03/26/18 10:26	03/26/18 11:14	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	89	%.	75-125	1	03/26/18 10:26	03/26/18 11:14	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	03/26/18 10:26	03/26/18 11:14	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	03/26/18 10:26	03/26/18 11:14	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	305	50	03/30/18 14:00	04/03/18 11:34	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/kg	1.0	1		04/05/18 08:57	16065-83-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-A4 (26-32.5) **Lab ID: 10424609001** Collected: 03/22/18 11:25 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	1.1	1	03/29/18 10:55	03/29/18 13:05	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.98	1	03/29/18 15:45	03/30/18 21:53	16984-48-8	

Sample: FD-SB-B4-WM (3-20 WM) **Lab ID: 10424609002** Collected: 03/22/18 13:20 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	17.1	1	03/30/18 11:35	04/02/18 15:26	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	309-00-2	
alpha-BHC	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	319-84-6	
beta-BHC	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	319-85-7	
delta-BHC	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	58-89-9	
Chlordane (Technical)	ND	ug/kg	256	10	03/26/18 07:27	04/04/18 01:04	57-74-9	
alpha-Chlordane	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	5103-71-9	
gamma-Chlordane	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	5103-74-2	
4,4'-DDD	ND	ug/kg	51.0	10	03/26/18 07:27	04/04/18 01:04	72-54-8	
4,4'-DDE	ND	ug/kg	51.0	10	03/26/18 07:27	04/04/18 01:04	72-55-9	
4,4'-DDT	ND	ug/kg	51.0	10	03/26/18 07:27	04/04/18 01:04	50-29-3	
Dieldrin	ND	ug/kg	51.0	10	03/26/18 07:27	04/04/18 01:04	60-57-1	
Endosulfan I	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	959-98-8	
Endosulfan II	ND	ug/kg	51.0	10	03/26/18 07:27	04/04/18 01:04	33213-65-9	
Endosulfan sulfate	ND	ug/kg	51.0	10	03/26/18 07:27	04/04/18 01:04	1031-07-8	
Endrin	ND	ug/kg	51.0	10	03/26/18 07:27	04/04/18 01:04	72-20-8	
Endrin aldehyde	ND	ug/kg	51.0	10	03/26/18 07:27	04/04/18 01:04	7421-93-4	
Endrin ketone	ND	ug/kg	51.0	10	03/26/18 07:27	04/04/18 01:04	53494-70-5	
Heptachlor	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	76-44-8	
Heptachlor epoxide	ND	ug/kg	25.6	10	03/26/18 07:27	04/04/18 01:04	1024-57-3	
Methoxychlor	ND	ug/kg	256	10	03/26/18 07:27	04/04/18 01:04	72-43-5	
Toxaphene	ND	ug/kg	765	10	03/26/18 07:27	04/04/18 01:04	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	10	03/26/18 07:27	04/04/18 01:04	877-09-8	5M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	10	03/26/18 07:27	04/04/18 01:04	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	50.5	1	03/23/18 16:00	03/26/18 19:00	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	50.5	1	03/23/18 16:00	03/26/18 19:00	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	50.5	1	03/23/18 16:00	03/26/18 19:00	11141-16-5	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-B4-WM (3-20 WM) **Lab ID: 10424609002** Collected: 03/22/18 13:20 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1242 (Aroclor 1242)	**3330**	ug/kg	101	2	03/23/18 16:00	03/27/18 08:04	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	50.5	1	03/23/18 16:00	03/26/18 19:00	12672-29-6	
PCB-1254 (Aroclor 1254)	**887**	ug/kg	50.5	1	03/23/18 16:00	03/26/18 19:00	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	50.5	1	03/23/18 16:00	03/26/18 19:00	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	50.5	1	03/23/18 16:00	03/26/18 19:00	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	50.5	1	03/23/18 16:00	03/26/18 19:00	11100-14-4	
PCB, Total	**4220**	ug/kg	101	2	03/23/18 16:00	03/27/18 08:04	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	94	%.	48-125	1	03/23/18 16:00	03/26/18 19:00	877-09-8	
Decachlorobiphenyl (S)	73	%.	30-134	1	03/23/18 16:00	03/26/18 19:00	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**1570**	mg/kg	153	10	03/28/18 12:37	03/29/18 16:15		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	03/28/18 12:37	03/29/18 16:15	638-68-6	7M,S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**243**	mg/kg	29.3	1	03/30/18 14:11	03/31/18 00:32		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	03/30/18 14:11	03/31/18 00:32	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**7510**	mg/kg	15.2	1	03/26/18 05:53	03/29/18 18:02	7429-90-5	
Barium	**194**	mg/kg	0.76	1	03/26/18 05:53	03/29/18 18:02	7440-39-3	
Boron	**112**	mg/kg	11.4	1	03/26/18 05:53	03/29/18 18:02	7440-42-8	
Copper	**474**	mg/kg	0.76	1	03/26/18 05:53	03/29/18 18:02	7440-50-8	
Iron	**32100**	mg/kg	19.0	5	03/26/18 05:53	03/30/18 10:32	7439-89-6	
Manganese	**270**	mg/kg	0.38	1	03/26/18 05:53	03/29/18 18:02	7439-96-5	
Nickel	**30.3**	mg/kg	1.5	1	03/26/18 05:53	03/29/18 18:02	7440-02-0	
Silver	**2.0**	mg/kg	0.76	1	03/26/18 05:53	03/29/18 18:02	7440-22-4	
Tin	**42.9**	mg/kg	5.7	1	03/26/18 05:53	03/29/18 18:02	7440-31-5	
Titanium	**260**	mg/kg	1.9	1	03/26/18 05:53	03/29/18 18:02	7440-32-6	
Zinc	**692**	mg/kg	1.5	1	03/26/18 05:53	03/29/18 18:02	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**35.9**	mg/kg	1.5	5	03/30/18 09:43	03/31/18 04:52	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**5.0**	mg/kg	0.72	20	03/26/18 09:32	04/02/18 11:40	7440-36-0	
Arsenic	**12.2**	mg/kg	0.72	20	03/26/18 09:32	04/02/18 11:40	7440-38-2	
Beryllium	**1.6**	mg/kg	0.29	20	03/26/18 09:32	04/02/18 11:40	7440-41-7	
Cadmium	**4.0**	mg/kg	0.11	20	03/26/18 09:32	04/02/18 11:40	7440-43-9	
Cobalt	**10**	mg/kg	0.72	20	03/26/18 09:32	04/02/18 11:40	7440-48-4	
Lead	**575**	mg/kg	0.14	20	03/26/18 09:32	04/02/18 11:40	7439-92-1	
Lithium	**10.3**	mg/kg	0.72	20	03/26/18 09:32	04/02/18 11:40	7439-93-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-B4-WM (3-20 WM) **Lab ID: 10424609002** Collected: 03/22/18 13:20 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Selenium	**3.5**	mg/kg	0.72	20	03/26/18 09:32	04/02/18 11:40	7782-49-2	
Strontium	**176**	mg/kg	0.72	20	03/26/18 09:32	04/02/18 11:40	7440-24-6	
Vanadium	**44.6**	mg/kg	1.4	20	03/26/18 09:32	04/02/18 11:40	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.52**	mg/kg	0.030	1	03/30/18 08:32	03/30/18 11:28	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**34.7**	%	0.10	1		03/26/18 14:26		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	83-32-9	
Acenaphthylene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	208-96-8	
Anthracene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	120-12-7	
Benzo(a)anthracene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	56-55-3	
Benzo(a)pyrene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	50-32-8	
Benzo(b)fluoranthene	**650**	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	101-55-3	
Butylbenzylphthalate	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	85-68-7	
Carbazole	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	59-50-7	
4-Chloroaniline	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	108-60-1	
2-Chloronaphthalene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	91-58-7	
2-Chlorophenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	7005-72-3	
Chrysene	**558**	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	53-70-3	
Dibenzofuran	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	120-83-2	
Diethylphthalate	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	105-67-9	
Dimethylphthalate	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	131-11-3	
Di-n-butylphthalate	**516**	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2590	1	03/27/18 12:47	03/30/18 15:20	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	121-14-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-B4-WM (3-20 WM) **Lab ID: 10424609002** Collected: 03/22/18 13:20 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2,6-Dinitrotoluene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	606-20-2	
Di-n-octylphthalate	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	122-66-7	
bis(2-Ethylhexyl)phthalate	**7900**	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	117-81-7	
Fluoranthene	**1560**	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	206-44-0	
Fluorene	**666**	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	87-68-3	
Hexachlorobenzene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	118-74-1	
Hexachloroethane	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	193-39-5	
Isophorone	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	78-59-1	
1-Methylnaphthalene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	90-12-0	
2-Methylnaphthalene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1010	1	03/27/18 12:47	03/30/18 15:20		
Naphthalene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	91-20-3	
2-Nitroaniline	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	88-74-4	
3-Nitroaniline	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	99-09-2	
4-Nitroaniline	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	100-01-6	
Nitrobenzene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	98-95-3	
2-Nitrophenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	88-75-5	
4-Nitrophenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	621-64-7	
N-Nitrosodiphenylamine	**759**	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	86-30-6	
Pentachlorophenol	ND	ug/kg	1020	1	03/27/18 12:47	03/30/18 15:20	87-86-5	
Phenanthrene	**2410**	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	85-01-8	
Phenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	108-95-2	
Pyrene	**1100**	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	504	1	03/27/18 12:47	03/30/18 15:20	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	56	%.	43-125	1	03/27/18 12:47	03/30/18 15:20	4165-60-0	
2-Fluorobiphenyl (S)	67	%.	30-132	1	03/27/18 12:47	03/30/18 15:20	321-60-8	
p-Terphenyl-d14 (S)	58	%.	62-125	1	03/27/18 12:47	03/30/18 15:20	1718-51-0	S5
Phenol-d6 (S)	58	%.	48-125	1	03/27/18 12:47	03/30/18 15:20	13127-88-3	
2-Fluorophenol (S)	53	%.	40-125	1	03/27/18 12:47	03/30/18 15:20	367-12-4	
2,4,6-Tribromophenol (S)	63	%.	60-125	1	03/27/18 12:47	03/30/18 15:20	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**514**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	83-32-9	
Acenaphthylene	ND	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	208-96-8	
Anthracene	**1080**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	120-12-7	
Benzo(a)anthracene	**2620**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	56-55-3	
Benzo(a)pyrene	**2430**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	50-32-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-B4-WM (3-20 WM) **Lab ID: 10424609002** Collected: 03/22/18 13:20 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Benzo(b)fluoranthene	**2860**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	205-99-2	
Benzo(g,h,i)perylene	**1640**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	191-24-2	
Benzo(k)fluoranthene	**1120**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	207-08-9	
Chrysene	**2750**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	218-01-9	
Dibenz(a,h)anthracene	**368**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	53-70-3	
Fluoranthene	**5350**	ug/kg	305	20	03/26/18 11:34	03/28/18 12:31	206-44-0	
Fluorene	**974**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	86-73-7	
Indeno(1,2,3-cd)pyrene	**1270**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	193-39-5	
Naphthalene	**746**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	91-20-3	
Phenanthrene	**4450**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	85-01-8	
Pyrene	**4740**	ug/kg	153	10	03/26/18 11:34	03/27/18 20:30	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	10	03/26/18 11:34	03/27/18 20:30	321-60-8	D3,S4
p-Terphenyl-d14 (S)	0	%.	57-125	10	03/26/18 11:34	03/27/18 20:30	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	25057-89-0	
2,4-D	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	94-75-7	
2,4-DB	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	94-82-6	
Dicamba	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	1918-00-9	
Dinoseb	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	88-85-7	
MCPA	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	94-74-6	
Pentachlorophenol	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	87-86-5	
Picloram	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	1918-02-1	
2,4,5-T	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	93-72-1	
Triclopyr	ND	mg/kg	0.051	1	03/29/18 07:30	04/04/18 15:18	55335-06-3	
Surrogates								
2,4-DCAA (S)	53	%.	46-125	1	03/29/18 07:30	04/04/18 15:18	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2870	1	03/26/18 09:03	03/26/18 13:44	67-64-1	
Allyl chloride	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	107-05-1	
Benzene	ND	ug/kg	57.5	1	03/26/18 09:03	03/26/18 13:44	71-43-2	
Bromobenzene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	108-86-1	
Bromochloromethane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	74-97-5	
Bromodichloromethane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	75-27-4	
Bromoform	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	75-25-2	
Bromomethane	ND	ug/kg	1440	1	03/26/18 09:03	03/26/18 13:44	74-83-9	
2-Butanone (MEK)	ND	ug/kg	718	1	03/26/18 09:03	03/26/18 13:44	78-93-3	
n-Butylbenzene	**989**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	104-51-8	
sec-Butylbenzene	**663**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	135-98-8	
tert-Butylbenzene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	98-06-6	
Carbon tetrachloride	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	56-23-5	
Chlorobenzene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	108-90-7	
Chloroethane	ND	ug/kg	1440	1	03/26/18 09:03	03/26/18 13:44	75-00-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-B4-WM (3-20 WM) **Lab ID: 10424609002** Collected: 03/22/18 13:20 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Chloroform	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	67-66-3	
Chloromethane	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	74-87-3	
2-Chlorotoluene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	95-49-8	
4-Chlorotoluene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1440	1	03/26/18 09:03	03/26/18 13:44	96-12-8	
Dibromochloromethane	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	106-93-4	
Dibromomethane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	74-95-3	
1,2-Dichlorobenzene	**259**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	541-73-1	
1,4-Dichlorobenzene	**810**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	75-71-8	
1,1-Dichloroethane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	75-34-3	
1,2-Dichloroethane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	107-06-2	
1,1-Dichloroethene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1440	1	03/26/18 09:03	03/26/18 13:44	75-43-4	
1,2-Dichloropropane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	78-87-5	
1,3-Dichloropropane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	142-28-9	
2,2-Dichloropropane	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	594-20-7	
1,1-Dichloropropene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	60-29-7	
Ethylbenzene	**1380**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	718	1	03/26/18 09:03	03/26/18 13:44	87-68-3	
Isopropylbenzene (Cumene)	**412**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	98-82-8	
p-Isopropyltoluene	**5250**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	99-87-6	
Methylene Chloride	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	718	1	03/26/18 09:03	03/26/18 13:44	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	1634-04-4	
Naphthalene	**3240**	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	91-20-3	
n-Propylbenzene	**880**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	103-65-1	
Styrene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	79-34-5	N2
Tetrachloroethene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	127-18-4	
Tetrahydrofuran	ND	ug/kg	5750	1	03/26/18 09:03	03/26/18 13:44	109-99-9	
Toluene	**208**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	79-00-5	
Trichloroethene	ND	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	75-69-4	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-B4-WM (3-20 WM) **Lab ID: 10424609002** Collected: 03/22/18 13:20 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,2,3-Trichloropropane	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	575	1	03/26/18 09:03	03/26/18 13:44	76-13-1	
1,2,4-Trimethylbenzene	**6930**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	95-63-6	
1,3,5-Trimethylbenzene	**2230**	ug/kg	144	1	03/26/18 09:03	03/26/18 13:44	108-67-8	
Vinyl chloride	ND	ug/kg	57.5	1	03/26/18 09:03	03/26/18 13:44	75-01-4	
Xylene (Total)	**5100**	ug/kg	431	1	03/26/18 09:03	03/26/18 13:44	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	03/26/18 09:03	03/26/18 13:44	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/26/18 09:03	03/26/18 13:44	2037-26-5	
4-Bromofluorobenzene (S)	115	%.	75-125	1	03/26/18 09:03	03/26/18 13:44	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	30.3	10	03/30/18 14:00	04/03/18 11:34	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**35.9**	mg/kg	1.0	1		04/05/18 08:57	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.47**	mg/kg	0.37	1	03/29/18 10:55	03/29/18 13:09	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	03/29/18 15:45	03/30/18 22:32	16984-48-8	

Sample: FD-SB-C4-WM (5-20 WM) **Lab ID: 10424609003** Collected: 03/22/18 15:00 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.1	1	03/30/18 11:35	04/02/18 15:32	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	309-00-2	
alpha-BHC	ND	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	319-84-6	
beta-BHC	**159**	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	319-85-7	
delta-BHC	**146**	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	58-89-9	
Chlordane (Technical)	ND	ug/kg	1040	50	03/26/18 07:27	04/04/18 01:40	57-74-9	
alpha-Chlordane	ND	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	5103-71-9	
gamma-Chlordane	**161**	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	5103-74-2	
4,4'-DDD	ND	ug/kg	207	50	03/26/18 07:27	04/04/18 01:40	72-54-8	
4,4'-DDE	**277**	ug/kg	207	50	03/26/18 07:27	04/04/18 01:40	72-55-9	
4,4'-DDT	**767**	ug/kg	207	50	03/26/18 07:27	04/04/18 01:40	50-29-3	
Dieldrin	ND	ug/kg	207	50	03/26/18 07:27	04/04/18 01:40	60-57-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-C4-WM (5-20 WM) **Lab ID: 10424609003** Collected: 03/22/18 15:00 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Endosulfan I	ND	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	959-98-8	
Endosulfan II	ND	ug/kg	207	50	03/26/18 07:27	04/04/18 01:40	33213-65-9	
Endosulfan sulfate	ND	ug/kg	207	50	03/26/18 07:27	04/04/18 01:40	1031-07-8	
Endrin	ND	ug/kg	207	50	03/26/18 07:27	04/04/18 01:40	72-20-8	
Endrin aldehyde	ND	ug/kg	207	50	03/26/18 07:27	04/04/18 01:40	7421-93-4	
Endrin ketone	ND	ug/kg	207	50	03/26/18 07:27	04/04/18 01:40	53494-70-5	
Heptachlor	ND	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	76-44-8	
Heptachlor epoxide	ND	ug/kg	104	50	03/26/18 07:27	04/04/18 01:40	1024-57-3	
Methoxychlor	ND	ug/kg	1040	50	03/26/18 07:27	04/04/18 01:40	72-43-5	
Toxaphene	ND	ug/kg	3120	50	03/26/18 07:27	04/04/18 01:40	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	50	03/26/18 07:27	04/04/18 01:40	877-09-8	4M,D4, S4
Decachlorobiphenyl (S)	0	%.	30-150	50	03/26/18 07:27	04/04/18 01:40	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	41.2	1	03/23/18 16:00	03/26/18 19:16	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	41.2	1	03/23/18 16:00	03/26/18 19:16	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	41.2	1	03/23/18 16:00	03/26/18 19:16	11141-16-5	
PCB-1242 (Aroclor 1242)	**39900**	ug/kg	2060	50	03/23/18 16:00	03/27/18 08:20	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	41.2	1	03/23/18 16:00	03/26/18 19:16	12672-29-6	
PCB-1254 (Aroclor 1254)	**5350**	ug/kg	2060	50	03/23/18 16:00	03/27/18 08:20	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	41.2	1	03/23/18 16:00	03/26/18 19:16	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	41.2	1	03/23/18 16:00	03/26/18 19:16	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	41.2	1	03/23/18 16:00	03/26/18 19:16	11100-14-4	
PCB, Total	**45200**	ug/kg	2060	50	03/23/18 16:00	03/27/18 08:20	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	205	%.	48-125	1	03/23/18 16:00	03/26/18 19:16	877-09-8	S0
Decachlorobiphenyl (S)	65	%.	30-134	1	03/23/18 16:00	03/26/18 19:16	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**1160**	mg/kg	124	10	03/28/18 12:37	03/29/18 10:49		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	03/28/18 12:37	03/29/18 10:49	638-68-6	7M,S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**104**	mg/kg	13.3	1	03/30/18 14:11	03/30/18 18:05		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	03/30/18 14:11	03/30/18 18:05	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**3810**	mg/kg	11.9	1	03/26/18 05:53	03/29/18 18:06	7429-90-5	
Barium	**227**	mg/kg	0.59	1	03/26/18 05:53	03/29/18 18:06	7440-39-3	
Boron	**87.4**	mg/kg	8.9	1	03/26/18 05:53	03/29/18 18:06	7440-42-8	
Copper	**51.6**	mg/kg	0.59	1	03/26/18 05:53	03/29/18 18:06	7440-50-8	
Iron	**42300**	mg/kg	29.7	10	03/26/18 05:53	03/30/18 10:36	7439-89-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-C4-WM (5-20 WM) **Lab ID: 10424609003** Collected: 03/22/18 15:00 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Manganese	**645**	mg/kg	0.30	1	03/26/18 05:53	03/29/18 18:06	7439-96-5	
Nickel	**14.9**	mg/kg	1.2	1	03/26/18 05:53	03/29/18 18:06	7440-02-0	
Silver	ND	mg/kg	0.59	1	03/26/18 05:53	03/29/18 18:06	7440-22-4	
Tin	**57.7**	mg/kg	4.5	1	03/26/18 05:53	03/29/18 18:06	7440-31-5	
Titanium	**156**	mg/kg	1.5	1	03/26/18 05:53	03/29/18 18:06	7440-32-6	
Zinc	**450**	mg/kg	1.2	1	03/26/18 05:53	03/29/18 18:06	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**31.2**	mg/kg	1.2	5	03/30/18 09:43	03/31/18 04:57	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.5**	mg/kg	0.60	20	03/26/18 09:32	04/02/18 11:45	7440-36-0	
Arsenic	**6.5**	mg/kg	0.60	20	03/26/18 09:32	04/02/18 11:45	7440-38-2	
Beryllium	**0.31**	mg/kg	0.24	20	03/26/18 09:32	04/02/18 11:45	7440-41-7	
Cadmium	**46.2**	mg/kg	0.096	20	03/26/18 09:32	04/02/18 11:45	7440-43-9	
Cobalt	**6.9**	mg/kg	0.60	20	03/26/18 09:32	04/02/18 11:45	7440-48-4	
Lead	**989**	mg/kg	0.12	20	03/26/18 09:32	04/02/18 11:45	7439-92-1	
Lithium	**4.4**	mg/kg	0.60	20	03/26/18 09:32	04/02/18 11:45	7439-93-2	
Selenium	**0.67**	mg/kg	0.60	20	03/26/18 09:32	04/02/18 11:45	7782-49-2	
Strontium	**53.0**	mg/kg	0.60	20	03/26/18 09:32	04/02/18 11:45	7440-24-6	
Vanadium	**16.5**	mg/kg	1.2	20	03/26/18 09:32	04/02/18 11:45	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**8.6**	mg/kg	0.50	20	03/30/18 08:32	03/30/18 11:36	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**19.9**	%	0.10	1		03/26/18 14:26		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	83-32-9	
Acenaphthylene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	208-96-8	
Anthracene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	120-12-7	
Benzo(a)anthracene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	56-55-3	
Benzo(a)pyrene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	101-55-3	
Butylbenzylphthalate	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	85-68-7	
Carbazole	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	59-50-7	
4-Chloroaniline	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	108-60-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-C4-WM (5-20 WM) **Lab ID: 10424609003** Collected: 03/22/18 15:00 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Chloronaphthalene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	91-58-7	
2-Chlorophenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	7005-72-3	
Chrysene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	53-70-3	
Dibenzofuran	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	120-83-2	
Diethylphthalate	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	105-67-9	
Dimethylphthalate	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	131-11-3	
Di-n-butylphthalate	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2120	1	03/27/18 12:47	03/31/18 18:35	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	606-20-2	
Di-n-octylphthalate	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	122-66-7	
bis(2-Ethylhexyl)phthalate	**1220**	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	117-81-7	
Fluoranthene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	206-44-0	
Fluorene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	87-68-3	
Hexachlorobenzene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	118-74-1	
Hexachloroethane	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	193-39-5	
Isophorone	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	78-59-1	
1-Methylnaphthalene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	90-12-0	
2-Methylnaphthalene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	823	1	03/27/18 12:47	03/31/18 18:35		
Naphthalene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	91-20-3	
2-Nitroaniline	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	88-74-4	
3-Nitroaniline	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	99-09-2	
4-Nitroaniline	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	100-01-6	
Nitrobenzene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	98-95-3	
2-Nitrophenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	88-75-5	
4-Nitrophenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	86-30-6	
Pentachlorophenol	ND	ug/kg	836	1	03/27/18 12:47	03/31/18 18:35	87-86-5	
Phenanthrene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	85-01-8	
Phenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	108-95-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-C4-WM (5-20 WM) **Lab ID: 10424609003** Collected: 03/22/18 15:00 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Pyrene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	412	1	03/27/18 12:47	03/31/18 18:35	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	58	%.	43-125	1	03/27/18 12:47	03/31/18 18:35	4165-60-0	
2-Fluorobiphenyl (S)	76	%.	30-132	1	03/27/18 12:47	03/31/18 18:35	321-60-8	
p-Terphenyl-d14 (S)	83	%.	62-125	1	03/27/18 12:47	03/31/18 18:35	1718-51-0	
Phenol-d6 (S)	71	%.	48-125	1	03/27/18 12:47	03/31/18 18:35	13127-88-3	
2-Fluorophenol (S)	55	%.	40-125	1	03/27/18 12:47	03/31/18 18:35	367-12-4	
2,4,6-Tribromophenol (S)	79	%.	60-125	1	03/27/18 12:47	03/31/18 18:35	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**191**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	83-32-9	
Acenaphthylene	ND	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	208-96-8	
Anthracene	**284**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	120-12-7	
Benzo(a)anthracene	**461**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	56-55-3	
Benzo(a)pyrene	**411**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	50-32-8	
Benzo(b)fluoranthene	**618**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	205-99-2	
Benzo(g,h,i)perylene	**294**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	191-24-2	
Benzo(k)fluoranthene	**205**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	207-08-9	
Chrysene	**562**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	53-70-3	
Fluoranthene	**1450**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	206-44-0	
Fluorene	**435**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	86-73-7	
Indeno(1,2,3-cd)pyrene	**230**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	193-39-5	
Naphthalene	**429**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	91-20-3	
Phenanthrene	**1860**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	85-01-8	
Pyrene	**1110**	ug/kg	124	10	03/26/18 11:34	03/27/18 20:52	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	10	03/26/18 11:34	03/27/18 20:52	321-60-8	D3,S4
p-Terphenyl-d14 (S)	0	%.	57-125	10	03/26/18 11:34	03/27/18 20:52	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	25057-89-0	
2,4-D	**0.16**	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	94-75-7	
2,4-DB	ND	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	94-82-6	
Dicamba	ND	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	1918-00-9	
Dinoseb	ND	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	88-85-7	
MCPA	ND	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	94-74-6	
Pentachlorophenol	**0.085**	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	87-86-5	
Picloram	ND	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	1918-02-1	
2,4,5-T	ND	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	93-72-1	
Triclopyr	ND	mg/kg	0.082	1	03/29/18 07:30	04/04/18 15:33	55335-06-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-C4-WM (5-20 WM) **Lab ID: 10424609003** Collected: 03/22/18 15:00 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D		Preparation Method: EPA 3546					
Surrogates								
2,4-DCAA (S)	71	%.	46-125	1	03/29/18 07:30	04/04/18 15:33	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B		Preparation Method: EPA 5035/5030B					
Acetone	ND	ug/kg	1380	1	03/26/18 09:03	03/26/18 14:01	67-64-1	
Allyl chloride	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	107-05-1	
Benzene	**70.9**	ug/kg	27.5	1	03/26/18 09:03	03/26/18 14:01	71-43-2	
Bromobenzene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	108-86-1	
Bromochloromethane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	74-97-5	
Bromodichloromethane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	75-27-4	
Bromoform	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	75-25-2	
Bromomethane	ND	ug/kg	688	1	03/26/18 09:03	03/26/18 14:01	74-83-9	
2-Butanone (MEK)	ND	ug/kg	344	1	03/26/18 09:03	03/26/18 14:01	78-93-3	
n-Butylbenzene	**1120**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	104-51-8	
sec-Butylbenzene	**520**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	135-98-8	
tert-Butylbenzene	**79.8**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	98-06-6	
Carbon tetrachloride	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	56-23-5	
Chlorobenzene	**122**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	108-90-7	
Chloroethane	ND	ug/kg	688	1	03/26/18 09:03	03/26/18 14:01	75-00-3	
Chloroform	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	67-66-3	
Chloromethane	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	74-87-3	
2-Chlorotoluene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	95-49-8	
4-Chlorotoluene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	688	1	03/26/18 09:03	03/26/18 14:01	96-12-8	
Dibromochloromethane	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	106-93-4	
Dibromomethane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	74-95-3	
1,2-Dichlorobenzene	**506**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	541-73-1	
1,4-Dichlorobenzene	**590**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	75-71-8	
1,1-Dichloroethane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	75-34-3	
1,2-Dichloroethane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	107-06-2	
1,1-Dichloroethene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	156-60-5	
Dichlorofluoromethane	ND	ug/kg	688	1	03/26/18 09:03	03/26/18 14:01	75-43-4	
1,2-Dichloropropane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	78-87-5	
1,3-Dichloropropane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	142-28-9	
2,2-Dichloropropane	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	594-20-7	
1,1-Dichloropropene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	60-29-7	
Ethylbenzene	**3310**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	344	1	03/26/18 09:03	03/26/18 14:01	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-C4-WM (5-20 WM) **Lab ID: 10424609003** Collected: 03/22/18 15:00 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	**1030**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	98-82-8	
p-Isopropyltoluene	**1760**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	99-87-6	
Methylene Chloride	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	344	1	03/26/18 09:03	03/26/18 14:01	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	1634-04-4	
Naphthalene	**5570**	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	91-20-3	
n-Propylbenzene	**1130**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	103-65-1	
Styrene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	79-34-5	N2
Tetrachloroethene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	127-18-4	
Tetrahydrofuran	ND	ug/kg	2750	1	03/26/18 09:03	03/26/18 14:01	109-99-9	
Toluene	**288**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	79-00-5	
Trichloroethene	ND	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	275	1	03/26/18 09:03	03/26/18 14:01	76-13-1	
1,2,4-Trimethylbenzene	**5820**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	95-63-6	
1,3,5-Trimethylbenzene	**1920**	ug/kg	68.8	1	03/26/18 09:03	03/26/18 14:01	108-67-8	
Vinyl chloride	ND	ug/kg	27.5	1	03/26/18 09:03	03/26/18 14:01	75-01-4	
Xylene (Total)	**6550**	ug/kg	206	1	03/26/18 09:03	03/26/18 14:01	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%.	75-125	1	03/26/18 09:03	03/26/18 14:01	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1	03/26/18 09:03	03/26/18 14:01	2037-26-5	
4-Bromofluorobenzene (S)	109	%.	75-125	1	03/26/18 09:03	03/26/18 14:01	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	25.1	10	03/30/18 14:00	04/03/18 11:34	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**31.2**	mg/kg	1.0	1		04/05/18 08:57	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.53	1	03/29/18 10:55	03/29/18 13:09	57-12-5	M0
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	03/29/18 15:45	03/30/18 23:12	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-D4-WM (5-20) **Lab ID: 10424609004** Collected: 03/22/18 15:50 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	9.68	1	03/30/18 11:35	04/02/18 15:39	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	309-00-2	M6
alpha-BHC	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	319-84-6	M6
beta-BHC	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	319-85-7	M6
delta-BHC	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	58-89-9	M6
Chlordane (Technical)	ND	ug/kg	441	20	03/26/18 07:27	04/03/18 21:06	57-74-9	
alpha-Chlordane	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	5103-71-9	
gamma-Chlordane	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	5103-74-2	M6
4,4'-DDD	ND	ug/kg	88.0	20	03/26/18 07:27	04/03/18 21:06	72-54-8	M6
4,4'-DDE	ND	ug/kg	88.0	20	03/26/18 07:27	04/03/18 21:06	72-55-9	
4,4'-DDT	ND	ug/kg	88.0	20	03/26/18 07:27	04/03/18 21:06	50-29-3	
Dieldrin	ND	ug/kg	88.0	20	03/26/18 07:27	04/03/18 21:06	60-57-1	M6
Endosulfan I	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	959-98-8	M6
Endosulfan II	ND	ug/kg	88.0	20	03/26/18 07:27	04/03/18 21:06	33213-65-9	
Endosulfan sulfate	ND	ug/kg	88.0	20	03/26/18 07:27	04/03/18 21:06	1031-07-8	
Endrin	ND	ug/kg	88.0	20	03/26/18 07:27	04/03/18 21:06	72-20-8	M6
Endrin aldehyde	ND	ug/kg	88.0	20	03/26/18 07:27	04/03/18 21:06	7421-93-4	M6
Endrin ketone	ND	ug/kg	88.0	20	03/26/18 07:27	04/03/18 21:06	53494-70-5	
Heptachlor	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	76-44-8	M6
Heptachlor epoxide	ND	ug/kg	44.1	20	03/26/18 07:27	04/03/18 21:06	1024-57-3	
Methoxychlor	ND	ug/kg	441	20	03/26/18 07:27	04/03/18 21:06	72-43-5	
Toxaphene	ND	ug/kg	1320	20	03/26/18 07:27	04/03/18 21:06	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	03/26/18 07:27	04/03/18 21:06	877-09-8	3M, D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	03/26/18 07:27	04/03/18 21:06	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	11141-16-5	
PCB-1242 (Aroclor 1242)	**306**	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	12672-29-6	
PCB-1254 (Aroclor 1254)	**91.8**	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	11100-14-4	
PCB, Total	**398**	ug/kg	43.5	1	03/23/18 16:00	03/26/18 19:32	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	40	%.	48-125	1	03/23/18 16:00	03/26/18 19:32	877-09-8	S0
Decachlorobiphenyl (S)	42	%.	30-134	1	03/23/18 16:00	03/26/18 19:32	2051-24-3	

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-D4-WM (5-20) **Lab ID: 10424609004** Collected: 03/22/18 15:50 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**383**	mg/kg	81.8	5	03/28/18 12:37	03/29/18 16:29		T6
Surrogates								
n-Triacontane (S)	95	%.	50-150	5	03/28/18 12:37	03/29/18 16:29	638-68-6	7M
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**257**	mg/kg	20.6	1	03/30/18 14:11	03/31/18 00:56		
Surrogates								
a,a,a-Trifluorotoluene (S)	96	%.	80-150	1	03/30/18 14:11	03/31/18 00:56	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**5710**	mg/kg	12.8	1	03/26/18 05:53	03/29/18 18:10	7429-90-5	
Barium	**177**	mg/kg	0.64	1	03/26/18 05:53	03/29/18 18:10	7440-39-3	
Boron	**62.7**	mg/kg	9.6	1	03/26/18 05:53	03/29/18 18:10	7440-42-8	
Copper	**64.6**	mg/kg	0.64	1	03/26/18 05:53	03/29/18 18:10	7440-50-8	
Iron	**65700**	mg/kg	32.1	10	03/26/18 05:53	03/30/18 10:42	7439-89-6	
Manganese	**532**	mg/kg	0.32	1	03/26/18 05:53	03/29/18 18:10	7439-96-5	
Nickel	**33.3**	mg/kg	1.3	1	03/26/18 05:53	03/29/18 18:10	7440-02-0	
Silver	**2.4**	mg/kg	0.64	1	03/26/18 05:53	03/29/18 18:10	7440-22-4	
Tin	**49.5**	mg/kg	4.8	1	03/26/18 05:53	03/29/18 18:10	7440-31-5	
Titanium	**244**	mg/kg	1.6	1	03/26/18 05:53	03/29/18 18:10	7440-32-6	
Zinc	**1360**	mg/kg	1.3	1	03/26/18 05:53	03/29/18 18:10	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**36.8**	mg/kg	1.2	5	03/30/18 09:43	03/31/18 05:28	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.1**	mg/kg	0.62	20	03/26/18 09:32	04/02/18 11:50	7440-36-0	
Arsenic	**15.1**	mg/kg	0.62	20	03/26/18 09:32	04/02/18 11:50	7440-38-2	
Beryllium	**1.3**	mg/kg	0.25	20	03/26/18 09:32	04/02/18 11:50	7440-41-7	
Cadmium	**1.4**	mg/kg	0.099	20	03/26/18 09:32	04/02/18 11:50	7440-43-9	
Cobalt	**7.5**	mg/kg	0.62	20	03/26/18 09:32	04/02/18 11:50	7440-48-4	
Lead	**178**	mg/kg	0.12	20	03/26/18 09:32	04/02/18 11:50	7439-92-1	
Lithium	**11.8**	mg/kg	0.62	20	03/26/18 09:32	04/02/18 11:50	7439-93-2	
Selenium	**2.6**	mg/kg	0.62	20	03/26/18 09:32	04/02/18 11:50	7782-49-2	
Strontium	**70.1**	mg/kg	0.62	20	03/26/18 09:32	04/02/18 11:50	7440-24-6	
Vanadium	**64.1**	mg/kg	1.2	20	03/26/18 09:32	04/02/18 11:50	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.97**	mg/kg	0.025	1	03/30/18 08:32	03/30/18 11:42	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**24.4**	%	0.10	1		03/26/18 14:27		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	83-32-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-D4-WM (5-20) **Lab ID: 10424609004** Collected: 03/22/18 15:50 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	208-96-8	
Anthracene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	120-12-7	
Benzo(a)anthracene	**2230**	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	56-55-3	
Benzo(a)pyrene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	50-32-8	
Benzo(b)fluoranthene	**2530**	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	101-55-3	
Butylbenzylphthalate	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	85-68-7	
Carbazole	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	59-50-7	
4-Chloroaniline	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	108-60-1	
2-Chloronaphthalene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	91-58-7	
2-Chlorophenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	7005-72-3	
Chrysene	**2250**	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	53-70-3	
Dibenzofuran	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	120-83-2	
Diethylphthalate	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	105-67-9	
Dimethylphthalate	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	131-11-3	
Di-n-butylphthalate	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	11200	5	03/27/18 12:47	03/30/18 22:24	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	606-20-2	
Di-n-octylphthalate	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	117-81-7	
Fluoranthene	**5620**	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	206-44-0	
Fluorene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	87-68-3	
Hexachlorobenzene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	118-74-1	
Hexachloroethane	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	193-39-5	
Isophorone	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	78-59-1	
1-Methylnaphthalene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	90-12-0	
2-Methylnaphthalene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-D4-WM (5-20) **Lab ID: 10424609004** Collected: 03/22/18 15:50 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	4360	5	03/27/18 12:47	03/30/18 22:24		
Naphthalene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	91-20-3	
2-Nitroaniline	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	88-74-4	
3-Nitroaniline	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	99-09-2	
4-Nitroaniline	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	100-01-6	
Nitrobenzene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	98-95-3	
2-Nitrophenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	88-75-5	
4-Nitrophenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	86-30-6	
Pentachlorophenol	ND	ug/kg	4420	5	03/27/18 12:47	03/30/18 22:24	87-86-5	
Phenanthrene	**5730**	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	85-01-8	
Phenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	108-95-2	
Pyrene	**4640**	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	2180	5	03/27/18 12:47	03/30/18 22:24	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	64	%.	43-125	5	03/27/18 12:47	03/30/18 22:24	4165-60-0	D4
2-Fluorobiphenyl (S)	78	%.	30-132	5	03/27/18 12:47	03/30/18 22:24	321-60-8	
p-Terphenyl-d14 (S)	78	%.	62-125	5	03/27/18 12:47	03/30/18 22:24	1718-51-0	
Phenol-d6 (S)	69	%.	48-125	5	03/27/18 12:47	03/30/18 22:24	13127-88-3	
2-Fluorophenol (S)	60	%.	40-125	5	03/27/18 12:47	03/30/18 22:24	367-12-4	
2,4,6-Tribromophenol (S)	70	%.	60-125	5	03/27/18 12:47	03/30/18 22:24	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**3710**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	83-32-9	
Acenaphthylene	ND	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	208-96-8	
Anthracene	**5750**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	120-12-7	
Benzo(a)anthracene	**5690**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	56-55-3	
Benzo(a)pyrene	**4250**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	50-32-8	
Benzo(b)fluoranthene	**4130**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	205-99-2	
Benzo(g,h,i)perylene	**2030**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	191-24-2	
Benzo(k)fluoranthene	**1680**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	207-08-9	
Chrysene	**4660**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	53-70-3	
Fluoranthene	**13200**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	206-44-0	
Fluorene	**4140**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	86-73-7	
Indeno(1,2,3-cd)pyrene	**1690**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	193-39-5	
Naphthalene	**8120**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	91-20-3	
Phenanthrene	**15000**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	85-01-8	
Pyrene	**10200**	ug/kg	1320	10	03/26/18 11:34	03/27/18 21:14	129-00-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-D4-WM (5-20) **Lab ID: 10424609004** Collected: 03/22/18 15:50 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	10	03/26/18 11:34	03/27/18 21:14	321-60-8	D3,P3, S4
p-Terphenyl-d14 (S)	0	%.	57-125	10	03/26/18 11:34	03/27/18 21:14	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	25057-89-0	
2,4-D	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	94-75-7	
2,4-DB	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	94-82-6	
Dicamba	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	1918-00-9	
Dinoseb	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	88-85-7	
MCPA	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	94-74-6	
Pentachlorophenol	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	87-86-5	
Picloram	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	1918-02-1	
2,4,5-T	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	93-72-1	
Triclopyr	ND	mg/kg	0.043	1	03/29/18 07:30	04/04/18 15:48	55335-06-3	
Surrogates								
2,4-DCAA (S)	64	%.	46-125	1	03/29/18 07:30	04/04/18 15:48	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1650	1	03/26/18 09:03	03/26/18 14:17	67-64-1	
Allyl chloride	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	107-05-1	
Benzene	ND	ug/kg	32.9	1	03/26/18 09:03	03/26/18 14:17	71-43-2	
Bromobenzene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	108-86-1	
Bromochloromethane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	74-97-5	
Bromodichloromethane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	75-27-4	
Bromoform	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	75-25-2	
Bromomethane	ND	ug/kg	824	1	03/26/18 09:03	03/26/18 14:17	74-83-9	
2-Butanone (MEK)	ND	ug/kg	412	1	03/26/18 09:03	03/26/18 14:17	78-93-3	
n-Butylbenzene	**1130**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	104-51-8	
sec-Butylbenzene	**696**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	135-98-8	
tert-Butylbenzene	**84.4**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	98-06-6	
Carbon tetrachloride	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	56-23-5	
Chlorobenzene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	108-90-7	
Chloroethane	ND	ug/kg	824	1	03/26/18 09:03	03/26/18 14:17	75-00-3	
Chloroform	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	67-66-3	
Chloromethane	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	74-87-3	
2-Chlorotoluene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	95-49-8	
4-Chlorotoluene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	824	1	03/26/18 09:03	03/26/18 14:17	96-12-8	
Dibromochloromethane	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	106-93-4	
Dibromomethane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	541-73-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-D4-WM (5-20) **Lab ID: 10424609004** Collected: 03/22/18 15:50 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,4-Dichlorobenzene	**262**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	75-71-8	
1,1-Dichloroethane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	75-34-3	
1,2-Dichloroethane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	107-06-2	
1,1-Dichloroethene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	156-60-5	
Dichlorofluoromethane	ND	ug/kg	824	1	03/26/18 09:03	03/26/18 14:17	75-43-4	
1,2-Dichloropropane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	78-87-5	
1,3-Dichloropropane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	142-28-9	
2,2-Dichloropropane	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	594-20-7	
1,1-Dichloropropene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	60-29-7	
Ethylbenzene	**231**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	412	1	03/26/18 09:03	03/26/18 14:17	87-68-3	
Isopropylbenzene (Cumene)	**401**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	98-82-8	
p-Isopropyltoluene	**998**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	99-87-6	
Methylene Chloride	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	412	1	03/26/18 09:03	03/26/18 14:17	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	1634-04-4	
Naphthalene	**4360**	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	91-20-3	
n-Propylbenzene	**684**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	103-65-1	
Styrene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	79-34-5	N2
Tetrachloroethene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	127-18-4	
Tetrahydrofuran	ND	ug/kg	3290	1	03/26/18 09:03	03/26/18 14:17	109-99-9	
Toluene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	79-00-5	
Trichloroethene	ND	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	329	1	03/26/18 09:03	03/26/18 14:17	76-13-1	
1,2,4-Trimethylbenzene	**5480**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	95-63-6	
1,3,5-Trimethylbenzene	**1590**	ug/kg	82.4	1	03/26/18 09:03	03/26/18 14:17	108-67-8	
Vinyl chloride	ND	ug/kg	32.9	1	03/26/18 09:03	03/26/18 14:17	75-01-4	
Xylene (Total)	**14900**	ug/kg	247	1	03/26/18 09:03	03/26/18 14:17	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	03/26/18 09:03	03/26/18 14:17	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1	03/26/18 09:03	03/26/18 14:17	2037-26-5	
4-Bromofluorobenzene (S)	105	%.	75-125	1	03/26/18 09:03	03/26/18 14:17	460-00-4	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-D4-WM (5-20) **Lab ID: 10424609004** Collected: 03/22/18 15:50 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	13.2	5	03/30/18 14:00	04/03/18 11:35	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**36.8**	mg/kg	1.0	1		04/05/18 08:57	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.47**	mg/kg	0.34	1	03/29/18 10:55	03/29/18 13:13	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.1**	mg/kg	0.99	1	03/29/18 15:45	03/30/18 22:52	16984-48-8	

Sample: FD-SB-E4-WM (3-21) **Lab ID: 10424609005** Collected: 03/22/18 16:30 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	15.7	1	03/30/18 11:35	04/02/18 15:59	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	309-00-2	
alpha-BHC	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	319-84-6	
beta-BHC	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	319-85-7	
delta-BHC	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	58-89-9	
Chlordane (Technical)	ND	ug/kg	433	20	03/26/18 07:27	04/04/18 01:22	57-74-9	
alpha-Chlordane	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	5103-71-9	
gamma-Chlordane	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	5103-74-2	
4,4'-DDD	ND	ug/kg	86.4	20	03/26/18 07:27	04/04/18 01:22	72-54-8	
4,4'-DDE	ND	ug/kg	86.4	20	03/26/18 07:27	04/04/18 01:22	72-55-9	
4,4'-DDT	ND	ug/kg	86.4	20	03/26/18 07:27	04/04/18 01:22	50-29-3	
Dieldrin	ND	ug/kg	86.4	20	03/26/18 07:27	04/04/18 01:22	60-57-1	
Endosulfan I	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	959-98-8	
Endosulfan II	ND	ug/kg	86.4	20	03/26/18 07:27	04/04/18 01:22	33213-65-9	
Endosulfan sulfate	ND	ug/kg	86.4	20	03/26/18 07:27	04/04/18 01:22	1031-07-8	
Endrin	ND	ug/kg	86.4	20	03/26/18 07:27	04/04/18 01:22	72-20-8	
Endrin aldehyde	ND	ug/kg	86.4	20	03/26/18 07:27	04/04/18 01:22	7421-93-4	
Endrin ketone	ND	ug/kg	86.4	20	03/26/18 07:27	04/04/18 01:22	53494-70-5	
Heptachlor	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	76-44-8	
Heptachlor epoxide	ND	ug/kg	43.3	20	03/26/18 07:27	04/04/18 01:22	1024-57-3	
Methoxychlor	ND	ug/kg	433	20	03/26/18 07:27	04/04/18 01:22	72-43-5	
Toxaphene	ND	ug/kg	1300	20	03/26/18 07:27	04/04/18 01:22	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	03/26/18 07:27	04/04/18 01:22	877-09-8	3M, D3, S4

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-E4-WM (3-21) **Lab ID: 10424609005** Collected: 03/22/18 16:30 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Surrogates								
Decachlorobiphenyl (S)	0	%.	30-150	20	03/26/18 07:27	04/04/18 01:22	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	11141-16-5	
PCB-1242 (Aroclor 1242)	**247**	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	12672-29-6	
PCB-1254 (Aroclor 1254)	**174**	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	11100-14-4	
PCB, Total	**421**	ug/kg	42.7	1	03/23/18 16:00	03/26/18 19:47	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	86	%.	48-125	1	03/23/18 16:00	03/26/18 19:47	877-09-8	
Decachlorobiphenyl (S)	75	%.	30-134	1	03/23/18 16:00	03/26/18 19:47	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**745**	mg/kg	232	20	03/26/18 14:27	03/27/18 20:54		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	03/26/18 14:27	03/27/18 20:54	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**90.2**	mg/kg	17.1	1	03/30/18 14:11	03/31/18 01:20		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	03/30/18 14:11	03/31/18 01:20	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**7660**	mg/kg	12.6	1	03/26/18 05:53	03/29/18 18:14	7429-90-5	
Barium	**1510**	mg/kg	0.63	1	03/26/18 05:53	03/29/18 18:14	7440-39-3	
Boron	**99.3**	mg/kg	9.5	1	03/26/18 05:53	03/29/18 18:14	7440-42-8	
Copper	**207**	mg/kg	0.63	1	03/26/18 05:53	03/29/18 18:14	7440-50-8	
Iron	**28800**	mg/kg	15.8	5	03/26/18 05:53	03/30/18 10:46	7439-89-6	
Manganese	**1640**	mg/kg	0.32	1	03/26/18 05:53	03/29/18 18:14	7439-96-5	
Nickel	**65.8**	mg/kg	1.3	1	03/26/18 05:53	03/29/18 18:14	7440-02-0	
Silver	ND	mg/kg	0.63	1	03/26/18 05:53	03/29/18 18:14	7440-22-4	
Tin	**16.6**	mg/kg	4.7	1	03/26/18 05:53	03/29/18 18:14	7440-31-5	
Titanium	**410**	mg/kg	1.6	1	03/26/18 05:53	03/29/18 18:14	7440-32-6	
Zinc	**565**	mg/kg	1.3	1	03/26/18 05:53	03/29/18 18:14	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**32.5**	mg/kg	1.2	5	03/30/18 09:43	03/31/18 05:33	7440-47-3	N2

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-E4-WM (3-21) **Lab ID: 10424609005** Collected: 03/22/18 16:30 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**2.1**	mg/kg	0.63	20	03/26/18 09:32	04/02/18 12:30	7440-36-0	
Arsenic	**9.7**	mg/kg	0.63	20	03/26/18 09:32	04/02/18 12:30	7440-38-2	
Beryllium	**0.96**	mg/kg	0.25	20	03/26/18 09:32	04/02/18 12:30	7440-41-7	
Cadmium	**1.3**	mg/kg	0.10	20	03/26/18 09:32	04/02/18 12:30	7440-43-9	
Cobalt	**7.3**	mg/kg	0.63	20	03/26/18 09:32	04/02/18 12:30	7440-48-4	
Lead	**141**	mg/kg	0.13	20	03/26/18 09:32	04/02/18 12:30	7439-92-1	
Lithium	**8.4**	mg/kg	0.63	20	03/26/18 09:32	04/02/18 12:30	7439-93-2	
Selenium	**2.2**	mg/kg	0.63	20	03/26/18 09:32	04/02/18 12:30	7782-49-2	
Strontium	**50.7**	mg/kg	0.63	20	03/26/18 09:32	04/02/18 12:30	7440-24-6	
Vanadium	**50.3**	mg/kg	1.3	20	03/26/18 09:32	04/02/18 12:30	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.21**	mg/kg	0.022	1	03/30/18 08:32	03/30/18 11:44	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**23.0**	%	0.10	1		03/26/18 14:27		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	83-32-9	
Acenaphthylene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	208-96-8	
Anthracene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	120-12-7	
Benzo(a)anthracene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	56-55-3	
Benzo(a)pyrene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	101-55-3	
Butylbenzylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	85-68-7	
Carbazole	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	59-50-7	
4-Chloroaniline	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	108-60-1	
2-Chloronaphthalene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	91-58-7	
2-Chlorophenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	7005-72-3	
Chrysene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	53-70-3	
Dibenzofuran	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	120-83-2	

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1700 Elm Street - Suite 200
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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-E4-WM (3-21) **Lab ID: 10424609005** Collected: 03/22/18 16:30 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Diethylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	105-67-9	
Dimethylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	131-11-3	
Di-n-butylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2210	1	03/27/18 12:47	03/31/18 19:05	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	606-20-2	
Di-n-octylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	117-81-7	
Fluoranthene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	206-44-0	
Fluorene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	87-68-3	
Hexachlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	118-74-1	
Hexachloroethane	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	193-39-5	
Isophorone	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	78-59-1	
1-Methylnaphthalene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	90-12-0	
2-Methylnaphthalene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	856	1	03/27/18 12:47	03/31/18 19:05		
Naphthalene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	91-20-3	
2-Nitroaniline	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	88-74-4	
3-Nitroaniline	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	99-09-2	
4-Nitroaniline	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	100-01-6	
Nitrobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	98-95-3	
2-Nitrophenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	88-75-5	
4-Nitrophenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	86-30-6	
Pentachlorophenol	ND	ug/kg	869	1	03/27/18 12:47	03/31/18 19:05	87-86-5	
Phenanthrene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	85-01-8	
Phenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	108-95-2	
Pyrene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	428	1	03/27/18 12:47	03/31/18 19:05	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	58	%.	43-125	1	03/27/18 12:47	03/31/18 19:05	4165-60-0	
2-Fluorobiphenyl (S)	65	%.	30-132	1	03/27/18 12:47	03/31/18 19:05	321-60-8	
p-Terphenyl-d14 (S)	62	%.	62-125	1	03/27/18 12:47	03/31/18 19:05	1718-51-0	
Phenol-d6 (S)	63	%.	48-125	1	03/27/18 12:47	03/31/18 19:05	13127-88-3	
2-Fluorophenol (S)	51	%.	40-125	1	03/27/18 12:47	03/31/18 19:05	367-12-4	
2,4,6-Tribromophenol (S)	38	%.	60-125	1	03/27/18 12:47	03/31/18 19:05	118-79-6	S5

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-E4-WM (3-21) **Lab ID: 10424609005** Collected: 03/22/18 16:30 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**267**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	83-32-9	
Acenaphthylene	**134**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	208-96-8	
Anthracene	**373**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	120-12-7	
Benzo(a)anthracene	**701**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	56-55-3	
Benzo(a)pyrene	**585**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	50-32-8	
Benzo(b)fluoranthene	**584**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	205-99-2	
Benzo(g,h,i)perylene	**413**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	191-24-2	
Benzo(k)fluoranthene	**303**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	207-08-9	
Chrysene	**660**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	53-70-3	
Fluoranthene	**1410**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	206-44-0	
Fluorene	**229**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	86-73-7	
Indeno(1,2,3-cd)pyrene	**301**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	193-39-5	
Naphthalene	**239**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	91-20-3	
Phenanthrene	**996**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	85-01-8	
Pyrene	**1410**	ug/kg	130	10	03/26/18 11:34	03/27/18 21:36	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	10	03/26/18 11:34	03/27/18 21:36	321-60-8	D3,S4
p-Terphenyl-d14 (S)	0	%.	57-125	10	03/26/18 11:34	03/27/18 21:36	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	25057-89-0	
2,4-D	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	94-75-7	
2,4-DB	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	94-82-6	
Dicamba	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	1918-00-9	
Dinoseb	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	88-85-7	
MCPA	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	94-74-6	
Pentachlorophenol	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	87-86-5	
Picloram	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	1918-02-1	
2,4,5-T	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	93-72-1	
Triclopyr	ND	mg/kg	0.086	1	03/29/18 07:30	04/04/18 16:02	55335-06-3	
Surrogates								
2,4-DCAA (S)	64	%.	46-125	1	03/29/18 07:30	04/04/18 16:02	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1500	1	03/26/18 09:03	03/26/18 14:34	67-64-1	
Allyl chloride	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	107-05-1	
Benzene	**211**	ug/kg	30.0	1	03/26/18 09:03	03/26/18 14:34	71-43-2	
Bromobenzene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	108-86-1	
Bromochloromethane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	74-97-5	
Bromodichloromethane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	75-27-4	
Bromoform	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	75-25-2	
Bromomethane	ND	ug/kg	750	1	03/26/18 09:03	03/26/18 14:34	74-83-9	
2-Butanone (MEK)	ND	ug/kg	375	1	03/26/18 09:03	03/26/18 14:34	78-93-3	
n-Butylbenzene	**307**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	104-51-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-E4-WM (3-21) **Lab ID: 10424609005** Collected: 03/22/18 16:30 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
sec-Butylbenzene	**214**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	135-98-8	
tert-Butylbenzene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	98-06-6	
Carbon tetrachloride	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	56-23-5	
Chlorobenzene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	108-90-7	
Chloroethane	ND	ug/kg	750	1	03/26/18 09:03	03/26/18 14:34	75-00-3	
Chloroform	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	67-66-3	
Chloromethane	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	74-87-3	
2-Chlorotoluene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	95-49-8	
4-Chlorotoluene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	750	1	03/26/18 09:03	03/26/18 14:34	96-12-8	
Dibromochloromethane	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	106-93-4	
Dibromomethane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	74-95-3	
1,2-Dichlorobenzene	**585**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	541-73-1	
1,4-Dichlorobenzene	**192**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	75-71-8	
1,1-Dichloroethane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	75-34-3	
1,2-Dichloroethane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	107-06-2	
1,1-Dichloroethene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	156-60-5	
Dichlorofluoromethane	ND	ug/kg	750	1	03/26/18 09:03	03/26/18 14:34	75-43-4	
1,2-Dichloropropane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	78-87-5	
1,3-Dichloropropane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	142-28-9	
2,2-Dichloropropane	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	594-20-7	
1,1-Dichloropropene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	60-29-7	
Ethylbenzene	**639**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	375	1	03/26/18 09:03	03/26/18 14:34	87-68-3	
Isopropylbenzene (Cumene)	**182**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	98-82-8	
p-Isopropyltoluene	**140**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	99-87-6	
Methylene Chloride	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	375	1	03/26/18 09:03	03/26/18 14:34	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	1634-04-4	
Naphthalene	**2500**	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	91-20-3	
n-Propylbenzene	**249**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	103-65-1	
Styrene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	79-34-5	N2
Tetrachloroethene	**125**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	127-18-4	
Tetrahydrofuran	ND	ug/kg	3000	1	03/26/18 09:03	03/26/18 14:34	109-99-9	
Toluene	**302**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	87-61-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Sample: FD-SB-E4-WM (3-21) **Lab ID: 10424609005** Collected: 03/22/18 16:30 Received: 03/22/18 17:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,2,4-Trichlorobenzene	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	79-00-5	
Trichloroethene	**82.5**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	300	1	03/26/18 09:03	03/26/18 14:34	76-13-1	
1,2,4-Trimethylbenzene	**1060**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	95-63-6	
1,3,5-Trimethylbenzene	**116**	ug/kg	75.0	1	03/26/18 09:03	03/26/18 14:34	108-67-8	
Vinyl chloride	ND	ug/kg	30.0	1	03/26/18 09:03	03/26/18 14:34	75-01-4	
Xylene (Total)	**545**	ug/kg	225	1	03/26/18 09:03	03/26/18 14:34	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1	03/26/18 09:03	03/26/18 14:34	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/26/18 09:03	03/26/18 14:34	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1	03/26/18 09:03	03/26/18 14:34	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	26.1	10	03/30/18 14:00	04/03/18 11:35	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**32.5**	mg/kg	1.0	1		04/05/18 08:57	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.18	1	03/29/18 10:55	03/29/18 13:13	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**2.9**	mg/kg	0.99	1	03/29/18 15:45	03/30/18 23:31	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 139779 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 553598 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.16	04/02/18 14:39	N3

METHOD BLANK: 553599 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.14	04/02/18 14:46	N3

METHOD BLANK: 553600 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.19	04/02/18 14:52	N3

LABORATORY CONTROL SAMPLE: 553601

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	104	109	105	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553602 553603

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	22.5	480	482	389	390	76	76	65-135	0	35	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553604 553605

Parameter	Units	10424609001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	1000	932	788	743	79	80	65-135	6	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 529815 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2875655 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	03/30/18 17:39	
a,a,a-Trifluorotoluene (S)	%.	100	80-150	03/30/18 17:39	

LABORATORY CONTROL SAMPLE & LCSD: 2875656 2875657

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	46.3	44.7	93	89	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%.				99	99	80-150			

MATRIX SPIKE SAMPLE: 2876408

Parameter	Units	10424443005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	60.8	115	187	80-120	C0,M1
a,a,a-Trifluorotoluene (S)	%.				98	80-150	

SAMPLE DUPLICATE: 2876409

Parameter	Units	10424609003 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	104	107	3	20	
a,a,a-Trifluorotoluene (S)	%.	99	99	0		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 529743 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2875322 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	03/30/18 10:50	

LABORATORY CONTROL SAMPLE: 2875323

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.44	0.51	115	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875635 2875636

Parameter	Units	10424609001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	ND	1.5	1.5	1.7	1.6	110	109	80-120	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 528915 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2870798 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	9.8	03/29/18 17:03	
Barium	mg/kg	ND	0.49	03/29/18 17:03	
Boron	mg/kg	ND	7.4	03/29/18 17:03	
Copper	mg/kg	ND	0.49	03/29/18 17:03	
Iron	mg/kg	ND	2.5	03/29/18 17:03	
Manganese	mg/kg	ND	0.25	03/29/18 17:03	
Nickel	mg/kg	ND	0.98	03/29/18 17:03	
Silver	mg/kg	ND	0.49	03/29/18 17:03	
Tin	mg/kg	ND	3.7	03/29/18 17:03	
Titanium	mg/kg	ND	1.2	03/29/18 17:03	
Zinc	mg/kg	ND	0.98	03/29/18 17:03	

LABORATORY CONTROL SAMPLE: 2870799

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	980	929	95	80-120	
Barium	mg/kg	49	49.2	100	80-120	
Boron	mg/kg	49	46.3	94	80-120	
Copper	mg/kg	49	47.6	97	80-120	
Iron	mg/kg	980	964	98	80-120	
Manganese	mg/kg	49	49.0	100	80-120	
Nickel	mg/kg	49	48.2	98	80-120	
Silver	mg/kg	24.5	23.0	94	80-120	
Tin	mg/kg	49	49.7	101	80-120	
Titanium	mg/kg	49	48.8	100	80-120	
Zinc	mg/kg	49	48.1	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2870800 2870801

Parameter	Units	10424443001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	11900	1370	1380	26800	10300	1090	-120	75-125	89	20	P6,R1
Barium	mg/kg	292	68.3	69	388	431	140	202	75-125	11	20	P6
Boron	mg/kg	26.6	68.3	69	122	132	140	152	75-125	7	20	M1
Copper	mg/kg	228	68.3	69	6980	1110	9880	1280	75-125	145	20	M6,R1
Iron	mg/kg	15900	1370	1380	60900	98200	3290	5960	75-125	47	20	M6,R1
Manganese	mg/kg	249	68.3	69	729	664	703	601	75-125	9	20	P6
Nickel	mg/kg	112	68.3	69	2360	141	3290	41	75-125	177	20	M6,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2870800 2870801

Parameter	Units	10424443001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	1.8	34.2	34.5	34.1	34.9	94	96	75-125	2	20	
Tin	mg/kg	186	68.3	69	237	238	74	76	75-125	1	20	M1
Titanium	mg/kg	275	68.3	69	265	560	-14	413	75-125	71	20	M1,R1
Zinc	mg/kg	86700	68.3	69	3680	9550	-121000	-112000	75-125	89	20	M6,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 434613 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2007430 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.18	03/31/18 04:29	N2

LABORATORY CONTROL SAMPLE: 2007431

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.6	97	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2007432 2007433

Parameter	Units	10424609003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	31.2	4.74	4.74	36.1	22.7	103	-179	75-125	46	20	1M, M0, N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 528917 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2870806 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.50	04/02/18 10:52	
Arsenic	mg/kg	ND	0.50	04/02/18 10:52	
Beryllium	mg/kg	ND	0.20	04/02/18 10:52	
Cadmium	mg/kg	ND	0.079	04/02/18 10:52	
Cobalt	mg/kg	ND	0.50	04/02/18 10:52	
Lead	mg/kg	ND	0.099	04/02/18 10:52	
Lithium	mg/kg	ND	0.50	04/02/18 10:52	
Selenium	mg/kg	ND	0.50	04/02/18 10:52	
Strontium	mg/kg	ND	0.50	04/02/18 10:52	
Vanadium	mg/kg	ND	0.99	04/02/18 10:52	

LABORATORY CONTROL SAMPLE: 2870807

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	49.5	51.0	103	80-120	
Arsenic	mg/kg	49.5	50.2	101	80-120	
Beryllium	mg/kg	49.5	50.1	101	80-120	
Cadmium	mg/kg	49.5	51.4	104	80-120	
Cobalt	mg/kg	49.5	52.1	105	80-120	
Lead	mg/kg	49.5	51.3	104	80-120	
Lithium	mg/kg	49.5	50.5	102	80-120	
Selenium	mg/kg	49.5	49.8	101	80-120	
Strontium	mg/kg	49.5	51.6	104	80-120	
Vanadium	mg/kg	49.5	52.6	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2870808 2870809

Parameter	Units	10424443001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	3.0	67	67.7	45.3	52.2	63	73	75-125	14	20	M6
Arsenic	mg/kg	14.3	67	67.7	84.2	84.6	104	104	75-125	1	20	
Beryllium	mg/kg	0.36	67	67.7	67.8	70.7	101	104	75-125	4	20	
Cadmium	mg/kg	4.6	67	67.7	78.7	77.4	110	107	75-125	2	20	
Cobalt	mg/kg	37.4	67	67.7	80.0	109	63	106	75-125	31	20	M6,R1
Lead	mg/kg	724	67	67.7	971	483	368	-356	75-125	67	20	M6,R1
Lithium	mg/kg	6.7	67	67.7	74.4	78.1	101	105	75-125	5	20	
Selenium	mg/kg	0.82	67	67.7	64.9	71.0	96	104	75-125	9	20	
Strontium	mg/kg	106	67	67.7	182	192	114	127	75-125	5	20	M6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2870808 2870809

Parameter	Units	10424443001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vanadium	mg/kg	27.4	67	67.7	104	101	114	108	75-125	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 528989 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

SAMPLE DUPLICATE: 2871261

Parameter	Units	10424609001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	67.6	68.4	1	30	

SAMPLE DUPLICATE: 2871439

Parameter	Units	10424778006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	35.6	36.0	1	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 528973 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2871002 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1,1-Trichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	03/26/18 10:56	N2
1,1,2-Trichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	03/26/18 10:56	
1,1-Dichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,1-Dichloroethene	ug/kg	ND	50.0	03/26/18 10:56	
1,1-Dichloropropene	ug/kg	ND	50.0	03/26/18 10:56	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2,3-Trichloropropane	ug/kg	ND	200	03/26/18 10:56	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	03/26/18 10:56	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dichloroethane	ug/kg	ND	50.0	03/26/18 10:56	
1,2-Dichloropropane	ug/kg	ND	50.0	03/26/18 10:56	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,3-Dichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
1,3-Dichloropropane	ug/kg	ND	50.0	03/26/18 10:56	
1,4-Dichlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
2,2-Dichloropropane	ug/kg	ND	200	03/26/18 10:56	
2-Butanone (MEK)	ug/kg	ND	250	03/26/18 10:56	
2-Chlorotoluene	ug/kg	ND	50.0	03/26/18 10:56	
4-Chlorotoluene	ug/kg	ND	50.0	03/26/18 10:56	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	03/26/18 10:56	
Acetone	ug/kg	ND	1000	03/26/18 10:56	
Allyl chloride	ug/kg	ND	200	03/26/18 10:56	
Benzene	ug/kg	ND	20.0	03/26/18 10:56	
Bromobenzene	ug/kg	ND	50.0	03/26/18 10:56	
Bromochloromethane	ug/kg	ND	50.0	03/26/18 10:56	
Bromodichloromethane	ug/kg	ND	50.0	03/26/18 10:56	
Bromoform	ug/kg	ND	200	03/26/18 10:56	
Bromomethane	ug/kg	ND	500	03/26/18 10:56	
Carbon tetrachloride	ug/kg	ND	50.0	03/26/18 10:56	
Chlorobenzene	ug/kg	ND	50.0	03/26/18 10:56	
Chloroethane	ug/kg	ND	500	03/26/18 10:56	
Chloroform	ug/kg	ND	50.0	03/26/18 10:56	
Chloromethane	ug/kg	ND	200	03/26/18 10:56	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	03/26/18 10:56	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	03/26/18 10:56	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

METHOD BLANK: 2871002 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	03/26/18 10:56	
Dibromomethane	ug/kg	ND	50.0	03/26/18 10:56	
Dichlorodifluoromethane	ug/kg	ND	200	03/26/18 10:56	
Dichlorofluoromethane	ug/kg	ND	500	03/26/18 10:56	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	03/26/18 10:56	
Ethylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Hexachloro-1,3-butadiene	ug/kg	ND	250	03/26/18 10:56	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	03/26/18 10:56	
Methyl-tert-butyl ether	ug/kg	ND	50.0	03/26/18 10:56	
Methylene Chloride	ug/kg	ND	200	03/26/18 10:56	
n-Butylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
n-Propylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Naphthalene	ug/kg	ND	200	03/26/18 10:56	
p-Isopropyltoluene	ug/kg	ND	50.0	03/26/18 10:56	
sec-Butylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Styrene	ug/kg	ND	50.0	03/26/18 10:56	
tert-Butylbenzene	ug/kg	ND	50.0	03/26/18 10:56	
Tetrachloroethene	ug/kg	ND	50.0	03/26/18 10:56	
Tetrahydrofuran	ug/kg	ND	2000	03/26/18 10:56	
Toluene	ug/kg	ND	50.0	03/26/18 10:56	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	03/26/18 10:56	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	03/26/18 10:56	
Trichloroethene	ug/kg	ND	50.0	03/26/18 10:56	N2
Trichlorofluoromethane	ug/kg	ND	200	03/26/18 10:56	
Vinyl chloride	ug/kg	ND	20.0	03/26/18 10:56	
Xylene (Total)	ug/kg	ND	150	03/26/18 10:56	
1,2-Dichloroethane-d4 (S)	%.	90	75-125	03/26/18 10:56	
4-Bromofluorobenzene (S)	%.	99	75-125	03/26/18 10:56	
Toluene-d8 (S)	%.	98	75-125	03/26/18 10:56	

LABORATORY CONTROL SAMPLE & LCSD: 2871003 2871004

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	828	958	83	96	59-125	15	20	
1,1,1-Trichloroethane	ug/kg	1000	802	933	80	93	59-125	15	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	803	971	80	97	58-125	19	20	N2
1,1,2-Trichloroethane	ug/kg	1000	778	897	78	90	64-125	14	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	776	922	78	92	65-125	17	20	
1,1-Dichloroethane	ug/kg	1000	754	861	75	86	63-125	13	20	
1,1-Dichloroethene	ug/kg	1000	790	968	79	97	59-125	20	20	
1,1-Dichloropropene	ug/kg	1000	799	946	80	95	64-125	17	20	
1,2,3-Trichlorobenzene	ug/kg	1000	776	965	78	97	55-126	22	20	R1
1,2,3-Trichloropropane	ug/kg	1000	736	872	74	87	62-125	17	20	
1,2,4-Trichlorobenzene	ug/kg	1000	804	961	80	96	62-125	18	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

LABORATORY CONTROL SAMPLE & LCSD: 2871003 2871004

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	793	931	79	93	59-125	16	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	1890	2200	76	88	54-125	15	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	781	899	78	90	64-125	14	20	
1,2-Dichlorobenzene	ug/kg	1000	765	890	76	89	63-125	15	20	
1,2-Dichloroethane	ug/kg	1000	684	807	68	81	57-125	17	20	
1,2-Dichloropropane	ug/kg	1000	779	896	78	90	67-125	14	20	
1,3,5-Trimethylbenzene	ug/kg	1000	811	936	81	94	59-125	14	20	
1,3-Dichlorobenzene	ug/kg	1000	738	884	74	88	64-125	18	20	
1,3-Dichloropropane	ug/kg	1000	757	878	76	88	64-125	15	20	
1,4-Dichlorobenzene	ug/kg	1000	766	874	77	87	63-125	13	20	
2,2-Dichloropropane	ug/kg	1000	860	973	86	97	37-126	12	20	
2-Butanone (MEK)	ug/kg	5000	3740	4230	75	85	48-125	12	20	
2-Chlorotoluene	ug/kg	1000	777	890	78	89	62-125	13	20	
4-Chlorotoluene	ug/kg	1000	763	893	76	89	63-125	16	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	3630	4290	73	86	52-135	17	20	
Acetone	ug/kg	5000	5390	6150	108	123	65-125	13	20	
Allyl chloride	ug/kg	1000	747	873	75	87	52-125	16	20	
Benzene	ug/kg	1000	765	859	76	86	61-125	12	20	
Bromobenzene	ug/kg	1000	794	916	79	92	64-125	14	20	
Bromochloromethane	ug/kg	1000	791	915	79	91	65-125	15	20	
Bromodichloromethane	ug/kg	1000	832	969	83	97	57-125	15	20	
Bromoform	ug/kg	1000	784	903	78	90	57-125	14	20	
Bromomethane	ug/kg	1000	777	845	78	85	60-125	8	20	
Carbon tetrachloride	ug/kg	1000	848	960	85	96	58-125	12	20	
Chlorobenzene	ug/kg	1000	782	883	78	88	66-125	12	20	
Chloroethane	ug/kg	1000	825	870	83	87	62-125	5	20	
Chloroform	ug/kg	1000	701	786	70	79	59-125	11	20	
Chloromethane	ug/kg	1000	733	791	73	79	50-125	8	20	
cis-1,2-Dichloroethene	ug/kg	1000	761	895	76	89	61-125	16	20	
cis-1,3-Dichloropropene	ug/kg	1000	794	937	79	94	61-125	17	20	
Dibromochloromethane	ug/kg	1000	790	890	79	89	60-125	12	20	
Dibromomethane	ug/kg	1000	808	948	81	95	69-125	16	20	
Dichlorodifluoromethane	ug/kg	1000	672	702	67	70	38-125	4	20	
Dichlorofluoromethane	ug/kg	1000	765	803	76	80	67-125	5	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1390	1250	139	125	60-125	11	20	L3
Ethylbenzene	ug/kg	1000	775	906	78	91	62-125	16	20	
Hexachloro-1,3-butadiene	ug/kg	1000	810	968	81	97	56-125	18	20	
Isopropylbenzene (Cumene)	ug/kg	1000	836	962	84	96	65-125	14	20	
Methyl-tert-butyl ether	ug/kg	1000	731	855	73	86	59-125	16	20	
Methylene Chloride	ug/kg	1000	774	888	77	89	64-125	14	20	
n-Butylbenzene	ug/kg	1000	802	976	80	98	59-125	20	20	
n-Propylbenzene	ug/kg	1000	808	931	81	93	61-125	14	20	
Naphthalene	ug/kg	1000	818	982	82	98	53-125	18	20	
p-Isopropyltoluene	ug/kg	1000	794	949	79	95	63-125	18	20	
sec-Butylbenzene	ug/kg	1000	819	960	82	96	62-125	16	20	
Styrene	ug/kg	1000	816	950	82	95	66-125	15	20	
tert-Butylbenzene	ug/kg	1000	806	939	81	94	64-125	15	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

LABORATORY CONTROL SAMPLE & LCSD: 2871003 2871004

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	810	941	81	94	67-125	15	20	
Tetrahydrofuran	ug/kg	10000	11200	12700	112	127	62-125	12	20	L3
Toluene	ug/kg	1000	798	905	80	91	61-125	13	20	
trans-1,2-Dichloroethene	ug/kg	1000	807	948	81	95	64-125	16	20	
trans-1,3-Dichloropropene	ug/kg	1000	809	946	81	95	56-125	16	20	
Trichloroethene	ug/kg	1000	767	896	77	90	67-125	15	20	N2
Trichlorofluoromethane	ug/kg	1000	782	818	78	82	65-125	5	20	
Vinyl chloride	ug/kg	1000	805	843	81	84	57-125	5	20	
Xylene (Total)	ug/kg	3000	2420	2790	81	93	62-125	14	20	
1,2-Dichloroethane-d4 (S)	%.				91	91	75-125			
4-Bromofluorobenzene (S)	%.				101	100	75-125			
Toluene-d8 (S)	%.				99	98	75-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 528957 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2870967 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/03/18 20:29	
4,4'-DDE	ug/kg	ND	3.3	04/03/18 20:29	
4,4'-DDT	ug/kg	ND	3.3	04/03/18 20:29	
Aldrin	ug/kg	ND	1.7	04/03/18 20:29	
alpha-BHC	ug/kg	ND	1.7	04/03/18 20:29	
alpha-Chlordane	ug/kg	ND	1.7	04/03/18 20:29	
beta-BHC	ug/kg	ND	1.7	04/03/18 20:29	
Chlordane (Technical)	ug/kg	ND	16.7	04/03/18 20:29	
delta-BHC	ug/kg	ND	1.7	04/03/18 20:29	
Dieldrin	ug/kg	ND	3.3	04/03/18 20:29	
Endosulfan I	ug/kg	ND	1.7	04/03/18 20:29	
Endosulfan II	ug/kg	ND	3.3	04/03/18 20:29	
Endosulfan sulfate	ug/kg	ND	3.3	04/03/18 20:29	
Endrin	ug/kg	ND	3.3	04/03/18 20:29	
Endrin aldehyde	ug/kg	ND	3.3	04/03/18 20:29	
Endrin ketone	ug/kg	ND	3.3	04/03/18 20:29	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/03/18 20:29	
gamma-Chlordane	ug/kg	ND	1.7	04/03/18 20:29	
Heptachlor	ug/kg	ND	1.7	04/03/18 20:29	
Heptachlor epoxide	ug/kg	ND	1.7	04/03/18 20:29	
Methoxychlor	ug/kg	ND	16.7	04/03/18 20:29	
Toxaphene	ug/kg	ND	50.0	04/03/18 20:29	
Decachlorobiphenyl (S)	%.	89	30-150	04/03/18 20:29	
Tetrachloro-m-xylene (S)	%.	95	30-150	04/03/18 20:29	

LABORATORY CONTROL SAMPLE: 2870968

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	36.7	110	62-127	
4,4'-DDE	ug/kg	33.3	36.5	110	66-125	
4,4'-DDT	ug/kg	33.3	38.7	116	67-128	
Aldrin	ug/kg	16.7	16.5	99	66-125	
alpha-BHC	ug/kg	16.7	16.8	101	64-125	
alpha-Chlordane	ug/kg	16.7	16.9	102	68-125	
beta-BHC	ug/kg	16.7	17.1	103	69-125	
delta-BHC	ug/kg	16.7	10.8	65	42-133	
Dieldrin	ug/kg	33.3	37.4	112	69-126	
Endosulfan I	ug/kg	16.7	15.5	93	63-125	
Endosulfan II	ug/kg	33.3	36.0	108	69-125	
Endosulfan sulfate	ug/kg	33.3	30.0	90	56-137	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

LABORATORY CONTROL SAMPLE: 2870968

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	34.6	104	69-125	
Endrin aldehyde	ug/kg	33.3	34.2	103	65-125	
Endrin ketone	ug/kg	33.3	36.6	110	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	17.3	104	67-125	
gamma-Chlordane	ug/kg	16.7	15.4	93	63-125	
Heptachlor	ug/kg	16.7	18.1	108	69-125	
Heptachlor epoxide	ug/kg	16.7	17.2	103	68-125	
Methoxychlor	ug/kg	167	189	114	65-134	
Decachlorobiphenyl (S)	%.			94	30-150	
Tetrachloro-m-xylene (S)	%.			104	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2871047 2871048

Parameter	Units	10424609004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	43.9	43.9	68.1J	70.1J	155	159	56-125		20	M6
4,4'-DDE	ug/kg	ND	43.9	43.9	58.9J	59J	134	134	32-150		20	
4,4'-DDT	ug/kg	ND	43.9	43.9	54.9J	51.6J	125	117	60-132		20	
Aldrin	ug/kg	ND	22	22	33.3J	32J	151	146	56-125		20	M6
alpha-BHC	ug/kg	ND	22	22	24.9J	30.5J	114	139	54-136		20	M6
alpha-Chlordane	ug/kg	ND	22	22	22.2J	20.5J	101	93	54-133		20	
beta-BHC	ug/kg	ND	22	22	39.4J	39.3J	179	179	30-150		20	M6
delta-BHC	ug/kg	ND	22	22	18.1J	17.2J	82	78	45-145		20	
Dieldrin	ug/kg	ND	43.9	43.9	79.1J	65.5J	180	149	47-150		20	M6
Endosulfan I	ug/kg	ND	22	22	37J	33.1J	169	151	35-145		20	M6
Endosulfan II	ug/kg	ND	43.9	43.9	50.1J	50.9J	114	116	50-147		20	
Endosulfan sulfate	ug/kg	ND	43.9	43.9	43.1J	41.2J	98	94	54-132		20	
Endrin	ug/kg	ND	43.9	43.9	7.4J	48.7J	17	111	62-125		20	M6
Endrin aldehyde	ug/kg	ND	43.9	43.9	58.9J	69J	134	157	33-150		20	M6
Endrin ketone	ug/kg	ND	43.9	43.9	50.9J	53.6J	116	122	56-144		20	
gamma-BHC (Lindane)	ug/kg	ND	22	22	27.3J	27.6J	124	126	63-125		20	M6
gamma-Chlordane	ug/kg	ND	22	22	39.2J	38.8J	179	176	45-132		20	M6
Heptachlor	ug/kg	ND	22	22	27.3J	34.4J	124	157	51-142		20	M6
Heptachlor epoxide	ug/kg	ND	22	22	20.6J	21.9J	94	100	50-142		20	
Methoxychlor	ug/kg	ND	220	220	255J	252J	116	114	58-139		20	
Decachlorobiphenyl (S)	%.						0	0	30-150			S4
Tetrachloro-m-xylene (S)	%.						0	0	30-150			3M, D3, S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 528834 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2870017 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	03/26/18 16:38	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	03/26/18 16:38	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	03/26/18 16:38	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	03/26/18 16:38	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	03/26/18 16:38	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	03/26/18 16:38	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	03/26/18 16:38	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	03/26/18 16:38	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	03/26/18 16:38	
Decachlorobiphenyl (S)	%.	87	30-134	03/26/18 16:38	
Tetrachloro-m-xylene (S)	%.	82	48-125	03/26/18 16:38	

LABORATORY CONTROL SAMPLE: 2870018

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	562	84	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	571	86	62-125	
Decachlorobiphenyl (S)	%.			89	30-134	
Tetrachloro-m-xylene (S)	%.			86	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2870019 2870020

Parameter	Units	10424607001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	847	847	459	692	54	82	30-150	40	30	R1
PCB-1260 (Aroclor 1260)	ug/kg	ND	847	847	460	699	54	82	30-138	41	30	R1
Decachlorobiphenyl (S)	%.						56	81	30-134			
Tetrachloro-m-xylene (S)	%.						59	87	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 529268 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2872570 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1,2-Dichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1,2-Diphenylhydrazine	ug/kg	ND	330	03/30/18 11:47	
1,3-Dichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1,4-Dichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1-Methylnaphthalene	ug/kg	ND	330	03/30/18 11:47	
2,4,5-Trichlorophenol	ug/kg	ND	330	03/30/18 11:47	
2,4,6-Trichlorophenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dichlorophenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dimethylphenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dinitrophenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dinitrotoluene	ug/kg	ND	330	03/30/18 11:47	
2,6-Dinitrotoluene	ug/kg	ND	330	03/30/18 11:47	
2-Chloronaphthalene	ug/kg	ND	330	03/30/18 11:47	
2-Chlorophenol	ug/kg	ND	330	03/30/18 11:47	
2-Methylnaphthalene	ug/kg	ND	330	03/30/18 11:47	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	03/30/18 11:47	
2-Nitroaniline	ug/kg	ND	330	03/30/18 11:47	
2-Nitrophenol	ug/kg	ND	330	03/30/18 11:47	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	03/30/18 11:47	
3,3'-Dichlorobenzidine	ug/kg	ND	330	03/30/18 11:47	
3-Nitroaniline	ug/kg	ND	330	03/30/18 11:47	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	03/30/18 11:47	
4-Bromophenylphenyl ether	ug/kg	ND	330	03/30/18 11:47	
4-Chloro-3-methylphenol	ug/kg	ND	330	03/30/18 11:47	
4-Chloroaniline	ug/kg	ND	330	03/30/18 11:47	
4-Chlorophenylphenyl ether	ug/kg	ND	330	03/30/18 11:47	
4-Nitroaniline	ug/kg	ND	330	03/30/18 11:47	
4-Nitrophenol	ug/kg	ND	330	03/30/18 11:47	
Acenaphthene	ug/kg	ND	330	03/30/18 11:47	
Acenaphthylene	ug/kg	ND	330	03/30/18 11:47	
Anthracene	ug/kg	ND	330	03/30/18 11:47	
Benzo(a)anthracene	ug/kg	ND	330	03/30/18 11:47	
Benzo(a)pyrene	ug/kg	ND	330	03/30/18 11:47	
Benzo(b)fluoranthene	ug/kg	ND	330	03/30/18 11:47	
Benzo(g,h,i)perylene	ug/kg	ND	330	03/30/18 11:47	
Benzo(k)fluoranthene	ug/kg	ND	330	03/30/18 11:47	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	03/30/18 11:47	
bis(2-Chloroethyl) ether	ug/kg	ND	330	03/30/18 11:47	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	03/30/18 11:47	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	03/30/18 11:47	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

METHOD BLANK: 2872570 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	03/30/18 11:47	
Carbazole	ug/kg	ND	330	03/30/18 11:47	
Chrysene	ug/kg	ND	330	03/30/18 11:47	
Di-n-butylphthalate	ug/kg	ND	330	03/30/18 11:47	
Di-n-octylphthalate	ug/kg	ND	330	03/30/18 11:47	
Dibenz(a,h)anthracene	ug/kg	ND	330	03/30/18 11:47	
Dibenzofuran	ug/kg	ND	330	03/30/18 11:47	
Diethylphthalate	ug/kg	ND	330	03/30/18 11:47	
Dimethylphthalate	ug/kg	ND	330	03/30/18 11:47	
Fluoranthene	ug/kg	ND	330	03/30/18 11:47	
Fluorene	ug/kg	ND	330	03/30/18 11:47	
Hexachloro-1,3-butadiene	ug/kg	ND	330	03/30/18 11:47	
Hexachlorobenzene	ug/kg	ND	330	03/30/18 11:47	
Hexachloroethane	ug/kg	ND	330	03/30/18 11:47	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	03/30/18 11:47	
Isophorone	ug/kg	ND	330	03/30/18 11:47	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	03/30/18 11:47	
N-Nitrosodimethylamine	ug/kg	ND	330	03/30/18 11:47	
N-Nitrosodiphenylamine	ug/kg	ND	330	03/30/18 11:47	
Naphthalene	ug/kg	ND	330	03/30/18 11:47	
Nitrobenzene	ug/kg	ND	330	03/30/18 11:47	
Pentachlorophenol	ug/kg	ND	670	03/30/18 11:47	
Phenanthrene	ug/kg	ND	330	03/30/18 11:47	
Phenol	ug/kg	ND	330	03/30/18 11:47	
Pyrene	ug/kg	ND	330	03/30/18 11:47	
2,4,6-Tribromophenol (S)	%.	73	60-125	03/30/18 11:47	
2-Fluorobiphenyl (S)	%.	58	30-132	03/30/18 11:47	
2-Fluorophenol (S)	%.	55	40-125	03/30/18 11:47	
Nitrobenzene-d5 (S)	%.	54	43-125	03/30/18 11:47	
p-Terphenyl-d14 (S)	%.	90	62-125	03/30/18 11:47	
Phenol-d6 (S)	%.	56	48-125	03/30/18 11:47	

LABORATORY CONTROL SAMPLE: 2872571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1020	61	46-125	
1,2-Dichlorobenzene	ug/kg	1670	999	60	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1310	78	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1010	61	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1010	61	39-125	
1-Methylnaphthalene	ug/kg	1670	1080	65	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1220	73	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1200	72	61-125	
2,4-Dichlorophenol	ug/kg	1670	1060	64	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

LABORATORY CONTROL SAMPLE: 2872571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1030	62	51-125	
2,4-Dinitrophenol	ug/kg	1670	1200	72	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1250	75	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1240	74	63-125	
2-Chloronaphthalene	ug/kg	1670	1130	68	61-125	
2-Chlorophenol	ug/kg	1670	1020	61	46-125	
2-Methylnaphthalene	ug/kg	1670	1080	65	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1080	65	50-125	
2-Nitroaniline	ug/kg	1670	1380	83	61-125	
2-Nitrophenol	ug/kg	1670	1030	62	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1080	65	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1290	78	47-125	
3-Nitroaniline	ug/kg	1670	1220	73	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1380J	83	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1350	81	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1180	71	64-125	
4-Chloroaniline	ug/kg	1670	944	57	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1210	73	64-125	
4-Nitroaniline	ug/kg	1670	1180	71	59-125	
4-Nitrophenol	ug/kg	1670	1320	79	54-125	
Acenaphthene	ug/kg	1670	1190	72	62-125	
Acenaphthylene	ug/kg	1670	1140	69	61-125	
Anthracene	ug/kg	1670	1280	77	66-125	
Benzo(a)anthracene	ug/kg	1670	1300	78	69-125	
Benzo(a)pyrene	ug/kg	1670	1310	79	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1380	83	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1320	79	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1300	78	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1120	67	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1090	65	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1180	71	37-125	
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1330	80	69-131	
Butylbenzylphthalate	ug/kg	1670	1340	81	69-129	
Carbazole	ug/kg	1670	1290	77	66-125	
Chrysene	ug/kg	1670	1300	78	68-125	
Di-n-butylphthalate	ug/kg	1670	1360	81	69-125	
Di-n-octylphthalate	ug/kg	1670	1310	79	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1340	81	64-125	
Dibenzofuran	ug/kg	1670	1200	72	65-125	
Diethylphthalate	ug/kg	1670	1280	77	67-125	
Dimethylphthalate	ug/kg	1670	1240	75	67-125	
Fluoranthene	ug/kg	1670	1280	77	66-125	
Fluorene	ug/kg	1670	1190	71	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1040	62	40-125	
Hexachlorobenzene	ug/kg	1670	1320	79	62-125	
Hexachloroethane	ug/kg	1670	1010	61	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1320	79	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

LABORATORY CONTROL SAMPLE: 2872571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1130	68	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1150	69	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1090	65	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1320	79	65-125	
Naphthalene	ug/kg	1670	1050	63	48-125	
Nitrobenzene	ug/kg	1670	1130	68	48-125	
Pentachlorophenol	ug/kg	1670	1220	73	41-125	
Phenanthrene	ug/kg	1670	1300	78	66-125	
Phenol	ug/kg	1670	1110	67	46-125	
Pyrene	ug/kg	1670	1360	82	69-125	
2,4,6-Tribromophenol (S)	%.			85	60-125	
2-Fluorobiphenyl (S)	%.			76	30-132	
2-Fluorophenol (S)	%.			69	40-125	
Nitrobenzene-d5 (S)	%.			71	43-125	
p-Terphenyl-d14 (S)	%.			89	62-125	
Phenol-d6 (S)	%.			72	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872788 2872789

Parameter	Units	10424792001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	1720	1710	1460J	1420J	85	83	30-127		30	
1,2-Dichlorobenzene	ug/kg	ND	1720	1710	1360J	1370J	79	80	30-125		30	
1,2-Diphenylhydrazine	ug/kg	ND	1720	1710	1710	1620J	100	95	30-150		30	
1,3-Dichlorobenzene	ug/kg	ND	1720	1710	1400J	1320J	82	77	30-125		30	
1,4-Dichlorobenzene	ug/kg	ND	1720	1710	1400J	1350J	82	79	30-125		30	
1-Methylnaphthalene	ug/kg	ND	1720	1710	1540J	1510J	90	88	42-125		30	
2,4,5-Trichlorophenol	ug/kg	ND	1720	1710	1470J	1350J	86	79	30-150		30	
2,4,6-Trichlorophenol	ug/kg	ND	1720	1710	1330J	1320J	78	77	30-150		30	
2,4-Dichlorophenol	ug/kg	ND	1720	1710	1550J	1480J	91	87	30-135		30	
2,4-Dimethylphenol	ug/kg	ND	1720	1710	1440J	1430J	84	84	30-148		30	
2,4-Dinitrophenol	ug/kg	ND	1720	1710	ND	ND	5	4	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	ND	1720	1710	1560J	1560J	91	92	30-150		30	
2,6-Dinitrotoluene	ug/kg	ND	1720	1710	1650J	1720	96	100	30-150		30	
2-Chloronaphthalene	ug/kg	ND	1720	1710	1580J	1500J	92	88	30-138		30	
2-Chlorophenol	ug/kg	ND	1720	1710	1500J	1450J	88	85	30-130		30	
2-Methylnaphthalene	ug/kg	ND	1720	1710	1530J	1640J	89	96	46-125		30	
2-Methylphenol(o-Cresol)	ug/kg	ND	1720	1710	1590J	1490J	93	87	30-133		30	
2-Nitroaniline	ug/kg	ND	1720	1710	1650J	1750	97	103	30-150		30	
2-Nitrophenol	ug/kg	ND	1720	1710	1360J	1410J	79	83	30-134		30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	1720	1710	1600J	1590J	94	93	30-138		30	
3,3'-Dichlorobenzidine	ug/kg	ND	1720	1710	1340J	1500J	78	88	30-149		30	6M
3-Nitroaniline	ug/kg	ND	1720	1710	1300J	1180J	76	69	30-150		30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1720	1710	ND	ND	19	20	30-133		30	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872788 2872789

Parameter	Units	10424792001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	1720	1710	1670J	1600J	97	94	44-125		30	
4-Chloro-3-methylphenol	ug/kg	ND	1720	1710	1580J	ND	92	99	30-150		30	
4-Chloroaniline	ug/kg	ND	1720	1710	1010J	930J	59	54	30-125		30	
4-Chlorophenylphenyl ether	ug/kg	ND	1720	1710	1630J	1540J	95	90	44-125		30	
4-Nitroaniline	ug/kg	ND	1720	1710	1500J	1440J	87	84	30-150		30	
4-Nitrophenol	ug/kg	ND	1720	1710	1450J	1370J	85	80	30-150		30	
Acenaphthene	ug/kg	ND	1720	1710	1490J	1430J	87	84	40-125		30	
Acenaphthylene	ug/kg	ND	1720	1710	1560J	1470J	91	86	30-150		30	
Anthracene	ug/kg	ND	1720	1710	1770	1800	103	106	30-150	2	30	
Benzo(a)anthracene	ug/kg	ND	1720	1710	1970	1970	115	115	30-150	0	30	
Benzo(a)pyrene	ug/kg	ND	1720	1710	1860	1850	109	108	30-150	1	30	
Benzo(b)fluoranthene	ug/kg	ND	1720	1710	1560J	1770	91	104	30-150		30	
Benzo(g,h,i)perylene	ug/kg	ND	1720	1710	1600J	1710	93	100	30-150		30	
Benzo(k)fluoranthene	ug/kg	ND	1720	1710	1660J	1550J	97	91	30-150		30	
bis(2-Chloroethoxy)methane	ug/kg	ND	1720	1710	1520J	1460J	89	85	30-134		30	
bis(2-Chloroethyl) ether	ug/kg	ND	1720	1710	1570J	1550J	91	91	30-125		30	6M
bis(2-Chloroisopropyl) ether	ug/kg	ND	1720	1710	1780	1600J	104	94	30-125		30	6M
bis(2-Ethylhexyl)phthalate	ug/kg	ND	1720	1710	1780	1880	104	110	30-150	5	30	
Butylbenzylphthalate	ug/kg	ND	1720	1710	1740	1790	102	105	30-150	3	30	
Carbazole	ug/kg	ND	1720	1710	1660J	1710	97	100	41-125		30	
Chrysene	ug/kg	ND	1720	1710	2070	2030	121	119	30-150	2	30	
Di-n-butylphthalate	ug/kg	ND	1720	1710	1730	1740	101	102	30-150	0	30	
Di-n-octylphthalate	ug/kg	ND	1720	1710	1840	1870	108	110	30-150	2	30	
Dibenz(a,h)anthracene	ug/kg	ND	1720	1710	1540J	1680J	90	98	30-150		30	
Dibenzofuran	ug/kg	ND	1720	1710	1620J	1590J	95	93	45-125		30	
Diethylphthalate	ug/kg	ND	1720	1710	1680J	1660J	98	97	30-150		30	
Dimethylphthalate	ug/kg	ND	1720	1710	1650J	1630J	97	96	30-150		30	
Fluoranthene	ug/kg	ND	1720	1710	1750	1740	102	102	30-150	0	30	
Fluorene	ug/kg	ND	1720	1710	1620J	1660J	95	97	30-150		30	
Hexachloro-1,3-butadiene	ug/kg	ND	1720	1710	1380J	1460J	80	86	30-128		30	
Hexachlorobenzene	ug/kg	ND	1720	1710	1500J	1500J	87	88	30-150		30	
Hexachloroethane	ug/kg	ND	1720	1710	1440J	1350J	84	79	30-125		30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	1720	1710	1500J	1650J	88	97	30-150		30	
Isophorone	ug/kg	ND	1720	1710	1570J	1550J	92	91	30-140		30	
N-Nitroso-di-n-propylamine	ug/kg	ND	1720	1710	1680J	1570J	98	92	30-147		30	6M
N-Nitrosodimethylamine	ug/kg	ND	1720	1710	1420J	1330J	83	78	30-125		30	
N-Nitrosodiphenylamine	ug/kg	ND	1720	1710	1610J	1720	94	101	30-150		30	
Naphthalene	ug/kg	ND	1720	1710	1520J	1480J	89	86	44-125		30	
Nitrobenzene	ug/kg	ND	1720	1710	1580J	1550J	92	91	30-136		30	
Pentachlorophenol	ug/kg	ND	1720	1710	ND	ND	23	22	30-150		30	M1
Phenanthrene	ug/kg	ND	1720	1710	1890	1950	110	114	30-150	3	30	
Phenol	ug/kg	ND	1720	1710	1530J	1490J	89	87	30-129		30	
Pyrene	ug/kg	ND	1720	1710	2160	2260	126	132	30-150	4	30	
2,4,6-Tribromophenol (S)	%.						86	83	60-125			
2-Fluorobiphenyl (S)	%.						98	95	30-132			
2-Fluorophenol (S)	%.						95	88	40-125			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872788 2872789

Parameter	Units	10424792001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						93	93	43-125			
p-Terphenyl-d14 (S)	%.						97	103	62-125			
Phenol-d6 (S)	%.						95	93	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 528955 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2870959 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	03/27/18 13:28	
Acenaphthylene	ug/kg	ND	10.0	03/27/18 13:28	
Anthracene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(a)anthracene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(a)pyrene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(b)fluoranthene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	03/27/18 13:28	
Benzo(k)fluoranthene	ug/kg	ND	10.0	03/27/18 13:28	
Chrysene	ug/kg	ND	10.0	03/27/18 13:28	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	03/27/18 13:28	
Fluoranthene	ug/kg	ND	10.0	03/27/18 13:28	
Fluorene	ug/kg	ND	10.0	03/27/18 13:28	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	03/27/18 13:28	
Naphthalene	ug/kg	ND	10.0	03/27/18 13:28	
Phenanthrene	ug/kg	ND	10.0	03/27/18 13:28	
Pyrene	ug/kg	ND	10.0	03/27/18 13:28	
2-Fluorobiphenyl (S)	%.	78	42-125	03/27/18 13:28	
p-Terphenyl-d14 (S)	%.	87	57-125	03/27/18 13:28	

LABORATORY CONTROL SAMPLE: 2870960

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	22.8	68	52-125	
Acenaphthylene	ug/kg	33.3	24.9	75	50-125	
Anthracene	ug/kg	33.3	29.1	87	65-125	
Benzo(a)anthracene	ug/kg	33.3	30.7	92	60-125	
Benzo(a)pyrene	ug/kg	33.3	30.7	92	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	31.4	94	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	24.5	73	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	27.4	82	67-125	
Chrysene	ug/kg	33.3	28.3	85	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	22.8	68	63-125	
Fluoranthene	ug/kg	33.3	30.9	93	75-125	
Fluorene	ug/kg	33.3	23.1	69	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	23.9	72	63-125	
Naphthalene	ug/kg	33.3	25.1	75	49-125	
Phenanthrene	ug/kg	33.3	23.8	71	65-125	
Pyrene	ug/kg	33.3	29.6	89	64-125	
2-Fluorobiphenyl (S)	%.			73	42-125	
p-Terphenyl-d14 (S)	%.			89	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2871138 2871139

Parameter	Units	10424835001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	34.2	34.2	22.3	22.6	65	66	30-125	1	30	
Acenaphthylene	ug/kg	ND	34.2	34.2	23.2	23.2	68	68	30-133	0	30	
Anthracene	ug/kg	ND	34.2	34.2	28.2	26.5	83	77	30-150	6	30	
Benzo(a)anthracene	ug/kg	ND	34.2	34.2	28.8	28.3	84	83	30-150	2	30	
Benzo(a)pyrene	ug/kg	ND	34.2	34.2	29.2	28.1	85	82	30-150	4	30	
Benzo(b)fluoranthene	ug/kg	ND	34.2	34.2	27.5	27.1	80	79	30-150	1	30	
Benzo(g,h,i)perylene	ug/kg	ND	34.2	34.2	28.6	27.6	84	81	30-150	4	30	
Benzo(k)fluoranthene	ug/kg	ND	34.2	34.2	25.8	24.0	75	70	30-150	7	30	
Chrysene	ug/kg	ND	34.2	34.2	27.3	26.0	80	76	30-150	5	30	
Dibenz(a,h)anthracene	ug/kg	ND	34.2	34.2	23.7	23.3	69	68	30-131	2	30	
Fluoranthene	ug/kg	ND	34.2	34.2	28.6	27.7	84	81	30-150	3	30	
Fluorene	ug/kg	ND	34.2	34.2	24.0	22.4	70	66	30-147	7	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	34.2	34.2	26.5	25.3	78	74	30-150	5	30	
Naphthalene	ug/kg	ND	34.2	34.2	21.6	22.6	63	66	30-131	4	30	
Phenanthrene	ug/kg	ND	34.2	34.2	23.6	22.8	69	67	30-150	3	30	
Pyrene	ug/kg	ND	34.2	34.2	28.6	27.3	84	80	30-150	5	30	
2-Fluorobiphenyl (S)	%.						66	65	42-125			
p-Terphenyl-d14 (S)	%.						82	81	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 529569 Analysis Method: EPA 8270D
QC Batch Method: EPA 3546 Analysis Description: MDA2 Solid MSSV
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2874519 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,5-T	mg/kg	ND	0.033	04/04/18 13:35	
2,4,5-TP (Silvex)	mg/kg	ND	0.033	04/04/18 13:35	
2,4-D	mg/kg	ND	0.033	04/04/18 13:35	
2,4-DB	mg/kg	ND	0.033	04/04/18 13:35	
Bentazon	mg/kg	ND	0.033	04/04/18 13:35	
Dicamba	mg/kg	ND	0.033	04/04/18 13:35	
Dinoseb	mg/kg	ND	0.033	04/04/18 13:35	
MCPA	mg/kg	ND	0.033	04/04/18 13:35	
Pentachlorophenol	mg/kg	ND	0.033	04/04/18 13:35	
Picloram	mg/kg	ND	0.033	04/04/18 13:35	
Triclopyr	mg/kg	ND	0.033	04/04/18 13:35	
2,4-DCAA (S)	%.	78	46-125	04/04/18 13:35	

LABORATORY CONTROL SAMPLE: 2874520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-T	mg/kg	.33	0.28	83	60-125	
2,4,5-TP (Silvex)	mg/kg	.33	0.26	79	61-125	
2,4-D	mg/kg	.33	0.29	86	63-125	
2,4-DB	mg/kg	.33	0.28	83	59-125	
Bentazon	mg/kg	.33	0.25	76	58-125	
Dicamba	mg/kg	.33	0.27	80	52-125	
Dinoseb	mg/kg	.33	0.18	53	35-126	
MCPA	mg/kg	.33	0.27	82	57-125	
Pentachlorophenol	mg/kg	.33	0.21	63	48-125	
Picloram	mg/kg	.33	0.24	72	47-125	
Triclopyr	mg/kg	.33	0.28	83	68-125	
2,4-DCAA (S)	%.			77	46-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874521 2874522

Parameter	Units	10425111006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2,4,5-T	mg/kg	ND	.45	.45	0.19	0.21	42	45	30-145	8	20	
2,4,5-TP (Silvex)	mg/kg	ND	.45	.45	0.28	0.26	63	58	30-130	7	20	
2,4-D	mg/kg	ND	.45	.45	0.18	0.20	40	44	30-150	9	20	
2,4-DB	mg/kg	ND	.45	.45	0.35	0.33	77	72	45-126	7	20	
Bentazon	mg/kg	ND	.45	.45	0.33	0.32	73	71	30-133	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874521 2874522

Parameter	Units	10425111006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Dicamba	mg/kg	ND	.45	.45	0.13	0.17	29	38	30-140	28	20	M1,R1
Dinoseb	mg/kg	ND	.45	.45	0.39	0.31	86	69	30-136	23	20	R1
MCPA	mg/kg	ND	.45	.45	0.24	0.22	53	49	30-136	9	20	
Pentachlorophenol	mg/kg	ND	.45	.45	0.28	0.25	63	55	44-125	13	20	
Picloram	mg/kg	ND	.45	.45	.016J	0.098	3	22	30-125		20	M1
Triclopyr	mg/kg	ND	.45	.45	0.23	0.22	51	50	30-149	3	20	
2,4-DCAA (S)	%.						65	60	46-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 529084 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10424609005

METHOD BLANK: 2871419 Matrix: Solid
Associated Lab Samples: 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	03/27/18 20:40	
n-Triacontane (S)	%.	89	50-150	03/27/18 20:40	

LABORATORY CONTROL SAMPLE & LCSD: 2871420 2871421

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	79.1	72.1	99	90	70-120	9	20	
n-Triacontane (S)	%.				91	89	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 529461 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004

METHOD BLANK: 2873677 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	03/29/18 10:21	
n-Triacontane (S)	%.	80	50-150	03/29/18 10:21	

LABORATORY CONTROL SAMPLE & LCSD: 2873678 2873679

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	69.1	90.2	86	113	70-120	26	20	R1
n-Triacontane (S)	%.				82	75	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 434844 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 2008420 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/03/18 11:09	

LABORATORY CONTROL SAMPLE: 2008421

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1090	929	85	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2008432 2008433

Parameter	Units	50193104001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	2190	2230	ND	ND	0	0	75-125		20	2M,M3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2008434 2008435

Parameter	Units	50193104001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	79.1	80.9	4.7J	6.3J	2	4	75-125		20	M3

SAMPLE DUPLICATE: 2008431

Parameter	Units	469837006 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 284583 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 1665486 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	03/29/18 12:56	

LABORATORY CONTROL SAMPLE: 1665487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665488 1665489

Parameter	Units	10424609003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	ND	3.62	3.62	2.8	3.2	66	77	80-120	13	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665490 1665491

Parameter	Units	10424937006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.56	4.11	4.26	4.2	4.0	89	81	80-120	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

QC Batch: 139574 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

METHOD BLANK: 552775 Matrix: Solid
Associated Lab Samples: 10424609001, 10424609002, 10424609003, 10424609004, 10424609005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	1.0	03/30/18 17:59	

LABORATORY CONTROL SAMPLE: 552774

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	48.5	49.5	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 552776 552777

Parameter	Units	12106344002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	3.3	49	49.8	53.1	53.4	102	101	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 552778 552779

Parameter	Units	12106344011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.1	49.2	49.8	47.4	47.0	92	90	80-120	1	20	

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QUALIFIERS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

BATCH QUALIFIERS

Batch: 529212

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	RPD value is outside control limits due to sample non-homogeneity.
2M	Redox (25 mv) and pH (7.84) values indicate a naturally reducing matrix. This accounts for poor recovery values on the sample per method Eh/pH phase diagram.
3M	Sample was black in color and needed to be centrifuged and decanted prior to analysis.
4M	Sample was black in color and slightly viscous. Sample needed to be centrifuged and decanted prior to analysis.
5M	Sample was dark brown in color.
6M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
7M	The sample was re-weighed into a new container because the original container had no tare weight.
C0	Result confirmed by second analysis.

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QUALIFIERS

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
T6	High boiling point hydrocarbons are present in the sample.

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424609001	**FD-SB-A4 (26-32.5)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424609004	**FD-SB-D4-WM (5-20)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424609005	**FD-SB-E4-WM (3-21)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424609001	**FD-SB-A4 (26-32.5)**	EPA 3550	528957	EPA 8081B	530398
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 3550	528957	EPA 8081B	530398
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 3550	528957	EPA 8081B	530398
10424609004	**FD-SB-D4-WM (5-20)**	EPA 3550	528957	EPA 8081B	530398
10424609005	**FD-SB-E4-WM (3-21)**	EPA 3550	528957	EPA 8081B	530398
10424609001	**FD-SB-A4 (26-32.5)**	EPA 3550	528834	EPA 8082A	529071
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 3550	528834	EPA 8082A	529071
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 3550	528834	EPA 8082A	529071
10424609004	**FD-SB-D4-WM (5-20)**	EPA 3550	528834	EPA 8082A	529071
10424609005	**FD-SB-E4-WM (3-21)**	EPA 3550	528834	EPA 8082A	529071
10424609001	**FD-SB-A4 (26-32.5)**	WI MOD DRO	529461	WI MOD DRO	529593
10424609002	**FD-SB-B4-WM (3-20 WM)**	WI MOD DRO	529461	WI MOD DRO	529593
10424609003	**FD-SB-C4-WM (5-20 WM)**	WI MOD DRO	529461	WI MOD DRO	529593
10424609004	**FD-SB-D4-WM (5-20)**	WI MOD DRO	529461	WI MOD DRO	529593
10424609005	**FD-SB-E4-WM (3-21)**	WI MOD DRO	529084	WI MOD DRO	529165
10424609001	**FD-SB-A4 (26-32.5)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424609004	**FD-SB-D4-WM (5-20)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424609005	**FD-SB-E4-WM (3-21)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424609001	**FD-SB-A4 (26-32.5)**	EPA 3050	528915	EPA 6010C	528992
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 3050	528915	EPA 6010C	528992
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 3050	528915	EPA 6010C	528992
10424609004	**FD-SB-D4-WM (5-20)**	EPA 3050	528915	EPA 6010C	528992
10424609005	**FD-SB-E4-WM (3-21)**	EPA 3050	528915	EPA 6010C	528992
10424609001	**FD-SB-A4 (26-32.5)**	EPA 3050B	434613	EPA 6020	434971
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 3050B	434613	EPA 6020	434971
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 3050B	434613	EPA 6020	434971
10424609004	**FD-SB-D4-WM (5-20)**	EPA 3050B	434613	EPA 6020	434971
10424609005	**FD-SB-E4-WM (3-21)**	EPA 3050B	434613	EPA 6020	434971
10424609001	**FD-SB-A4 (26-32.5)**	EPA 3050	528917	EPA 6020A	529111
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 3050	528917	EPA 6020A	529111
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 3050	528917	EPA 6020A	529111
10424609004	**FD-SB-D4-WM (5-20)**	EPA 3050	528917	EPA 6020A	529111
10424609005	**FD-SB-E4-WM (3-21)**	EPA 3050	528917	EPA 6020A	529111
10424609001	**FD-SB-A4 (26-32.5)**	EPA 7471	529743	EPA 7471	529845
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 7471	529743	EPA 7471	529845
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 7471	529743	EPA 7471	529845
10424609004	**FD-SB-D4-WM (5-20)**	EPA 7471	529743	EPA 7471	529845

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424609005	**FD-SB-E4-WM (3-21)**	EPA 7471	529743	EPA 7471	529845
10424609001	**FD-SB-A4 (26-32.5)**	ASTM D2974	528989		
10424609002	**FD-SB-B4-WM (3-20 WM)**	ASTM D2974	528989		
10424609003	**FD-SB-C4-WM (5-20 WM)**	ASTM D2974	528989		
10424609004	**FD-SB-D4-WM (5-20)**	ASTM D2974	528989		
10424609005	**FD-SB-E4-WM (3-21)**	ASTM D2974	528989		
10424609001	**FD-SB-A4 (26-32.5)**	EPA 3550	529268	EPA 8270D	529887
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 3550	529268	EPA 8270D	529887
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 3550	529268	EPA 8270D	529887
10424609004	**FD-SB-D4-WM (5-20)**	EPA 3550	529268	EPA 8270D	529887
10424609005	**FD-SB-E4-WM (3-21)**	EPA 3550	529268	EPA 8270D	529887
10424609001	**FD-SB-A4 (26-32.5)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424609004	**FD-SB-D4-WM (5-20)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424609005	**FD-SB-E4-WM (3-21)**	EPA 3550	528955	EPA 8270D by SIM	529226
10424609001	**FD-SB-A4 (26-32.5)**	EPA 3546	529569	EPA 8270D	530638
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 3546	529569	EPA 8270D	530638
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 3546	529569	EPA 8270D	530638
10424609004	**FD-SB-D4-WM (5-20)**	EPA 3546	529569	EPA 8270D	530638
10424609005	**FD-SB-E4-WM (3-21)**	EPA 3546	529569	EPA 8270D	530638
10424609001	**FD-SB-A4 (26-32.5)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424609004	**FD-SB-D4-WM (5-20)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424609005	**FD-SB-E4-WM (3-21)**	EPA 5035/5030B	528973	EPA 8260B	529212
10424609001	**FD-SB-A4 (26-32.5)**	EPA 3060A	434844	EPA 7196A	435162
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 3060A	434844	EPA 7196A	435162
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 3060A	434844	EPA 7196A	435162
10424609004	**FD-SB-D4-WM (5-20)**	EPA 3060A	434844	EPA 7196A	435162
10424609005	**FD-SB-E4-WM (3-21)**	EPA 3060A	434844	EPA 7196A	435162
10424609001	**FD-SB-A4 (26-32.5)**	Trivalent Chromium Calculation	435725		
10424609002	**FD-SB-B4-WM (3-20 WM)**	Trivalent Chromium Calculation	435725		
10424609003	**FD-SB-C4-WM (5-20 WM)**	Trivalent Chromium Calculation	435725		
10424609004	**FD-SB-D4-WM (5-20)**	Trivalent Chromium Calculation	435725		
10424609005	**FD-SB-E4-WM (3-21)**	Trivalent Chromium Calculation	435725		
10424609001	**FD-SB-A4 (26-32.5)**	EPA 9012A	284583	EPA 9012	284661
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 9012A	284583	EPA 9012	284661
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 9012A	284583	EPA 9012	284661
10424609004	**FD-SB-D4-WM (5-20)**	EPA 9012A	284583	EPA 9012	284661
10424609005	**FD-SB-E4-WM (3-21)**	EPA 9012A	284583	EPA 9012	284661

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA FreewayLF Solids-Revised Report
Pace Project No.: 10424609

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424609001	**FD-SB-A4 (26-32.5)**	EPA 300.0	139574	EPA 9056A	139586
10424609002	**FD-SB-B4-WM (3-20 WM)**	EPA 300.0	139574	EPA 9056A	139586
10424609003	**FD-SB-C4-WM (5-20 WM)**	EPA 300.0	139574	EPA 9056A	139586
10424609004	**FD-SB-D4-WM (5-20)**	EPA 300.0	139574	EPA 9056A	139586
10424609005	**FD-SB-E4-WM (3-21)**	EPA 300.0	139574	EPA 9056A	139586

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WO# : 10424609

10424609

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number:

COC Type

Turnaround Time:

COC ID:

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MPCA - Freeway LF solids	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA - Freeway LF solids	Project Task Code:	Address: 18-00383
Project Manager:			EPIC Profile # 38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

FOR LAB USE ONLY — Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

PRESERV.

ANALYSIS: See attached for soils/waste (C-Dioxins) + Dioxins

Location Identifier	Sample Type	Date	Time	Start Depth, in ~~meters~~	End Depth, in ~~meters~~	Grab (G) or Composite (C)	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	See attached for soils/waste (C-Dioxins)	+ Dioxins	Lab Sample No.	#
FD-5B-A4 (26-32.5)	S	3/22/18	1125	26"	32"	C	SO				13	X	X	001	1
FD-5B-B4-WM (3-20 WM)	S	3/22/18	1320	3'	20'	C	SO				13	X		002	2
FD-5B-C4-WM (5-20 WM)	S	3/22/18	1500	5'	20'	C	SO				13	X	X	003	3
FD-5B-D4-WM (5-20)	S	3/22/18	1550	5'	20'	C	SO				13	X		004	4
FD-5B-E4-WM (3-21)	S	3/22/18	1630	3'	21'	C	SO				13	X	X	005	5
															6
															7
															8
															9
															10

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/22/18 1730	Grace	3-22-18 1740

T=4.9°C

Received 3/19/18 / BGS

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluorine, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Sample Condition Upon Receipt

Client Name: Face-Field

Project #: WO#: 10424609

PM: BM2 Due Date: 04/06/18

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 4.7 **Cooler Temp Corrected (°C):** 4.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** 3/22/18 SD

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	☒ Yes ☐ No	1.
Chain of Custody Filled Out?	☒ Yes ☐ No	2.
Chain of Custody Relinquished?	☒ Yes ☐ No	3.
Sampler Name and/or Signature on COC?	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes ☐ No	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No	6.
Rush Turn Around Time Requested?	☐ Yes ☒ No	7.
Sufficient Volume?	☒ Yes ☐ No	8.
Correct Containers Used?	☒ Yes ☐ No	9.
-Pace Containers Used?	☒ Yes ☐ No	
Containers Intact?	☒ Yes ☐ No	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes ☐ No ☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? 3/22/18 SD	☒ Yes ☐ No	12. No time on samples
-Includes Date/Time/ID/Analysis Matrix: SL		
All containers needing acid/base preservation have been checked?	☐ Yes ☐ No ☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes ☐ No ☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes ☐ No ☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present?	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: BM **Date:** 3/23/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424609 **Workorder Name:** MPCA - Freeway LF Solids **Owner Received Date:** 3/22/2018 **Results Requested By:** 4/6/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Cyanide by EPA 9012	LAB USE ONLY
1	FD-SB-A4 (26-325) 001	PS	3/22/2018 11:25	10424609001	Solid	1	X	
2	FD-SB-B4-WM (3-20WM) 002	PS	3/22/2018 13:20	10424609002	Solid	1	X	
3	FD-SB-C4-WM (5-20WM) 003	PS	3/22/2018 15:00	10424609003	Solid	1	X	
4	FD-SB-D4-WM (5-20) 004	PS	3/22/2018 15:50	10424609004	Solid	1	X	
5	FD-SB-E4-WM (3-21) 005	PS	3/22/2018 16:30	10424609005	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	PACE	3/23/18 1730		
2	Walter	3/24/18 0805	Pace	3/24/18 0805
3				

Comments

Cooler Temperature on Receipt 2 °C **Custody Seal** N or N **Received on Ice** Y or N **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace MN

Project #:

WO# : 40166401

40166401

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other:

Tracking #: 1674108-1

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 75 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 2 /Corr: 2

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 3/24/18
Initials: SM

Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☐No	☒N/A	4. FRWO SM 3/24/18
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes	☐No		Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
MS/MSD	☐Yes	☐No	☒N/A	
Correct Containers Used:	☒Yes	☐No	☐N/A	9. SM 3/24/18
-Pace Containers Used:	☒Yes	☐No	☒N/A	
-Pace IR Containers Used:	☒Yes	☐No	☐N/A	
Containers Intact:	☐Yes	☒No	☐N/A	10. 005 - lid cracked upon receipt - replaced b/kb
Filtered volume received for Dissolved tests	☐Yes	☐No	☐N/A	11. SM 3/24/18
Sample Labels match COC:	☐Yes	☒No	☐N/A	12. No times on client labels SM 3/24/18
-Includes date/time/ID/Analysis Matrix: S				
Trip Blank Present:	☐Yes	☐No	☒N/A	13.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Date: 3/26/18

Chain of Custody

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424609 **Workorder Name:** 18-00383 MPCA FreewayLF Solids **Owner Received Date:** 3/22/2018 **Results Requested By:** 4/6/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Chromium III (calculation)	Chromium VI	Total Chromium by 6020	LAB USE ONLY 50193059
1	FD-SB-A4 (26-32.5)	PS	3/22/2018 11:25	10424609001	Solid	1	X	X	X	001
2	FD-SB-B4-WM (3-20 WM)	PS	3/22/2018 13:20	10424609002	Solid	1	X	X	X	002
3	FD-SB-C4-WM (5-20 WM)	PS	3/22/2018 15:00	10424609003	Solid	1	X	X	X	003
4	FD-SB-D4-WM (5-20)	PS	3/22/2018 15:50	10424609004	Solid	1	X	X	X	004
5	FD-SB-E4-WM (3-21)	PS	3/22/2018 16:30	10424609005	Solid	1	X	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1	Pace FED EX	3/26/18 1510	FED EX	
2				3/27/18 0955
3				

Comments

Cooler Temperature on Receipt 1.6 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50193059

Date/Time and Initials of person examining contents: 3/22/18 1850 DZ

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9831 7232

Custody Seal on Cooler/Box Present: ☒ Yes ☐ No **Seals Intact:** ☒ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer: ①2 3 4 5 6 A B C D E F Ice Type: ☒ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☒ N/A

Cooler Temperature: 1.4/1.6 Ice Visible in Sample Containers?: ☐ Yes ☒ No ☐ N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☒ N/A

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.			All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)						
Chain of Custody Present:			Dissolved Metals field filtered?:			
Chain of Custody Filled Out:						
Short Hold Time Analysis (<72hr)?: Analysis:			Headspace Wisconsin Sulfide			
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			
Rush TAT Requested:			Headspace in VOA Vials (>6mm):			
Containers Intact?:			Trip Blank Present?:			
Sample Labels Match COC?: Except TCs, which only require sample ID			Trip Blank Custody Seals?:			

Comments:

Chain of Custody

WO#: 12106317

PM: HRZ Due Date: 04/06/18

CLIENT: PACE MPLS

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: M

Workorder: 10424609 Workorder Name: 18-00383 MPCA FreewayLF Solids Owner Received Date: 3/22/2018 Results Requested By: 4/6/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury by EPA 1630	LAB USE ONLY
1	FD-SB-A4 (26-32.5)	PS	3/22/2018 11:25	10424609001	Solid	1	X	
2	FD-SB-B4-WM (3-20 WM)	PS	3/22/2018 13:20	10424609002	Solid	1	X	
3	FD-SB-C4-WM (5-20 WM)	PS	3/22/2018 15:00	10424609003	Solid	1	X	
4	FD-SB-D4-WM (5-20)	PS	3/22/2018 15:50	10424609004	Solid	1	X	
5	FD-SB-E4-WM (3-21)	PS	3/22/2018 16:30	10424609005	Solid	1	X	

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	3/26/18 1635	[signature]	3/27/18 1020
2				
3				

Cooler Temperature on Receipt 0.4 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace - Mpls

Project #: WO# : 12106317

PM: HRZ Due Date: 04/06/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☒ 01339252/1710 ☐ IR-1 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 0.4 **Cooler Temp Corrected °C:** 0.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: 0.0 **Date and Initials of Person Examining Contents:** dl 3/27/18

If temperature is ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☒ NA

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☐ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☒ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☒ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: _____ **Date:** 3/27/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

WO#: 12106317

12106317

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin:

Workorder: 10424609 **Workorder Name:** 18-00383 MPCA FreewayLF Solids **Owner Received Date:** 3/22/2018 **Results Requested By:** 4/6/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Fluoride by EPA 9056	LAB USE ONLY
1	FD-SB-A4 (26-32.5)	PS	3/22/2018 11:25	10424609001	Solid	1	X	
2	FD-SB-B4-WM (3-20 WM)	PS	3/22/2018 13:20	10424609002	Solid	1	X	
3	FD-SB-C4-WM (5-20 WM)	PS	3/22/2018 15:00	10424609003	Solid	1	X	
4	FD-SB-D4-WM (5-20)	PS	3/22/2018 15:50	10424609004	Solid	1	X	
5	FD-SB-E4-WM (3-21)	PS	3/22/2018 16:30	10424609005	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	3/26/18 1630	B Mathews	3/27/18 0925
2				
3				

Comments

Cooler Temperature on Receipt 1.3 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace Mpls

Project #: WO#: 12106317
PM: HRZ Due Date: 04/06/18
CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☑ Other: SD

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 140792808 Type of Ice: ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.0 Cooler Temp Corrected °C: 1.3
Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: BM 3/27/18

Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Comments:

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Heather Stotts Date: 3/27/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10424611
Sample Receipt Date: 03/22/2018
Client Project #: MPCA - Freeway LF Sol
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

April 04, 2018
Nathan Boberg, Project Manager

(612) 607-6444 (fax)
nathan.boberg@pacelabs.com

Report Prepared Date:
April 4, 2018

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on three samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 61-73%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

Laboratory and matrix spike samples were also prepared with the sample batch using clean reference matrix or sample matrix that had been fortified with native standard materials. The results show that the spiked native TCDD was recovered at 94-102% with a relative percent difference of 0.1%. These results were within the target ranges for the method.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

WO# : 10424611

10424611

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number:

Turnaround Time:

COC ID:

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MPCA - Freeway LF solids	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA - Freeway LF solids	Project Task Code:	Address: 18-00383 EPIC Proj# 38716
Project Manager:			
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

FOR LAB USE ONLY — Lab Work Order Sticker

SAMPLE DETAILS

ANALYSIS REQUESTED

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: See attached list for solids/waste (-Dioxins)	ANALYSIS: +Dioxins	Lab Sample No.	#
FD-SB-A4 (26-32.5)	S	3/22/18	1125	26'	32'	C	SO				13		X	X	001	1
FD-SB-B4-WM (3-20 WM)	S	3/22/18	1329	3'	20'	C	SO				13		X			2
FD-SB-C4-WM (5-20 WM)	S	3/22/18	1520	5'	20'	C	SO				13		X	X	002	3
FD-SB-D4-WM (5-20)	S	3/22/18	1556	5'	20'	C	SO				13		X			4
FD-SB-E4-WM (3-21)	S	3/22/18	1631	3'	21'	C	SO				13		X	X	003	5
																6
																7
																8
																9
																10

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/22/18 1730	Grace	3-22-18 1740

T=4.9°C

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Face-Field

Project #: **WO#: 10424611**

PM: SCU **Due Date: 04/13/18**

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 4.9 **Cooler Temp Corrected (°C):** 4.9

Temp should be above freezing to 6°C **Correction Factor:** +0.5

Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Date and Initials of Person Examining Contents: 3/22/18 MS

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	☒ Yes ☐ No	1.
Chain of Custody Filled Out?	☒ Yes ☐ No	2.
Chain of Custody Relinquished?	☒ Yes ☐ No	3.
Sampler Name and/or Signature on COC?	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes ☐ No	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No	6.
Rush Turn Around Time Requested?	☐ Yes ☒ No	7.
Sufficient Volume?	☒ Yes ☐ No	8.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☐ No ☒ Yes ☐ No	9.
Containers Intact?	☒ Yes ☐ No	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes ☐ No ☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	~~☒ Yes~~ ☒ No 3/22/18 20	12. No time on samples
All containers needing acid/base preservation have been checked? All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes ☐ No ☒ N/A ☐ Yes ☐ No ☒ N/A ☐ Yes ☐ No ☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N Sample # Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present? Trip Blank Custody Seals Present? Pace Trip Blank Lot # (if purchased):	☐ Yes ☐ No ☒ N/A ☐ Yes ☐ No ☒ N/A	15.

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 03/23/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Received 5/14/18 / BG

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluorine, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

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Minneapolis, MN 55414

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Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-A4 (26-325)		
Lab Sample ID	10424611001		
Filename	F180402B_16		
Injected By	SMT		
Total Amount Extracted	14.3 g	Matrix	Solid
% Moisture	67.7	Dilution	NA
Dry Weight Extracted	4.62 g	Collected	03/22/2018 11:25
ICAL ID	F180329	Received	03/22/2018 17:40
CCal Filename(s)	F180402B_04 & F180402B_21	Extracted	03/26/2018 15:05
Method Blank ID	BLANK-61315	Analyzed	04/03/2018 01:22

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	73
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	75

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-C4-WM (5-20 WM)		
Lab Sample ID	10424611002		
Filename	F180402B_17		
Injected By	SMT		
Total Amount Extracted	14.5 g	Matrix	Solid
% Moisture	19.9	Dilution	NA
Dry Weight Extracted	11.6 g	Collected	03/22/2018 15:00
ICAL ID	F180329	Received	03/22/2018 17:40
CCal Filename(s)	F180402B_04 & F180402B_21	Extracted	03/26/2018 15:05
Method Blank ID	BLANK-61315	Analyzed	04/03/2018 02:07

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	4.8	-----	1.0	2,3,7,8-TCDD-13C	2.00	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	66

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-E4-WM (3-21)		
Lab Sample ID	10424611003		
Filename	F180402B_18		
Injected By	SMT		
Total Amount Extracted	14.4 g	Matrix	Solid
% Moisture	23.0	Dilution	NA
Dry Weight Extracted	11.1 g	Collected	03/22/2018 16:30
ICAL ID	F180329	Received	03/22/2018 17:40
CCal Filename(s)	F180402B_04 & F180402B_21	Extracted	03/26/2018 15:05
Method Blank ID	BLANK-61315	Analyzed	04/03/2018 02:52

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	66
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	68

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61315	Matrix	Solid
Filename	F180329A_17	Dilution	NA
Total Amount Extracted	75.1 g	Extracted	03/26/2018 15:05
ICAL ID	F180329	Analyzed	03/29/2018 23:16
CCal Filename(s)	F180329A_12 & F180329A_26	Injected By	SMT

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	57
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	59

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61316		
Filename	Y180329A_06	Matrix	Solid
Total Amount Extracted	75.9 g	Dilution	NA
ICAL ID	Y180204	Extracted	03/26/2018 15:05
CCal Filename(s)	Y180329A_01 & Y180329A_16	Analyzed	03/29/2018 17:06
Method Blank ID	BLANK-61315	Injected By	SMT

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.19	94	2,3,7,8-TCDD-13C	2.0	50
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	49

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

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Method 8290 Spiked Sample Report

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-A4 (26-325)		
Lab Sample ID	10424611001-MS		
Filename	F180402B_19	Matrix	Solid
Total Amount Extracted	14.4 g	Dilution	NA
ICAL ID	F180329	Extracted	03/26/2018 15:05
CCal Filename(s)	F180402B_04 & F180402B_21	Analyzed	04/03/2018 03:37
Method Blank ID	BLANK-61315	Injected By	SMT

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.20	102	2,3,7,8-TCDD-37Cl4	0.20	73
				2,3,7,8-TCDD-13C	2.00	71

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Spiked Sample Report

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-A4 (26-325)		
Lab Sample ID	10424611001-MSD		
Filename	F180403B_04	Matrix	Solid
Total Amount Extracted	14.3 g	Dilution	NA
ICAL ID	F180329	Extracted	03/26/2018 15:05
CCal Filename(s)	F180403B_01 & F180403B_18	Analyzed	04/03/2018 16:33
Method Blank ID	BLANK-61315	Injected By	SMT

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.20	102	2,3,7,8-TCDD-37Cl4	0.20	77
				2,3,7,8-TCDD-13C	2.00	76

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Spike Sample Results

Client - PACE Minnesota Field

Client Sample ID	FD-SB-A4 (26-325)			Dry Weights	
Lab Sample ID	10424611001	Sample Filename	F180402B_16	Sample Amount	4.62 g
MS ID	10424611001-MS	MS Filename	F180402B_19	MS Amount	4.7 g
MSD ID	10424611001-MSD	MSD Filename	F180403B_04	MSD Amount	4.6 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	Background Subtracted MSD % Rec.	Background Subtracted RPD
2,3,7,8-TCDD	0.000	0.20	0.20	0.20	0.1	102	102	0.1

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

Pace Analytical Services, LLC
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April 13, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 23, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bob Michels
bob.michels@pacelabs.com
(612)607-6452
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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CERTIFICATIONS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10424793001	**FD-SB-A3-S (30-35)**	Solid	03/23/18 12:30	03/23/18 16:00
10424793002	**FD-SB-B3-WM (5-26)**	Solid	03/23/18 13:30	03/23/18 16:00
10424793003	**FD-SB-C3-WM (5-20)**	Solid	03/23/18 14:30	03/23/18 16:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10424793001	**FD-SB-A3-S (30-35)**	EPA 1630 (1998)	CPK	1	PASI-M
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-M
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JRH	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 9012	DAW	1	PASI-M
		EPA 9056A	MCT	1	PASI-M
10424793002	**FD-SB-B3-WM (5-26)**	EPA 1630 (1998)	CPK	1	PASI-M
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-M
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR, JRH	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 9012	DAW	1	PASI-M
		EPA 9056A	MCT	1	PASI-M
10424793003	**FD-SB-C3-WM (5-20)**	EPA 1630 (1998)	CPK	1	PASI-M
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	LPM	2	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-M
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JRH	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-M
		Trivalent Chromium Calculation	SLB	1	PASI-M
		EPA 9012	DAW	1	PASI-M
		EPA 9056A	MCT	1	PASI-M

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-A3-S (30-35) **Lab ID: 10424793001** Collected: 03/23/18 12:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	43.9	1	04/04/18 10:58	04/06/18 15:25		N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	309-00-2	
alpha-BHC	ND	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	319-84-6	
beta-BHC	**64.3**	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	319-85-7	M1
delta-BHC	ND	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	58-89-9	
Chlordane (Technical)	ND	ug/kg	166	2	03/28/18 12:51	04/05/18 18:51	57-74-9	
alpha-Chlordane	**147**	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	5103-71-9	M1
gamma-Chlordane	**129**	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	5103-74-2	M1
4,4'-DDD	ND	ug/kg	33.1	2	03/28/18 12:51	04/05/18 18:51	72-54-8	
4,4'-DDE	ND	ug/kg	33.1	2	03/28/18 12:51	04/05/18 18:51	72-55-9	
4,4'-DDT	ND	ug/kg	33.1	2	03/28/18 12:51	04/05/18 18:51	50-29-3	
Dieldrin	ND	ug/kg	33.1	2	03/28/18 12:51	04/05/18 18:51	60-57-1	
Endosulfan I	ND	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	959-98-8	
Endosulfan II	ND	ug/kg	33.1	2	03/28/18 12:51	04/05/18 18:51	33213-65-9	
Endosulfan sulfate	ND	ug/kg	33.1	2	03/28/18 12:51	04/05/18 18:51	1031-07-8	
Endrin	ND	ug/kg	33.1	2	03/28/18 12:51	04/05/18 18:51	72-20-8	
Endrin aldehyde	ND	ug/kg	33.1	2	03/28/18 12:51	04/05/18 18:51	7421-93-4	
Endrin ketone	ND	ug/kg	33.1	2	03/28/18 12:51	04/05/18 18:51	53494-70-5	
Heptachlor	ND	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	76-44-8	R1
Heptachlor epoxide	ND	ug/kg	16.6	2	03/28/18 12:51	04/05/18 18:51	1024-57-3	
Methoxychlor	ND	ug/kg	166	2	03/28/18 12:51	04/05/18 18:51	72-43-5	
Toxaphene	ND	ug/kg	497	2	03/28/18 12:51	04/05/18 18:51	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	37	%.	30-150	2	03/28/18 12:51	04/05/18 18:51	877-09-8	4M,D4
Decachlorobiphenyl (S)	31	%.	30-150	2	03/28/18 12:51	04/05/18 18:51	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	11100-14-4	
PCB, Total	ND	ug/kg	164	1	03/28/18 12:51	04/02/18 10:43	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	86	%.	48-125	1	03/28/18 12:51	04/02/18 10:43	877-09-8	
Decachlorobiphenyl (S)	87	%.	30-134	1	03/28/18 12:51	04/02/18 10:43	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	67.6	1	03/27/18 16:31	03/30/18 14:50		

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-A3-S (30-35) **Lab ID: 10424793001** Collected: 03/23/18 12:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	72	%.	50-150	1	03/27/18 16:31	03/30/18 14:50	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	92.6	1	03/30/18 14:11	03/31/18 01:45		
Surrogates								
a,a,a-Trifluorotoluene (S)	100	%.	80-150	1	03/30/18 14:11	03/31/18 01:45	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**5600**	mg/kg	48.7	1	03/28/18 04:51	04/02/18 12:27	7429-90-5	M1
Barium	**252**	mg/kg	2.4	1	03/28/18 04:51	04/02/18 12:27	7440-39-3	
Boron	**524**	mg/kg	36.6	1	03/28/18 04:51	04/02/18 12:27	7440-42-8	
Copper	**24.2**	mg/kg	2.4	1	03/28/18 04:51	04/02/18 12:27	7440-50-8	
Iron	**15500**	mg/kg	12.2	1	03/28/18 04:51	04/02/18 12:27	7439-89-6	M1,R1
Manganese	**423**	mg/kg	1.2	1	03/28/18 04:51	04/02/18 12:27	7439-96-5	
Nickel	**11.3**	mg/kg	4.9	1	03/28/18 04:51	04/02/18 12:27	7440-02-0	
Silver	ND	mg/kg	2.4	1	03/28/18 04:51	04/02/18 12:27	7440-22-4	
Tin	**44.1**	mg/kg	18.3	1	03/28/18 04:51	04/02/18 12:27	7440-31-5	
Titanium	**158**	mg/kg	6.1	1	03/28/18 04:51	04/02/18 12:27	7440-32-6	
Zinc	**232**	mg/kg	4.9	1	03/28/18 04:51	04/02/18 12:27	7440-66-6	M1
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**29.3**	mg/kg	4.8	5	04/04/18 17:21	04/08/18 15:38	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	2.3	20	03/28/18 04:52	03/30/18 17:22	7440-36-0	
Arsenic	**3.8**	mg/kg	2.3	20	03/28/18 04:52	03/30/18 17:22	7440-38-2	
Beryllium	ND	mg/kg	0.94	20	03/28/18 04:52	03/30/18 17:22	7440-41-7	
Cadmium	**0.72**	mg/kg	0.38	20	03/28/18 04:52	03/30/18 17:22	7440-43-9	
Cobalt	**3.4**	mg/kg	2.3	20	03/28/18 04:52	03/30/18 17:22	7440-48-4	
Lead	**308**	mg/kg	0.47	20	03/28/18 04:52	03/30/18 17:22	7439-92-1	M6
Lithium	**4.6**	mg/kg	2.3	20	03/28/18 04:52	03/30/18 17:22	7439-93-2	
Selenium	ND	mg/kg	2.3	20	03/28/18 04:52	03/30/18 17:22	7782-49-2	
Strontium	**47.6**	mg/kg	2.3	20	03/28/18 04:52	03/30/18 17:22	7440-24-6	
Vanadium	**15.0**	mg/kg	4.7	20	03/28/18 04:52	03/30/18 17:22	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.12**	mg/kg	0.090	1	03/28/18 04:53	03/30/18 12:41	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**79.9**	%	0.10	1		03/28/18 12:44		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	83-32-9	
Acenaphthylene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	208-96-8	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-A3-S (30-35) **Lab ID: 10424793001** Collected: 03/23/18 12:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	120-12-7	
Benzo(a)anthracene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	56-55-3	
Benzo(a)pyrene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	101-55-3	
Butylbenzylphthalate	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	85-68-7	
Carbazole	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	59-50-7	
4-Chloroaniline	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	108-60-1	
2-Chloronaphthalene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	91-58-7	
2-Chlorophenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	7005-72-3	
Chrysene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	53-70-3	
Dibenzofuran	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	120-83-2	
Diethylphthalate	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	105-67-9	
Dimethylphthalate	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	131-11-3	
Di-n-butylphthalate	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	8430	1	03/27/18 12:47	03/30/18 14:19	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	606-20-2	
Di-n-octylphthalate	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	117-81-7	
Fluoranthene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	206-44-0	
Fluorene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	87-68-3	
Hexachlorobenzene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	118-74-1	
Hexachloroethane	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	193-39-5	
Isophorone	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	78-59-1	
1-Methylnaphthalene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	90-12-0	
2-Methylnaphthalene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-A3-S (30-35) **Lab ID: 10424793001** Collected: 03/23/18 12:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	3270	1	03/27/18 12:47	03/30/18 14:19		
Naphthalene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	91-20-3	
2-Nitroaniline	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	88-74-4	
3-Nitroaniline	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	99-09-2	
4-Nitroaniline	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	100-01-6	
Nitrobenzene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	98-95-3	
2-Nitrophenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	88-75-5	
4-Nitrophenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	86-30-6	
Pentachlorophenol	ND	ug/kg	3320	1	03/27/18 12:47	03/30/18 14:19	87-86-5	
Phenanthrene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	85-01-8	
Phenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	108-95-2	
Pyrene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	1640	1	03/27/18 12:47	03/30/18 14:19	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	62	%.	43-125	1	03/27/18 12:47	03/30/18 14:19	4165-60-0	
2-Fluorobiphenyl (S)	75	%.	30-132	1	03/27/18 12:47	03/30/18 14:19	321-60-8	
p-Terphenyl-d14 (S)	100	%.	62-125	1	03/27/18 12:47	03/30/18 14:19	1718-51-0	
Phenol-d6 (S)	69	%.	48-125	1	03/27/18 12:47	03/30/18 14:19	13127-88-3	
2-Fluorophenol (S)	61	%.	40-125	1	03/27/18 12:47	03/30/18 14:19	367-12-4	
2,4,6-Tribromophenol (S)	88	%.	60-125	1	03/27/18 12:47	03/30/18 14:19	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	83-32-9	
Acenaphthylene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	208-96-8	
Anthracene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	120-12-7	
Benzo(a)anthracene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	56-55-3	
Benzo(a)pyrene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	207-08-9	
Chrysene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	53-70-3	
Fluoranthene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	206-44-0	
Fluorene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	193-39-5	
Naphthalene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	91-20-3	
Phenanthrene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	85-01-8	
Pyrene	ND	ug/kg	49.7	1	03/27/18 15:20	04/02/18 22:27	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	68	%.	42-125	1	03/27/18 15:20	04/02/18 22:27	321-60-8	
p-Terphenyl-d14 (S)	88	%.	57-125	1	03/27/18 15:20	04/02/18 22:27	1718-51-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-A3-S (30-35) **Lab ID: 10424793001** Collected: 03/23/18 12:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	25057-89-0	
2,4-D	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	94-75-7	
2,4-DB	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	94-82-6	
Dicamba	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	1918-00-9	
Dinoseb	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	88-85-7	
MCPA	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	94-74-6	
Pentachlorophenol	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	87-86-5	
Picloram	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	1918-02-1	
2,4,5-T	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	93-72-1	
Triclopyr	ND	mg/kg	0.33	1	03/29/18 07:30	04/04/18 16:17	55335-06-3	
Surrogates								
2,4-DCAA (S)	71	%.	46-125	1	03/29/18 07:30	04/04/18 16:17	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	8250	1	03/27/18 14:03	03/27/18 16:51	67-64-1	
Allyl chloride	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	107-05-1	
Benzene	**256**	ug/kg	165	1	03/27/18 14:03	03/27/18 16:51	71-43-2	
Bromobenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	108-86-1	
Bromochloromethane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	74-97-5	
Bromodichloromethane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	75-27-4	
Bromoform	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	75-25-2	
Bromomethane	ND	ug/kg	4120	1	03/27/18 14:03	03/27/18 16:51	74-83-9	
2-Butanone (MEK)	ND	ug/kg	2060	1	03/27/18 14:03	03/27/18 16:51	78-93-3	
n-Butylbenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	104-51-8	
sec-Butylbenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	135-98-8	
tert-Butylbenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	98-06-6	
Carbon tetrachloride	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	56-23-5	
Chlorobenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	108-90-7	
Chloroethane	ND	ug/kg	4120	1	03/27/18 14:03	03/27/18 16:51	75-00-3	
Chloroform	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	67-66-3	
Chloromethane	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	74-87-3	
2-Chlorotoluene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	95-49-8	
4-Chlorotoluene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4120	1	03/27/18 14:03	03/27/18 16:51	96-12-8	
Dibromochloromethane	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	106-93-4	
Dibromomethane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	75-71-8	
1,1-Dichloroethane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	75-34-3	
1,2-Dichloroethane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	107-06-2	
1,1-Dichloroethene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	156-59-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-A3-S (30-35) **Lab ID: 10424793001** Collected: 03/23/18 12:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
trans-1,2-Dichloroethene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	156-60-5	
Dichlorofluoromethane	ND	ug/kg	4120	1	03/27/18 14:03	03/27/18 16:51	75-43-4	
1,2-Dichloropropane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	78-87-5	
1,3-Dichloropropane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	142-28-9	
2,2-Dichloropropane	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	594-20-7	
1,1-Dichloropropene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	60-29-7	
Ethylbenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	2060	1	03/27/18 14:03	03/27/18 16:51	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	98-82-8	
p-Isopropyltoluene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	99-87-6	
Methylene Chloride	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	2060	1	03/27/18 14:03	03/27/18 16:51	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	1634-04-4	
Naphthalene	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	91-20-3	
n-Propylbenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	103-65-1	
Styrene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	79-34-5	N2
Tetrachloroethene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	127-18-4	
Tetrahydrofuran	ND	ug/kg	16500	1	03/27/18 14:03	03/27/18 16:51	109-99-9	
Toluene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	79-00-5	
Trichloroethene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 16:51	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	412	1	03/27/18 14:03	03/27/18 16:51	108-67-8	
Vinyl chloride	ND	ug/kg	165	1	03/27/18 14:03	03/27/18 16:51	75-01-4	
Xylene (Total)	ND	ug/kg	1240	1	03/27/18 14:03	03/27/18 16:51	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1	03/27/18 14:03	03/27/18 16:51	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	03/27/18 14:03	03/27/18 16:51	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	03/27/18 14:03	03/27/18 16:51	460-00-4	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	1.7	1	04/05/18 10:35	04/05/18 14:44	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	04/05/18 12:00	04/05/18 18:34	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-B3-WM (5-26) **Lab ID: 10424793002** Collected: 03/23/18 13:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.1	1	04/04/18 10:58	04/06/18 15:31		N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	309-00-2	
alpha-BHC	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	319-84-6	
beta-BHC	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	319-85-7	
delta-BHC	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	58-89-9	
Chlordane (Technical)	ND	ug/kg	117	5	03/28/18 12:51	04/10/18 14:33	57-74-9	
alpha-Chlordane	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	5103-71-9	
gamma-Chlordane	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	5103-74-2	
4,4'-DDD	ND	ug/kg	23.3	5	03/28/18 12:51	04/10/18 14:33	72-54-8	
4,4'-DDE	ND	ug/kg	23.3	5	03/28/18 12:51	04/10/18 14:33	72-55-9	
4,4'-DDT	**24.5**	ug/kg	23.3	5	03/28/18 12:51	04/10/18 14:33	50-29-3	
Dieldrin	ND	ug/kg	23.3	5	03/28/18 12:51	04/10/18 14:33	60-57-1	
Endosulfan I	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	959-98-8	
Endosulfan II	ND	ug/kg	23.3	5	03/28/18 12:51	04/10/18 14:33	33213-65-9	
Endosulfan sulfate	ND	ug/kg	23.3	5	03/28/18 12:51	04/10/18 14:33	1031-07-8	
Endrin	ND	ug/kg	23.3	5	03/28/18 12:51	04/10/18 14:33	72-20-8	
Endrin aldehyde	ND	ug/kg	23.3	5	03/28/18 12:51	04/10/18 14:33	7421-93-4	
Endrin ketone	ND	ug/kg	23.3	5	03/28/18 12:51	04/10/18 14:33	53494-70-5	
Heptachlor	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	76-44-8	
Heptachlor epoxide	ND	ug/kg	11.7	5	03/28/18 12:51	04/10/18 14:33	1024-57-3	
Methoxychlor	ND	ug/kg	117	5	03/28/18 12:51	04/10/18 14:33	72-43-5	
Toxaphene	ND	ug/kg	349	5	03/28/18 12:51	04/10/18 14:33	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	85	%.	30-150	5	03/28/18 12:51	04/10/18 14:33	877-09-8	3M,D4
Decachlorobiphenyl (S)	99	%.	30-150	5	03/28/18 12:51	04/10/18 14:33	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	12672-29-6	
PCB-1254 (Aroclor 1254)	**551**	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	11100-14-4	
PCB, Total	**551**	ug/kg	45.8	1	03/28/18 12:51	04/02/18 12:49	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	48-125	1	03/28/18 12:51	04/02/18 12:49	877-09-8	
Decachlorobiphenyl (S)	73	%.	30-134	1	03/28/18 12:51	04/02/18 12:49	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**23.3**	mg/kg	22.2	1	03/27/18 16:31	03/30/18 14:22		T6,T7

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-B3-WM (5-26) **Lab ID: 10424793002** Collected: 03/23/18 13:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	59	%.	50-150	1	03/27/18 16:31	03/30/18 14:22	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	35.5	1	03/30/18 14:11	03/31/18 02:09		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	03/30/18 14:11	03/31/18 02:09	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**9250**	mg/kg	13.7	1	03/28/18 04:51	04/02/18 12:46	7429-90-5	
Barium	**84.4**	mg/kg	0.68	1	03/28/18 04:51	04/02/18 12:46	7440-39-3	
Boron	**216**	mg/kg	10.3	1	03/28/18 04:51	04/02/18 12:46	7440-42-8	
Copper	**24.7**	mg/kg	0.68	1	03/28/18 04:51	04/02/18 12:46	7440-50-8	
Iron	**40200**	mg/kg	34.2	10	03/28/18 04:51	04/02/18 13:32	7439-89-6	
Manganese	**141**	mg/kg	0.34	1	03/28/18 04:51	04/02/18 12:46	7439-96-5	
Nickel	**58.3**	mg/kg	1.4	1	03/28/18 04:51	04/02/18 12:46	7440-02-0	
Silver	**5.5**	mg/kg	0.68	1	03/28/18 04:51	04/02/18 12:46	7440-22-4	
Tin	**7.4**	mg/kg	5.1	1	03/28/18 04:51	04/02/18 12:46	7440-31-5	
Titanium	**416**	mg/kg	1.7	1	03/28/18 04:51	04/02/18 12:46	7440-32-6	
Zinc	**215**	mg/kg	1.4	1	03/28/18 04:51	04/02/18 12:46	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**3.6**	mg/kg	1.3	5	04/04/18 17:21	04/08/18 15:42	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.1**	mg/kg	0.66	20	03/28/18 04:52	03/30/18 17:07	7440-36-0	
Arsenic	**16.1**	mg/kg	0.66	20	03/28/18 04:52	03/30/18 17:07	7440-38-2	
Beryllium	**2.2**	mg/kg	0.27	20	03/28/18 04:52	03/30/18 17:07	7440-41-7	
Cadmium	**1.1**	mg/kg	0.11	20	03/28/18 04:52	03/30/18 17:07	7440-43-9	
Cobalt	**9.0**	mg/kg	0.66	20	03/28/18 04:52	03/30/18 17:07	7440-48-4	
Lead	**67.9**	mg/kg	0.13	20	03/28/18 04:52	03/30/18 17:07	7439-92-1	
Lithium	**8.5**	mg/kg	0.66	20	03/28/18 04:52	03/30/18 17:07	7439-93-2	
Selenium	**5.3**	mg/kg	0.66	20	03/28/18 04:52	03/30/18 17:07	7782-49-2	
Strontium	**49.6**	mg/kg	0.66	20	03/28/18 04:52	03/30/18 17:07	7440-24-6	
Vanadium	**239**	mg/kg	1.3	20	03/28/18 04:52	03/30/18 17:07	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.072**	mg/kg	0.025	1	03/28/18 04:53	03/30/18 12:47	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**28.4**	%	0.10	1		03/28/18 12:44		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	**461**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	83-32-9	
Acenaphthylene	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-B3-WM (5-26) **Lab ID: 10424793002** Collected: 03/23/18 13:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	**885**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	120-12-7	
Benzo(a)anthracene	**1780**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	56-55-3	
Benzo(a)pyrene	**1190**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	50-32-8	
Benzo(b)fluoranthene	**2010**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	205-99-2	
Benzo(g,h,i)perylene	**782**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	191-24-2	
Benzo(k)fluoranthene	**689**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	101-55-3	
Butylbenzylphthalate	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	85-68-7	
Carbazole	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	59-50-7	
4-Chloroaniline	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	108-60-1	
2-Chloronaphthalene	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	91-58-7	
2-Chlorophenol	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	7005-72-3	
Chrysene	**2180**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	53-70-3	
Dibenzofuran	**515**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	120-83-2	
Diethylphthalate	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	105-67-9	
Dimethylphthalate	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	131-11-3	
Di-n-butylphthalate	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2370	1	03/27/18 12:47	03/30/18 15:50	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	606-20-2	
Di-n-octylphthalate	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	122-66-7	
bis(2-Ethylhexyl)phthalate	**1660**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	117-81-7	
Fluoranthene	**6860**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	206-44-0	
Fluorene	**933**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	87-68-3	
Hexachlorobenzene	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	118-74-1	
Hexachloroethane	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	67-72-1	
Indeno(1,2,3-cd)pyrene	**676**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	193-39-5	
Isophorone	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	78-59-1	
1-Methylnaphthalene	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	90-12-0	
2-Methylnaphthalene	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	95-48-7	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-B3-WM (5-26) **Lab ID: 10424793002** Collected: 03/23/18 13:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	**1120**	ug/kg	921	1	03/27/18 12:47	03/30/18 15:50		
Naphthalene	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	91-20-3	
2-Nitroaniline	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	88-74-4	
3-Nitroaniline	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	99-09-2	
4-Nitroaniline	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	100-01-6	
Nitrobenzene	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	98-95-3	
2-Nitrophenol	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	88-75-5	
4-Nitrophenol	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	86-30-6	
Pentachlorophenol	ND	ug/kg	935	1	03/27/18 12:47	03/30/18 15:50	87-86-5	
Phenanthrene	**7060**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	85-01-8	
Phenol	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	108-95-2	
Pyrene	**3740**	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	2300	5	03/27/18 12:47	03/30/18 20:23	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	460	1	03/27/18 12:47	03/30/18 15:50	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	64	%.	43-125	5	03/27/18 12:47	03/30/18 20:23	4165-60-0	D3
2-Fluorobiphenyl (S)	76	%.	30-132	1	03/27/18 12:47	03/30/18 15:50	321-60-8	
p-Terphenyl-d14 (S)	59	%.	62-125	1	03/27/18 12:47	03/30/18 15:50	1718-51-0	S5
Phenol-d6 (S)	66	%.	48-125	1	03/27/18 12:47	03/30/18 15:50	13127-88-3	
2-Fluorophenol (S)	66	%.	40-125	1	03/27/18 12:47	03/30/18 15:50	367-12-4	
2,4,6-Tribromophenol (S)	67	%.	60-125	1	03/27/18 12:47	03/30/18 15:50	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	83-32-9	
Acenaphthylene	ND	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	208-96-8	
Anthracene	**1510**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	120-12-7	
Benzo(a)anthracene	**4020**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	56-55-3	
Benzo(a)pyrene	**2730**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	50-32-8	
Benzo(b)fluoranthene	**4020**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	205-99-2	
Benzo(g,h,i)perylene	**1670**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	191-24-2	
Benzo(k)fluoranthene	**1260**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	207-08-9	
Chrysene	**3660**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	53-70-3	
Fluoranthene	**10600**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	206-44-0	
Fluorene	**861**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	86-73-7	
Indeno(1,2,3-cd)pyrene	**1590**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	193-39-5	
Naphthalene	ND	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	91-20-3	
Phenanthrene	**7760**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	85-01-8	
Pyrene	**8170**	ug/kg	698	50	03/27/18 15:20	04/04/18 12:25	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	50	03/27/18 15:20	04/04/18 12:25	321-60-8	D4,S4
p-Terphenyl-d14 (S)	0	%.	57-125	50	03/27/18 15:20	04/04/18 12:25	1718-51-0	S4

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-B3-WM (5-26) **Lab ID: 10424793002** Collected: 03/23/18 13:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	25057-89-0	
2,4-D	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	94-75-7	
2,4-DB	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	94-82-6	
Dicamba	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	1918-00-9	
Dinoseb	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	88-85-7	
MCPA	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	94-74-6	
Pentachlorophenol	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	87-86-5	
Picloram	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	1918-02-1	
2,4,5-T	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	93-72-1	
Triclopyr	ND	mg/kg	0.091	1	03/29/18 07:30	04/04/18 16:32	55335-06-3	
Surrogates								
2,4-DCAA (S)	71	%.	46-125	1	03/29/18 07:30	04/04/18 16:32	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	3470	1	03/27/18 14:03	03/27/18 17:08	67-64-1	
Allyl chloride	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	107-05-1	
Benzene	ND	ug/kg	69.3	1	03/27/18 14:03	03/27/18 17:08	71-43-2	
Bromobenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	108-86-1	
Bromochloromethane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	74-97-5	
Bromodichloromethane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	75-27-4	
Bromoform	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	75-25-2	
Bromomethane	ND	ug/kg	1730	1	03/27/18 14:03	03/27/18 17:08	74-83-9	
2-Butanone (MEK)	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 17:08	78-93-3	
n-Butylbenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	104-51-8	
sec-Butylbenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	135-98-8	
tert-Butylbenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	98-06-6	
Carbon tetrachloride	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	56-23-5	
Chlorobenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	108-90-7	
Chloroethane	ND	ug/kg	1730	1	03/27/18 14:03	03/27/18 17:08	75-00-3	
Chloroform	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	67-66-3	
Chloromethane	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	74-87-3	
2-Chlorotoluene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	95-49-8	
4-Chlorotoluene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1730	1	03/27/18 14:03	03/27/18 17:08	96-12-8	
Dibromochloromethane	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	106-93-4	
Dibromomethane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	75-71-8	
1,1-Dichloroethane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	75-34-3	
1,2-Dichloroethane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	107-06-2	
1,1-Dichloroethene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	156-59-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-B3-WM (5-26) **Lab ID: 10424793002** Collected: 03/23/18 13:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
trans-1,2-Dichloroethene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1730	1	03/27/18 14:03	03/27/18 17:08	75-43-4	
1,2-Dichloropropane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	78-87-5	
1,3-Dichloropropane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	142-28-9	
2,2-Dichloropropane	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	594-20-7	
1,1-Dichloropropene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	60-29-7	
Ethylbenzene	**535**	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 17:08	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	98-82-8	
p-Isopropyltoluene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	99-87-6	
Methylene Chloride	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 17:08	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	1634-04-4	
Naphthalene	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	91-20-3	
n-Propylbenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	103-65-1	
Styrene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	79-34-5	N2
Tetrachloroethene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	127-18-4	
Tetrahydrofuran	ND	ug/kg	6930	1	03/27/18 14:03	03/27/18 17:08	109-99-9	
Toluene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	79-00-5	
Trichloroethene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	693	1	03/27/18 14:03	03/27/18 17:08	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	173	1	03/27/18 14:03	03/27/18 17:08	108-67-8	
Vinyl chloride	ND	ug/kg	69.3	1	03/27/18 14:03	03/27/18 17:08	75-01-4	
Xylene (Total)	**1440**	ug/kg	520	1	03/27/18 14:03	03/27/18 17:08	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1	03/27/18 14:03	03/27/18 17:08	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	03/27/18 14:03	03/27/18 17:08	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	03/27/18 14:03	03/27/18 17:08	460-00-4	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.39	1	04/05/18 10:35	04/05/18 14:47	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.7**	mg/kg	0.99	1	04/05/18 12:00	04/05/18 17:36	16984-48-8	M1

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-C3-WM (5-20) **Lab ID: 10424793003** Collected: 03/23/18 14:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	9.57	1	04/04/18 10:58	04/06/18 15:38		N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	309-00-2	
alpha-BHC	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	319-84-6	
beta-BHC	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	319-85-7	
delta-BHC	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	58-89-9	
Chlordane (Technical)	ND	ug/kg	434	20	03/28/18 12:51	04/06/18 00:20	57-74-9	
alpha-Chlordane	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	5103-71-9	
gamma-Chlordane	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	5103-74-2	
4,4'-DDD	ND	ug/kg	86.6	20	03/28/18 12:51	04/06/18 00:20	72-54-8	
4,4'-DDE	ND	ug/kg	86.6	20	03/28/18 12:51	04/06/18 00:20	72-55-9	
4,4'-DDT	ND	ug/kg	86.6	20	03/28/18 12:51	04/06/18 00:20	50-29-3	
Dieldrin	ND	ug/kg	86.6	20	03/28/18 12:51	04/06/18 00:20	60-57-1	
Endosulfan I	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	959-98-8	
Endosulfan II	ND	ug/kg	86.6	20	03/28/18 12:51	04/06/18 00:20	33213-65-9	
Endosulfan sulfate	ND	ug/kg	86.6	20	03/28/18 12:51	04/06/18 00:20	1031-07-8	
Endrin	ND	ug/kg	86.6	20	03/28/18 12:51	04/06/18 00:20	72-20-8	
Endrin aldehyde	ND	ug/kg	86.6	20	03/28/18 12:51	04/06/18 00:20	7421-93-4	
Endrin ketone	ND	ug/kg	86.6	20	03/28/18 12:51	04/06/18 00:20	53494-70-5	
Heptachlor	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	76-44-8	
Heptachlor epoxide	ND	ug/kg	43.4	20	03/28/18 12:51	04/06/18 00:20	1024-57-3	
Methoxychlor	ND	ug/kg	434	20	03/28/18 12:51	04/06/18 00:20	72-43-5	
Toxaphene	ND	ug/kg	1300	20	03/28/18 12:51	04/06/18 00:20	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	03/28/18 12:51	04/06/18 00:20	877-09-8	2M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	03/28/18 12:51	04/06/18 00:20	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	12672-29-6	
PCB-1254 (Aroclor 1254)	**144**	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	11100-14-4	
PCB, Total	**144**	ug/kg	42.5	1	03/28/18 12:51	04/02/18 10:59	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	82	%.	48-125	1	03/28/18 12:51	04/02/18 10:59	877-09-8	
Decachlorobiphenyl (S)	84	%.	30-134	1	03/28/18 12:51	04/02/18 10:59	2051-24-3	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-C3-WM (5-20) **Lab ID: 10424793003** Collected: 03/23/18 14:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**222**	mg/kg	126	1	03/27/18 16:31	03/30/18 14:14		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	1	03/27/18 16:31	03/30/18 14:14	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	15.5	1	03/30/18 14:11	03/31/18 02:33		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	03/30/18 14:11	03/31/18 02:33	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**8090**	mg/kg	12.6	1	03/28/18 04:51	04/02/18 12:48	7429-90-5	
Barium	**235**	mg/kg	0.63	1	03/28/18 04:51	04/02/18 12:48	7440-39-3	
Boron	**75.4**	mg/kg	9.5	1	03/28/18 04:51	04/02/18 12:48	7440-42-8	
Copper	**119**	mg/kg	0.63	1	03/28/18 04:51	04/02/18 12:48	7440-50-8	
Iron	**47000**	mg/kg	31.6	10	03/28/18 04:51	04/02/18 13:34	7439-89-6	
Manganese	**951**	mg/kg	3.2	10	03/28/18 04:51	04/02/18 13:34	7439-96-5	
Nickel	**29.5**	mg/kg	1.3	1	03/28/18 04:51	04/02/18 12:48	7440-02-0	
Silver	**1.0**	mg/kg	0.63	1	03/28/18 04:51	04/02/18 12:48	7440-22-4	
Tin	**114**	mg/kg	4.7	1	03/28/18 04:51	04/02/18 12:48	7440-31-5	
Titanium	**238**	mg/kg	1.6	1	03/28/18 04:51	04/02/18 12:48	7440-32-6	
Zinc	**799**	mg/kg	1.3	1	03/28/18 04:51	04/02/18 12:48	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**118**	mg/kg	1.2	5	04/04/18 17:21	04/08/18 15:47	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**0.96**	mg/kg	0.64	20	03/28/18 04:52	03/30/18 17:12	7440-36-0	
Arsenic	**7.9**	mg/kg	0.64	20	03/28/18 04:52	03/30/18 17:12	7440-38-2	
Beryllium	**0.43**	mg/kg	0.26	20	03/28/18 04:52	03/30/18 17:12	7440-41-7	
Cadmium	**2.0**	mg/kg	0.10	20	03/28/18 04:52	03/30/18 17:12	7440-43-9	
Cobalt	**4.8**	mg/kg	0.64	20	03/28/18 04:52	03/30/18 17:12	7440-48-4	
Lead	**151**	mg/kg	0.13	20	03/28/18 04:52	03/30/18 17:12	7439-92-1	
Lithium	**4.2**	mg/kg	0.64	20	03/28/18 04:52	03/30/18 17:12	7439-93-2	
Selenium	**1.2**	mg/kg	0.64	20	03/28/18 04:52	03/30/18 17:12	7782-49-2	
Strontium	**31.8**	mg/kg	0.64	20	03/28/18 04:52	03/30/18 17:12	7440-24-6	
Vanadium	**30.5**	mg/kg	1.3	20	03/28/18 04:52	03/30/18 17:12	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.44**	mg/kg	0.024	1	03/28/18 04:53	03/30/18 12:53	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**23.1**	%	0.10	1		03/28/18 12:44		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	83-32-9	

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-C3-WM (5-20) **Lab ID: 10424793003** Collected: 03/23/18 14:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	208-96-8	
Anthracene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	120-12-7	
Benzo(a)anthracene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	56-55-3	
Benzo(a)pyrene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	50-32-8	
Benzo(b)fluoranthene	**475**	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	101-55-3	
Butylbenzylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	85-68-7	
Carbazole	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	59-50-7	
4-Chloroaniline	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	108-60-1	
2-Chloronaphthalene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	91-58-7	
2-Chlorophenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	7005-72-3	
Chrysene	**449**	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	53-70-3	
Dibenzofuran	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	120-83-2	
Diethylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	105-67-9	
Dimethylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	131-11-3	
Di-n-butylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2200	1	03/27/18 12:47	03/30/18 16:21	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	606-20-2	
Di-n-octylphthalate	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	122-66-7	
bis(2-Ethylhexyl)phthalate	**1490**	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	117-81-7	
Fluoranthene	**747**	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	206-44-0	
Fluorene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	87-68-3	
Hexachlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	118-74-1	
Hexachloroethane	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	193-39-5	
Isophorone	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	78-59-1	
1-Methylnaphthalene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	90-12-0	
2-Methylnaphthalene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-C3-WM (5-20) **Lab ID: 10424793003** Collected: 03/23/18 14:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	855	1	03/27/18 12:47	03/30/18 16:21		
Naphthalene	**1710**	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	91-20-3	
2-Nitroaniline	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	88-74-4	
3-Nitroaniline	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	99-09-2	
4-Nitroaniline	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	100-01-6	
Nitrobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	98-95-3	
2-Nitrophenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	88-75-5	
4-Nitrophenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	86-30-6	
Pentachlorophenol	ND	ug/kg	868	1	03/27/18 12:47	03/30/18 16:21	87-86-5	
Phenanthrene	**822**	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	85-01-8	
Phenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	108-95-2	
Pyrene	**724**	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	428	1	03/27/18 12:47	03/30/18 16:21	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	57	%.	43-125	1	03/27/18 12:47	03/30/18 16:21	4165-60-0	
2-Fluorobiphenyl (S)	73	%.	30-132	1	03/27/18 12:47	03/30/18 16:21	321-60-8	
p-Terphenyl-d14 (S)	70	%.	62-125	1	03/27/18 12:47	03/30/18 16:21	1718-51-0	
Phenol-d6 (S)	59	%.	48-125	1	03/27/18 12:47	03/30/18 16:21	13127-88-3	
2-Fluorophenol (S)	59	%.	40-125	1	03/27/18 12:47	03/30/18 16:21	367-12-4	
2,4,6-Tribromophenol (S)	63	%.	60-125	1	03/27/18 12:47	03/30/18 16:21	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**1090**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	83-32-9	
Acenaphthylene	ND	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	208-96-8	
Anthracene	**831**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	120-12-7	
Benzo(a)anthracene	**351**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	56-55-3	
Benzo(a)pyrene	**378**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	50-32-8	
Benzo(b)fluoranthene	**483**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	207-08-9	
Chrysene	**439**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	53-70-3	
Fluoranthene	**1640**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	206-44-0	
Fluorene	**1020**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	193-39-5	
Naphthalene	**3510**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	91-20-3	
Phenanthrene	**3430**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	85-01-8	
Pyrene	**1120**	ug/kg	324	5	03/27/18 15:20	04/03/18 23:44	129-00-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-C3-WM (5-20) **Lab ID: 10424793003** Collected: 03/23/18 14:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	5	03/27/18 15:20	04/03/18 23:44	321-60-8	D3,P3, S4
p-Terphenyl-d14 (S)	0	%.	57-125	5	03/27/18 15:20	04/03/18 23:44	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	25057-89-0	
2,4-D	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	94-75-7	
2,4-DB	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	94-82-6	
Dicamba	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	1918-00-9	
Dinoseb	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	88-85-7	
MCPA	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	94-74-6	
Pentachlorophenol	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	87-86-5	
Picloram	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	1918-02-1	
2,4,5-T	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	93-72-1	
Triclopyr	ND	mg/kg	0.21	5	03/29/18 07:30	04/04/18 19:13	55335-06-3	
Surrogates								
2,4-DCAA (S)	61	%.	46-125	5	03/29/18 07:30	04/04/18 19:13	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1370	1	03/27/18 14:03	03/27/18 17:25	67-64-1	
Allyl chloride	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	107-05-1	
Benzene	ND	ug/kg	27.4	1	03/27/18 14:03	03/27/18 17:25	71-43-2	
Bromobenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	108-86-1	
Bromochloromethane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	74-97-5	
Bromodichloromethane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	75-27-4	
Bromoform	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	75-25-2	
Bromomethane	ND	ug/kg	684	1	03/27/18 14:03	03/27/18 17:25	74-83-9	
2-Butanone (MEK)	ND	ug/kg	342	1	03/27/18 14:03	03/27/18 17:25	78-93-3	
n-Butylbenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	104-51-8	
sec-Butylbenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	135-98-8	
tert-Butylbenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	98-06-6	
Carbon tetrachloride	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	56-23-5	
Chlorobenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	108-90-7	
Chloroethane	ND	ug/kg	684	1	03/27/18 14:03	03/27/18 17:25	75-00-3	
Chloroform	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	67-66-3	
Chloromethane	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	74-87-3	
2-Chlorotoluene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	95-49-8	
4-Chlorotoluene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	684	1	03/27/18 14:03	03/27/18 17:25	96-12-8	
Dibromochloromethane	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	106-93-4	
Dibromomethane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	541-73-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-C3-WM (5-20) **Lab ID: 10424793003** Collected: 03/23/18 14:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,4-Dichlorobenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	75-71-8	
1,1-Dichloroethane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	75-34-3	
1,2-Dichloroethane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	107-06-2	
1,1-Dichloroethene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	156-60-5	
Dichlorofluoromethane	ND	ug/kg	684	1	03/27/18 14:03	03/27/18 17:25	75-43-4	
1,2-Dichloropropane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	78-87-5	
1,3-Dichloropropane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	142-28-9	
2,2-Dichloropropane	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	594-20-7	
1,1-Dichloropropene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	60-29-7	
Ethylbenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	342	1	03/27/18 14:03	03/27/18 17:25	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	98-82-8	
p-Isopropyltoluene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	99-87-6	
Methylene Chloride	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	342	1	03/27/18 14:03	03/27/18 17:25	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	1634-04-4	
Naphthalene	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	91-20-3	
n-Propylbenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	103-65-1	
Styrene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	79-34-5	N2
Tetrachloroethene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	127-18-4	
Tetrahydrofuran	ND	ug/kg	2740	1	03/27/18 14:03	03/27/18 17:25	109-99-9	
Toluene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	79-00-5	
Trichloroethene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	274	1	03/27/18 14:03	03/27/18 17:25	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	68.4	1	03/27/18 14:03	03/27/18 17:25	108-67-8	
Vinyl chloride	ND	ug/kg	27.4	1	03/27/18 14:03	03/27/18 17:25	75-01-4	
Xylene (Total)	ND	ug/kg	205	1	03/27/18 14:03	03/27/18 17:25	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1	03/27/18 14:03	03/27/18 17:25	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/27/18 14:03	03/27/18 17:25	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1	03/27/18 14:03	03/27/18 17:25	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Sample: FD-SB-C3-WM (5-20) **Lab ID: 10424793003** Collected: 03/23/18 14:30 Received: 03/23/18 16:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	12.8	5	04/05/18 08:00	04/06/18 13:32		D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**118**	mg/kg	1.0	1		04/09/18 12:27		
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.41	1	04/05/18 10:35	04/05/18 14:47	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**3.9**	mg/kg	0.99	1	04/05/18 12:00	04/05/18 18:54	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 140178 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 555070 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.18	04/06/18 13:51	N3

METHOD BLANK: 555071 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.20	04/06/18 13:58	N3

METHOD BLANK: 555072 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.03	04/06/18 14:05	N3

LABORATORY CONTROL SAMPLE: 555073

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	105	90.2	86	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 555074 555075

Parameter	Units	10425111001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	446	407	290	293	65	72	65-135	1	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529815 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2875655 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	03/30/18 17:39	
a,a,a-Trifluorotoluene (S)	%.	100	80-150	03/30/18 17:39	

LABORATORY CONTROL SAMPLE & LCSD: 2875656 2875657

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	46.3	44.7	93	89	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%.				99	99	80-150			

MATRIX SPIKE SAMPLE: 2876408

Parameter	Units	10424443005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	60.8	115	187	80-120	C0,M1
a,a,a-Trifluorotoluene (S)	%.				98	80-150	

SAMPLE DUPLICATE: 2876409

Parameter	Units	10424609003 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	104	107	3	20	
a,a,a-Trifluorotoluene (S)	%.	99	99	0		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529342 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2873298 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.020	03/30/18 12:37	

LABORATORY CONTROL SAMPLE: 2873299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.45	0.51	112	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873300 2873301

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.12	2.2	2.4	2.6	2.6	109	105	80-120	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529339 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2873286 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	10.0	04/02/18 12:22	
Barium	mg/kg	ND	0.50	04/02/18 12:22	
Boron	mg/kg	ND	7.5	04/02/18 12:22	
Copper	mg/kg	ND	0.50	04/02/18 12:22	
Iron	mg/kg	24.4	2.5	04/02/18 12:22	
Manganese	mg/kg	ND	0.25	04/02/18 12:22	
Nickel	mg/kg	ND	1.0	04/02/18 12:22	
Silver	mg/kg	ND	0.50	04/02/18 12:22	
Tin	mg/kg	ND	3.8	04/02/18 12:22	
Titanium	mg/kg	ND	1.2	04/02/18 12:22	
Zinc	mg/kg	ND	1.0	04/02/18 12:22	

LABORATORY CONTROL SAMPLE: 2873287

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	962	978	102	80-120	
Barium	mg/kg	48.1	50.1	104	80-120	
Boron	mg/kg	48.1	45.5	95	80-120	
Copper	mg/kg	48.1	47.2	98	80-120	
Iron	mg/kg	962	1000	104	80-120	
Manganese	mg/kg	48.1	50.6	105	80-120	
Nickel	mg/kg	48.1	49.2	102	80-120	
Silver	mg/kg	24	22.4	93	80-120	
Tin	mg/kg	48.1	49.1	102	80-120	
Titanium	mg/kg	48.1	48.7	101	80-120	
Zinc	mg/kg	48.1	48.2	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873288 2873289

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	5600	4830	4830	12100	12700	134	147	75-125	5	20	M1
Barium	mg/kg	252	241	241	474	480	92	95	75-125	1	20	
Boron	mg/kg	524	241	241	778	802	105	115	75-125	3	20	
Copper	mg/kg	24.2	241	241	275	298	104	113	75-125	8	20	
Iron	mg/kg	15500	4830	4830	18100	23200	55	161	75-125	25	20	M1,R1
Manganese	mg/kg	423	241	241	614	675	79	104	75-125	9	20	
Nickel	mg/kg	11.3	241	241	256	262	101	104	75-125	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873288 2873289

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	ND	121	121	113	110	93	91	75-125	2	20	
Tin	mg/kg	44.1	241	241	272	273	95	95	75-125	0	20	
Titanium	mg/kg	158	241	241	391	406	96	103	75-125	4	20	
Zinc	mg/kg	232	241	241	411	487	74	106	75-125	17	20	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 435596 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2011670 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.18	04/08/18 14:34	N2

LABORATORY CONTROL SAMPLE: 2011671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.8	102	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2011672 2011673

Parameter	Units	10425111003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	51.1	4.81	4.81	48.6	136	-52	1770	75-125	95	20	1M, E, M0, N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529341 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2873294 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.50	03/30/18 17:03	
Arsenic	mg/kg	ND	0.50	03/30/18 17:03	
Beryllium	mg/kg	ND	0.20	03/30/18 17:03	
Cadmium	mg/kg	ND	0.080	03/30/18 17:03	
Cobalt	mg/kg	ND	0.50	03/30/18 17:03	
Lead	mg/kg	ND	0.10	03/30/18 17:03	
Lithium	mg/kg	ND	0.50	03/30/18 17:03	
Selenium	mg/kg	ND	0.50	03/30/18 17:03	
Strontium	mg/kg	ND	0.50	03/30/18 17:03	
Vanadium	mg/kg	ND	1.0	03/30/18 17:03	

LABORATORY CONTROL SAMPLE: 2873295

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	49.5	49.3	100	80-120	
Arsenic	mg/kg	49.5	49.1	99	80-120	
Beryllium	mg/kg	49.5	46.9	95	80-120	
Cadmium	mg/kg	49.5	48.8	99	80-120	
Cobalt	mg/kg	49.5	49.6	100	80-120	
Lead	mg/kg	49.5	50.3	102	80-120	
Lithium	mg/kg	49.5	45.7	92	80-120	
Selenium	mg/kg	49.5	48.0	97	80-120	
Strontium	mg/kg	49.5	48.3	98	80-120	
Vanadium	mg/kg	49.5	51.0	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873296 2873297

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	ND	239	239	192	203	80	85	75-125	5	20	
Arsenic	mg/kg	3.8	239	239	223	236	92	97	75-125	5	20	
Beryllium	mg/kg	ND	239	239	219	234	91	98	75-125	7	20	
Cadmium	mg/kg	0.72	239	239	221	234	92	98	75-125	6	20	
Cobalt	mg/kg	3.4	239	239	228	242	94	100	75-125	6	20	
Lead	mg/kg	308	239	239	641	734	139	178	75-125	14	20	M6
Lithium	mg/kg	4.6	239	239	216	232	88	95	75-125	7	20	
Selenium	mg/kg	ND	239	239	215	223	90	93	75-125	4	20	
Strontium	mg/kg	47.6	239	239	265	304	91	107	75-125	14	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873296 2873297

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vanadium	mg/kg	15.0	239	239	247	275	97	109	75-125	11	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529398 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10424793001, 10424793002, 10424793003

SAMPLE DUPLICATE: 2873484

Parameter	Units	10424937006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	31.8	32.4	2	30	

SAMPLE DUPLICATE: 2873740

Parameter	Units	10424803007 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	5.4	4.9	10	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529276 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2872633 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,1,1-Trichloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	03/27/18 16:35	N2
1,1,2-Trichloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	03/27/18 16:35	
1,1-Dichloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,1-Dichloroethene	ug/kg	ND	50.0	03/27/18 16:35	
1,1-Dichloropropene	ug/kg	ND	50.0	03/27/18 16:35	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,2,3-Trichloropropane	ug/kg	ND	200	03/27/18 16:35	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	03/27/18 16:35	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	03/27/18 16:35	
1,2-Dichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,2-Dichloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,2-Dichloropropane	ug/kg	ND	50.0	03/27/18 16:35	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,3-Dichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,3-Dichloropropane	ug/kg	ND	50.0	03/27/18 16:35	
1,4-Dichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
2,2-Dichloropropane	ug/kg	ND	200	03/27/18 16:35	
2-Butanone (MEK)	ug/kg	ND	250	03/27/18 16:35	
2-Chlorotoluene	ug/kg	ND	50.0	03/27/18 16:35	
4-Chlorotoluene	ug/kg	ND	50.0	03/27/18 16:35	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	03/27/18 16:35	
Acetone	ug/kg	ND	1000	03/27/18 16:35	
Allyl chloride	ug/kg	ND	200	03/27/18 16:35	
Benzene	ug/kg	ND	20.0	03/27/18 16:35	
Bromobenzene	ug/kg	ND	50.0	03/27/18 16:35	
Bromochloromethane	ug/kg	ND	50.0	03/27/18 16:35	
Bromodichloromethane	ug/kg	ND	50.0	03/27/18 16:35	
Bromoform	ug/kg	ND	200	03/27/18 16:35	
Bromomethane	ug/kg	ND	500	03/27/18 16:35	
Carbon tetrachloride	ug/kg	ND	50.0	03/27/18 16:35	
Chlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
Chloroethane	ug/kg	ND	500	03/27/18 16:35	
Chloroform	ug/kg	ND	50.0	03/27/18 16:35	
Chloromethane	ug/kg	ND	200	03/27/18 16:35	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	03/27/18 16:35	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	03/27/18 16:35	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

METHOD BLANK: 2872633 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	03/27/18 16:35	
Dibromomethane	ug/kg	ND	50.0	03/27/18 16:35	
Dichlorodifluoromethane	ug/kg	ND	200	03/27/18 16:35	
Dichlorofluoromethane	ug/kg	ND	500	03/27/18 16:35	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	03/27/18 16:35	
Ethylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
Hexachloro-1,3-butadiene	ug/kg	ND	250	03/27/18 16:35	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	03/27/18 16:35	
Methyl-tert-butyl ether	ug/kg	ND	50.0	03/27/18 16:35	
Methylene Chloride	ug/kg	ND	200	03/27/18 16:35	
n-Butylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
n-Propylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
Naphthalene	ug/kg	ND	200	03/27/18 16:35	
p-Isopropyltoluene	ug/kg	ND	50.0	03/27/18 16:35	
sec-Butylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
Styrene	ug/kg	ND	50.0	03/27/18 16:35	
tert-Butylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
Tetrachloroethene	ug/kg	ND	50.0	03/27/18 16:35	
Tetrahydrofuran	ug/kg	ND	2000	03/27/18 16:35	
Toluene	ug/kg	ND	50.0	03/27/18 16:35	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	03/27/18 16:35	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	03/27/18 16:35	
Trichloroethene	ug/kg	ND	50.0	03/27/18 16:35	N2
Trichlorofluoromethane	ug/kg	ND	200	03/27/18 16:35	
Vinyl chloride	ug/kg	ND	20.0	03/27/18 16:35	
Xylene (Total)	ug/kg	ND	150	03/27/18 16:35	
1,2-Dichloroethane-d4 (S)	%.	91	75-125	03/27/18 16:35	
4-Bromofluorobenzene (S)	%.	101	75-125	03/27/18 16:35	
Toluene-d8 (S)	%.	98	75-125	03/27/18 16:35	

LABORATORY CONTROL SAMPLE & LCSD: 2872634 2872635

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	936	912	94	91	59-125	3	20	
1,1,1-Trichloroethane	ug/kg	1000	910	885	91	89	59-125	3	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	923	898	92	90	58-125	3	20	N2
1,1,2-Trichloroethane	ug/kg	1000	913	861	91	86	64-125	6	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	876	853	88	85	65-125	3	20	
1,1-Dichloroethane	ug/kg	1000	853	825	85	82	63-125	3	20	
1,1-Dichloroethene	ug/kg	1000	918	900	92	90	59-125	2	20	
1,1-Dichloropropene	ug/kg	1000	918	913	92	91	64-125	1	20	
1,2,3-Trichlorobenzene	ug/kg	1000	898	866	90	87	55-126	4	20	
1,2,3-Trichloropropane	ug/kg	1000	847	792	85	79	62-125	7	20	
1,2,4-Trichlorobenzene	ug/kg	1000	907	899	91	90	62-125	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

LABORATORY CONTROL SAMPLE & LCSD: 2872634 2872635

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	895	876	90	88	59-125	2	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2070	2030	83	81	54-125	2	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	865	861	87	86	64-125	1	20	
1,2-Dichlorobenzene	ug/kg	1000	858	840	86	84	63-125	2	20	
1,2-Dichloroethane	ug/kg	1000	784	767	78	77	57-125	2	20	
1,2-Dichloropropane	ug/kg	1000	889	873	89	87	67-125	2	20	
1,3,5-Trimethylbenzene	ug/kg	1000	899	870	90	87	59-125	3	20	
1,3-Dichlorobenzene	ug/kg	1000	864	833	86	83	64-125	4	20	
1,3-Dichloropropane	ug/kg	1000	875	859	87	86	64-125	2	20	
1,4-Dichlorobenzene	ug/kg	1000	840	843	84	84	63-125	0	20	
2,2-Dichloropropane	ug/kg	1000	975	934	98	93	37-126	4	20	
2-Butanone (MEK)	ug/kg	5000	4040	4150	81	83	48-125	3	20	
2-Chlorotoluene	ug/kg	1000	870	844	87	84	62-125	3	20	
4-Chlorotoluene	ug/kg	1000	893	868	89	87	63-125	3	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4230	4170	85	83	52-135	1	20	
Acetone	ug/kg	5000	5930	5540	119	111	65-125	7	20	
Allyl chloride	ug/kg	1000	861	838	86	84	52-125	3	20	
Benzene	ug/kg	1000	870	836	87	84	61-125	4	20	
Bromobenzene	ug/kg	1000	896	858	90	86	64-125	4	20	
Bromochloromethane	ug/kg	1000	902	848	90	85	65-125	6	20	
Bromodichloromethane	ug/kg	1000	956	912	96	91	57-125	5	20	
Bromoform	ug/kg	1000	857	861	86	86	57-125	0	20	
Bromomethane	ug/kg	1000	761	842	76	84	60-125	10	20	
Carbon tetrachloride	ug/kg	1000	936	894	94	89	58-125	5	20	
Chlorobenzene	ug/kg	1000	891	868	89	87	66-125	3	20	
Chloroethane	ug/kg	1000	808	861	81	86	62-125	6	20	
Chloroform	ug/kg	1000	780	773	78	77	59-125	1	20	
Chloromethane	ug/kg	1000	777	793	78	79	50-125	2	20	
cis-1,2-Dichloroethene	ug/kg	1000	871	844	87	84	61-125	3	20	
cis-1,3-Dichloropropene	ug/kg	1000	920	884	92	88	61-125	4	20	
Dibromochloromethane	ug/kg	1000	873	836	87	84	60-125	4	20	
Dibromomethane	ug/kg	1000	919	879	92	88	69-125	4	20	
Dichlorodifluoromethane	ug/kg	1000	692	727	69	73	38-125	5	20	
Dichlorofluoromethane	ug/kg	1000	781	830	78	83	67-125	6	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1440	1560	144	156	60-125	8	20	L3
Ethylbenzene	ug/kg	1000	885	876	89	88	62-125	1	20	
Hexachloro-1,3-butadiene	ug/kg	1000	929	952	93	95	56-125	2	20	
Isopropylbenzene (Cumene)	ug/kg	1000	945	925	94	92	65-125	2	20	
Methyl-tert-butyl ether	ug/kg	1000	834	815	83	82	59-125	2	20	
Methylene Chloride	ug/kg	1000	905	859	91	86	64-125	5	20	
n-Butylbenzene	ug/kg	1000	931	914	93	91	59-125	2	20	
n-Propylbenzene	ug/kg	1000	920	887	92	89	61-125	4	20	
Naphthalene	ug/kg	1000	909	917	91	92	53-125	1	20	
p-Isopropyltoluene	ug/kg	1000	911	904	91	90	63-125	1	20	
sec-Butylbenzene	ug/kg	1000	937	918	94	92	62-125	2	20	
Styrene	ug/kg	1000	939	902	94	90	66-125	4	20	
tert-Butylbenzene	ug/kg	1000	914	898	91	90	64-125	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

LABORATORY CONTROL SAMPLE & LCSD: 2872634 2872635

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	916	895	92	89	67-125	2	20	
Tetrahydrofuran	ug/kg	10000	12300	11600	123	116	62-125	6	20	
Toluene	ug/kg	1000	886	876	89	88	61-125	1	20	
trans-1,2-Dichloroethene	ug/kg	1000	901	885	90	89	64-125	2	20	
trans-1,3-Dichloropropene	ug/kg	1000	931	929	93	93	56-125	0	20	
Trichloroethene	ug/kg	1000	892	866	89	87	67-125	3	20	N2
Trichlorofluoromethane	ug/kg	1000	753	816	75	82	65-125	8	20	
Vinyl chloride	ug/kg	1000	851	883	85	88	57-125	4	20	
Xylene (Total)	ug/kg	3000	2710	2690	90	90	62-125	1	20	
1,2-Dichloroethane-d4 (S)	%.				92	91	75-125			
4-Bromofluorobenzene (S)	%.				100	102	75-125			
Toluene-d8 (S)	%.				99	101	75-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529466 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2873686 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/05/18 18:14	
4,4'-DDE	ug/kg	ND	3.3	04/05/18 18:14	
4,4'-DDT	ug/kg	ND	3.3	04/05/18 18:14	
Aldrin	ug/kg	ND	1.7	04/05/18 18:14	
alpha-BHC	ug/kg	ND	1.7	04/05/18 18:14	
alpha-Chlordane	ug/kg	ND	1.7	04/05/18 18:14	
beta-BHC	ug/kg	ND	1.7	04/05/18 18:14	
Chlordane (Technical)	ug/kg	ND	16.7	04/05/18 18:14	
delta-BHC	ug/kg	ND	1.7	04/05/18 18:14	
Dieldrin	ug/kg	ND	3.3	04/05/18 18:14	
Endosulfan I	ug/kg	ND	1.7	04/05/18 18:14	
Endosulfan II	ug/kg	ND	3.3	04/05/18 18:14	
Endosulfan sulfate	ug/kg	ND	3.3	04/05/18 18:14	
Endrin	ug/kg	ND	3.3	04/05/18 18:14	
Endrin aldehyde	ug/kg	ND	3.3	04/05/18 18:14	
Endrin ketone	ug/kg	ND	3.3	04/05/18 18:14	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/05/18 18:14	
gamma-Chlordane	ug/kg	ND	1.7	04/05/18 18:14	
Heptachlor	ug/kg	ND	1.7	04/05/18 18:14	
Heptachlor epoxide	ug/kg	ND	1.7	04/05/18 18:14	
Methoxychlor	ug/kg	ND	16.7	04/05/18 18:14	
Toxaphene	ug/kg	ND	50.0	04/05/18 18:14	
Decachlorobiphenyl (S)	%.	95	30-150	04/05/18 18:14	
Tetrachloro-m-xylene (S)	%.	91	30-150	04/05/18 18:14	

LABORATORY CONTROL SAMPLE: 2873687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	33.1	99	62-127	
4,4'-DDE	ug/kg	33.3	32.4	97	66-125	
4,4'-DDT	ug/kg	33.3	33.2	99	67-128	CH
Aldrin	ug/kg	16.7	14.5	87	66-125	
alpha-BHC	ug/kg	16.7	14.8	89	64-125	
alpha-Chlordane	ug/kg	16.7	15.2	91	68-125	
beta-BHC	ug/kg	16.7	15.3	92	69-125	
delta-BHC	ug/kg	16.7	9.8	59	42-133	
Dieldrin	ug/kg	33.3	33.7	101	69-126	
Endosulfan I	ug/kg	16.7	14.1	85	63-125	
Endosulfan II	ug/kg	33.3	33.0	99	69-125	
Endosulfan sulfate	ug/kg	33.3	27.6	83	56-137	

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

LABORATORY CONTROL SAMPLE: 2873687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	31.1	93	69-125	
Endrin aldehyde	ug/kg	33.3	31.3	94	65-125	
Endrin ketone	ug/kg	33.3	34.0	102	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	15.3	92	67-125	
gamma-Chlordane	ug/kg	16.7	13.8	83	63-125	
Heptachlor	ug/kg	16.7	15.3	92	69-125	
Heptachlor epoxide	ug/kg	16.7	15.3	92	68-125	
Methoxychlor	ug/kg	167	165	99	65-134	CH
Decachlorobiphenyl (S)	%.			90	30-150	
Tetrachloro-m-xylene (S)	%.			86	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873688 2873689

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	166	166	147	154	89	93	56-125	5	20	
4,4'-DDE	ug/kg	ND	166	166	154	164	93	99	32-150	6	20	
4,4'-DDT	ug/kg	ND	166	166	154	158	93	95	60-132	2	20	CH
Aldrin	ug/kg	ND	82.5	83	61.8	64.2	75	78	56-125	4	20	
alpha-BHC	ug/kg	ND	82.5	83	74.1	80.9	90	98	54-136	9	20	
alpha-Chlordane	ug/kg	147	82.5	83	169	140	26	-9	54-133	19	20	M1
beta-BHC	ug/kg	64.3	82.5	83	79.8	87.9	19	28	30-150	10	20	M1
delta-BHC	ug/kg	ND	82.5	83	49.8	54.9	60	66	45-145	10	20	
Dieldrin	ug/kg	ND	166	166	142	143	86	86	47-150	0	20	
Endosulfan I	ug/kg	ND	82.5	83	66.2	70.2	80	85	35-145	6	20	
Endosulfan II	ug/kg	ND	166	166	139	142	84	86	50-147	2	20	
Endosulfan sulfate	ug/kg	ND	166	166	118	120	71	73	54-132	2	20	
Endrin	ug/kg	ND	166	166	126	128	76	78	62-125	2	20	
Endrin aldehyde	ug/kg	ND	166	166	132	132	80	80	33-150	1	20	
Endrin ketone	ug/kg	ND	166	166	144	146	87	88	56-144	1	20	
gamma-BHC (Lindane)	ug/kg	ND	82.5	83	66.3	68.3	80	82	63-125	3	20	
gamma-Chlordane	ug/kg	129	82.5	83	141	118	14	-14	45-132	18	20	M1
Heptachlor	ug/kg	ND	82.5	83	77.5	95.3	94	115	51-142	21	20	R1
Heptachlor epoxide	ug/kg	ND	82.5	83	65.2	69.5	79	84	50-142	6	20	
Methoxychlor	ug/kg	ND	825	830	810	820	98	99	58-139	1	20	CH
Decachlorobiphenyl (S)	%.						60	64	30-150			
Tetrachloro-m-xylene (S)	%.						57	64	30-150			4M,D4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529467 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2873690 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/02/18 10:11	
Decachlorobiphenyl (S)	%.	88	30-134	04/02/18 10:11	
Tetrachloro-m-xylene (S)	%.	88	48-125	04/02/18 10:11	

LABORATORY CONTROL SAMPLE: 2873691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	569	85	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	575	86	62-125	
Decachlorobiphenyl (S)	%.			90	30-134	
Tetrachloro-m-xylene (S)	%.			90	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873692 2873693

Parameter	Units	10424793002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	930	930	789	769	85	83	30-150	3	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	930	930	906	896	97	96	30-138	1	30	
Decachlorobiphenyl (S)	%.						77	74	30-134			
Tetrachloro-m-xylene (S)	%.						76	69	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529268 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2872570 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1,2-Dichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1,2-Diphenylhydrazine	ug/kg	ND	330	03/30/18 11:47	
1,3-Dichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1,4-Dichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1-Methylnaphthalene	ug/kg	ND	330	03/30/18 11:47	
2,4,5-Trichlorophenol	ug/kg	ND	330	03/30/18 11:47	
2,4,6-Trichlorophenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dichlorophenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dimethylphenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dinitrophenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dinitrotoluene	ug/kg	ND	330	03/30/18 11:47	
2,6-Dinitrotoluene	ug/kg	ND	330	03/30/18 11:47	
2-Chloronaphthalene	ug/kg	ND	330	03/30/18 11:47	
2-Chlorophenol	ug/kg	ND	330	03/30/18 11:47	
2-Methylnaphthalene	ug/kg	ND	330	03/30/18 11:47	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	03/30/18 11:47	
2-Nitroaniline	ug/kg	ND	330	03/30/18 11:47	
2-Nitrophenol	ug/kg	ND	330	03/30/18 11:47	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	03/30/18 11:47	
3,3'-Dichlorobenzidine	ug/kg	ND	330	03/30/18 11:47	
3-Nitroaniline	ug/kg	ND	330	03/30/18 11:47	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	03/30/18 11:47	
4-Bromophenylphenyl ether	ug/kg	ND	330	03/30/18 11:47	
4-Chloro-3-methylphenol	ug/kg	ND	330	03/30/18 11:47	
4-Chloroaniline	ug/kg	ND	330	03/30/18 11:47	
4-Chlorophenylphenyl ether	ug/kg	ND	330	03/30/18 11:47	
4-Nitroaniline	ug/kg	ND	330	03/30/18 11:47	
4-Nitrophenol	ug/kg	ND	330	03/30/18 11:47	
Acenaphthene	ug/kg	ND	330	03/30/18 11:47	
Acenaphthylene	ug/kg	ND	330	03/30/18 11:47	
Anthracene	ug/kg	ND	330	03/30/18 11:47	
Benzo(a)anthracene	ug/kg	ND	330	03/30/18 11:47	
Benzo(a)pyrene	ug/kg	ND	330	03/30/18 11:47	
Benzo(b)fluoranthene	ug/kg	ND	330	03/30/18 11:47	
Benzo(g,h,i)perylene	ug/kg	ND	330	03/30/18 11:47	
Benzo(k)fluoranthene	ug/kg	ND	330	03/30/18 11:47	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	03/30/18 11:47	
bis(2-Chloroethyl) ether	ug/kg	ND	330	03/30/18 11:47	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	03/30/18 11:47	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	03/30/18 11:47	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

METHOD BLANK: 2872570 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	03/30/18 11:47	
Carbazole	ug/kg	ND	330	03/30/18 11:47	
Chrysene	ug/kg	ND	330	03/30/18 11:47	
Di-n-butylphthalate	ug/kg	ND	330	03/30/18 11:47	
Di-n-octylphthalate	ug/kg	ND	330	03/30/18 11:47	
Dibenz(a,h)anthracene	ug/kg	ND	330	03/30/18 11:47	
Dibenzofuran	ug/kg	ND	330	03/30/18 11:47	
Diethylphthalate	ug/kg	ND	330	03/30/18 11:47	
Dimethylphthalate	ug/kg	ND	330	03/30/18 11:47	
Fluoranthene	ug/kg	ND	330	03/30/18 11:47	
Fluorene	ug/kg	ND	330	03/30/18 11:47	
Hexachloro-1,3-butadiene	ug/kg	ND	330	03/30/18 11:47	
Hexachlorobenzene	ug/kg	ND	330	03/30/18 11:47	
Hexachloroethane	ug/kg	ND	330	03/30/18 11:47	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	03/30/18 11:47	
Isophorone	ug/kg	ND	330	03/30/18 11:47	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	03/30/18 11:47	
N-Nitrosodimethylamine	ug/kg	ND	330	03/30/18 11:47	
N-Nitrosodiphenylamine	ug/kg	ND	330	03/30/18 11:47	
Naphthalene	ug/kg	ND	330	03/30/18 11:47	
Nitrobenzene	ug/kg	ND	330	03/30/18 11:47	
Pentachlorophenol	ug/kg	ND	670	03/30/18 11:47	
Phenanthrene	ug/kg	ND	330	03/30/18 11:47	
Phenol	ug/kg	ND	330	03/30/18 11:47	
Pyrene	ug/kg	ND	330	03/30/18 11:47	
2,4,6-Tribromophenol (S)	%.	73	60-125	03/30/18 11:47	
2-Fluorobiphenyl (S)	%.	58	30-132	03/30/18 11:47	
2-Fluorophenol (S)	%.	55	40-125	03/30/18 11:47	
Nitrobenzene-d5 (S)	%.	54	43-125	03/30/18 11:47	
p-Terphenyl-d14 (S)	%.	90	62-125	03/30/18 11:47	
Phenol-d6 (S)	%.	56	48-125	03/30/18 11:47	

LABORATORY CONTROL SAMPLE: 2872571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1020	61	46-125	
1,2-Dichlorobenzene	ug/kg	1670	999	60	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1310	78	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1010	61	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1010	61	39-125	
1-Methylnaphthalene	ug/kg	1670	1080	65	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1220	73	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1200	72	61-125	
2,4-Dichlorophenol	ug/kg	1670	1060	64	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

LABORATORY CONTROL SAMPLE: 2872571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1030	62	51-125	
2,4-Dinitrophenol	ug/kg	1670	1200	72	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1250	75	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1240	74	63-125	
2-Chloronaphthalene	ug/kg	1670	1130	68	61-125	
2-Chlorophenol	ug/kg	1670	1020	61	46-125	
2-Methylnaphthalene	ug/kg	1670	1080	65	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1080	65	50-125	
2-Nitroaniline	ug/kg	1670	1380	83	61-125	
2-Nitrophenol	ug/kg	1670	1030	62	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1080	65	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1290	78	47-125	
3-Nitroaniline	ug/kg	1670	1220	73	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1380J	83	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1350	81	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1180	71	64-125	
4-Chloroaniline	ug/kg	1670	944	57	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1210	73	64-125	
4-Nitroaniline	ug/kg	1670	1180	71	59-125	
4-Nitrophenol	ug/kg	1670	1320	79	54-125	
Acenaphthene	ug/kg	1670	1190	72	62-125	
Acenaphthylene	ug/kg	1670	1140	69	61-125	
Anthracene	ug/kg	1670	1280	77	66-125	
Benzo(a)anthracene	ug/kg	1670	1300	78	69-125	
Benzo(a)pyrene	ug/kg	1670	1310	79	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1380	83	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1320	79	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1300	78	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1120	67	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1090	65	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1180	71	37-125	
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1330	80	69-131	
Butylbenzylphthalate	ug/kg	1670	1340	81	69-129	
Carbazole	ug/kg	1670	1290	77	66-125	
Chrysene	ug/kg	1670	1300	78	68-125	
Di-n-butylphthalate	ug/kg	1670	1360	81	69-125	
Di-n-octylphthalate	ug/kg	1670	1310	79	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1340	81	64-125	
Dibenzofuran	ug/kg	1670	1200	72	65-125	
Diethylphthalate	ug/kg	1670	1280	77	67-125	
Dimethylphthalate	ug/kg	1670	1240	75	67-125	
Fluoranthene	ug/kg	1670	1280	77	66-125	
Fluorene	ug/kg	1670	1190	71	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1040	62	40-125	
Hexachlorobenzene	ug/kg	1670	1320	79	62-125	
Hexachloroethane	ug/kg	1670	1010	61	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1320	79	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

LABORATORY CONTROL SAMPLE: 2872571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1130	68	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1150	69	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1090	65	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1320	79	65-125	
Naphthalene	ug/kg	1670	1050	63	48-125	
Nitrobenzene	ug/kg	1670	1130	68	48-125	
Pentachlorophenol	ug/kg	1670	1220	73	41-125	
Phenanthrene	ug/kg	1670	1300	78	66-125	
Phenol	ug/kg	1670	1110	67	46-125	
Pyrene	ug/kg	1670	1360	82	69-125	
2,4,6-Tribromophenol (S)	%.			85	60-125	
2-Fluorobiphenyl (S)	%.			76	30-132	
2-Fluorophenol (S)	%.			69	40-125	
Nitrobenzene-d5 (S)	%.			71	43-125	
p-Terphenyl-d14 (S)	%.			89	62-125	
Phenol-d6 (S)	%.			72	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872788 2872789

Parameter	Units	10424792001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	1720	1710	1460J	1420J	85	83	30-127		30	
1,2-Dichlorobenzene	ug/kg	ND	1720	1710	1360J	1370J	79	80	30-125		30	
1,2-Diphenylhydrazine	ug/kg	ND	1720	1710	1710	1620J	100	95	30-150		30	
1,3-Dichlorobenzene	ug/kg	ND	1720	1710	1400J	1320J	82	77	30-125		30	
1,4-Dichlorobenzene	ug/kg	ND	1720	1710	1400J	1350J	82	79	30-125		30	
1-Methylnaphthalene	ug/kg	ND	1720	1710	1540J	1510J	90	88	42-125		30	
2,4,5-Trichlorophenol	ug/kg	ND	1720	1710	1470J	1350J	86	79	30-150		30	
2,4,6-Trichlorophenol	ug/kg	ND	1720	1710	1330J	1320J	78	77	30-150		30	
2,4-Dichlorophenol	ug/kg	ND	1720	1710	1550J	1480J	91	87	30-135		30	
2,4-Dimethylphenol	ug/kg	ND	1720	1710	1440J	1430J	84	84	30-148		30	
2,4-Dinitrophenol	ug/kg	ND	1720	1710	ND	ND	5	4	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	ND	1720	1710	1560J	1560J	91	92	30-150		30	
2,6-Dinitrotoluene	ug/kg	ND	1720	1710	1650J	1720	96	100	30-150		30	
2-Chloronaphthalene	ug/kg	ND	1720	1710	1580J	1500J	92	88	30-138		30	
2-Chlorophenol	ug/kg	ND	1720	1710	1500J	1450J	88	85	30-130		30	
2-Methylnaphthalene	ug/kg	ND	1720	1710	1530J	1640J	89	96	46-125		30	
2-Methylphenol(o-Cresol)	ug/kg	ND	1720	1710	1590J	1490J	93	87	30-133		30	
2-Nitroaniline	ug/kg	ND	1720	1710	1650J	1750	97	103	30-150		30	
2-Nitrophenol	ug/kg	ND	1720	1710	1360J	1410J	79	83	30-134		30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	1720	1710	1600J	1590J	94	93	30-138		30	
3,3'-Dichlorobenzidine	ug/kg	ND	1720	1710	1340J	1500J	78	88	30-149		30	5M
3-Nitroaniline	ug/kg	ND	1720	1710	1300J	1180J	76	69	30-150		30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1720	1710	ND	ND	19	20	30-133		30	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872788 2872789

Parameter	Units	10424792001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	1720	1710	1670J	1600J	97	94	44-125		30	
4-Chloro-3-methylphenol	ug/kg	ND	1720	1710	1580J	ND	92	99	30-150		30	
4-Chloroaniline	ug/kg	ND	1720	1710	1010J	930J	59	54	30-125		30	
4-Chlorophenylphenyl ether	ug/kg	ND	1720	1710	1630J	1540J	95	90	44-125		30	
4-Nitroaniline	ug/kg	ND	1720	1710	1500J	1440J	87	84	30-150		30	
4-Nitrophenol	ug/kg	ND	1720	1710	1450J	1370J	85	80	30-150		30	
Acenaphthene	ug/kg	ND	1720	1710	1490J	1430J	87	84	40-125		30	
Acenaphthylene	ug/kg	ND	1720	1710	1560J	1470J	91	86	30-150		30	
Anthracene	ug/kg	ND	1720	1710	1770	1800	103	106	30-150	2	30	
Benzo(a)anthracene	ug/kg	ND	1720	1710	1970	1970	115	115	30-150	0	30	
Benzo(a)pyrene	ug/kg	ND	1720	1710	1860	1850	109	108	30-150	1	30	
Benzo(b)fluoranthene	ug/kg	ND	1720	1710	1560J	1770	91	104	30-150		30	
Benzo(g,h,i)perylene	ug/kg	ND	1720	1710	1600J	1710	93	100	30-150		30	
Benzo(k)fluoranthene	ug/kg	ND	1720	1710	1660J	1550J	97	91	30-150		30	
bis(2-Chloroethoxy)methane	ug/kg	ND	1720	1710	1520J	1460J	89	85	30-134		30	
bis(2-Chloroethyl) ether	ug/kg	ND	1720	1710	1570J	1550J	91	91	30-125		30	5M
bis(2-Chloroisopropyl) ether	ug/kg	ND	1720	1710	1780	1600J	104	94	30-125		30	5M
bis(2-Ethylhexyl)phthalate	ug/kg	ND	1720	1710	1780	1880	104	110	30-150	5	30	
Butylbenzylphthalate	ug/kg	ND	1720	1710	1740	1790	102	105	30-150	3	30	
Carbazole	ug/kg	ND	1720	1710	1660J	1710	97	100	41-125		30	
Chrysene	ug/kg	ND	1720	1710	2070	2030	121	119	30-150	2	30	
Di-n-butylphthalate	ug/kg	ND	1720	1710	1730	1740	101	102	30-150	0	30	
Di-n-octylphthalate	ug/kg	ND	1720	1710	1840	1870	108	110	30-150	2	30	
Dibenz(a,h)anthracene	ug/kg	ND	1720	1710	1540J	1680J	90	98	30-150		30	
Dibenzofuran	ug/kg	ND	1720	1710	1620J	1590J	95	93	45-125		30	
Diethylphthalate	ug/kg	ND	1720	1710	1680J	1660J	98	97	30-150		30	
Dimethylphthalate	ug/kg	ND	1720	1710	1650J	1630J	97	96	30-150		30	
Fluoranthene	ug/kg	ND	1720	1710	1750	1740	102	102	30-150	0	30	
Fluorene	ug/kg	ND	1720	1710	1620J	1660J	95	97	30-150		30	
Hexachloro-1,3-butadiene	ug/kg	ND	1720	1710	1380J	1460J	80	86	30-128		30	
Hexachlorobenzene	ug/kg	ND	1720	1710	1500J	1500J	87	88	30-150		30	
Hexachloroethane	ug/kg	ND	1720	1710	1440J	1350J	84	79	30-125		30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	1720	1710	1500J	1650J	88	97	30-150		30	
Isophorone	ug/kg	ND	1720	1710	1570J	1550J	92	91	30-140		30	
N-Nitroso-di-n-propylamine	ug/kg	ND	1720	1710	1680J	1570J	98	92	30-147		30	5M
N-Nitrosodimethylamine	ug/kg	ND	1720	1710	1420J	1330J	83	78	30-125		30	
N-Nitrosodiphenylamine	ug/kg	ND	1720	1710	1610J	1720	94	101	30-150		30	
Naphthalene	ug/kg	ND	1720	1710	1520J	1480J	89	86	44-125		30	
Nitrobenzene	ug/kg	ND	1720	1710	1580J	1550J	92	91	30-136		30	
Pentachlorophenol	ug/kg	ND	1720	1710	ND	ND	23	22	30-150		30	M1
Phenanthrene	ug/kg	ND	1720	1710	1890	1950	110	114	30-150	3	30	
Phenol	ug/kg	ND	1720	1710	1530J	1490J	89	87	30-129		30	
Pyrene	ug/kg	ND	1720	1710	2160	2260	126	132	30-150	4	30	
2,4,6-Tribromophenol (S)	%.						86	83	60-125			
2-Fluorobiphenyl (S)	%.						98	95	30-132			
2-Fluorophenol (S)	%.						95	88	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872788 2872789

Parameter	Units	10424792001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						93	93	43-125			
p-Terphenyl-d14 (S)	%.						97	103	62-125			
Phenol-d6 (S)	%.						95	93	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529263 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2872540 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/02/18 12:14	
Acenaphthylene	ug/kg	ND	10.0	04/02/18 12:14	
Anthracene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(a)anthracene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(a)pyrene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/02/18 12:14	
Chrysene	ug/kg	ND	10.0	04/02/18 12:14	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/02/18 12:14	
Fluoranthene	ug/kg	ND	10.0	04/02/18 12:14	
Fluorene	ug/kg	ND	10.0	04/02/18 12:14	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/02/18 12:14	
Naphthalene	ug/kg	ND	10.0	04/02/18 12:14	
Phenanthrene	ug/kg	ND	10.0	04/02/18 12:14	
Pyrene	ug/kg	ND	10.0	04/02/18 12:14	
2-Fluorobiphenyl (S)	%.	84	42-125	04/02/18 12:14	
p-Terphenyl-d14 (S)	%.	100	57-125	04/02/18 12:14	

LABORATORY CONTROL SAMPLE: 2872541

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	24.2	73	52-125	
Acenaphthylene	ug/kg	33.3	26.1	78	50-125	
Anthracene	ug/kg	33.3	30.0	90	65-125	
Benzo(a)anthracene	ug/kg	33.3	31.8	95	60-125	
Benzo(a)pyrene	ug/kg	33.3	30.2	90	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	31.1	93	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	26.3	79	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	29.3	88	67-125	
Chrysene	ug/kg	33.3	28.6	86	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	25.8	77	63-125	
Fluoranthene	ug/kg	33.3	30.2	91	75-125	
Fluorene	ug/kg	33.3	25.3	76	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	26.4	79	63-125	
Naphthalene	ug/kg	33.3	26.1	78	49-125	
Phenanthrene	ug/kg	33.3	25.1	75	65-125	
Pyrene	ug/kg	33.3	31.2	94	64-125	
2-Fluorobiphenyl (S)	%.			78	42-125	
p-Terphenyl-d14 (S)	%.			97	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872542 2872543

Parameter	Units	10424778001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	36.5	36.6	27.7J	25.3J	76	69	30-125		30	
Acenaphthylene	ug/kg	ND	36.5	36.6	74.3J	57.6J	203	157	30-133		30	M1
Anthracene	ug/kg	ND	36.5	36.6	76.5J	62.4J	209	170	30-150		30	M1
Benzo(a)anthracene	ug/kg	ND	36.5	36.6	117	64.1J	319	175	30-150		30	M1
Benzo(a)pyrene	ug/kg	ND	36.5	36.6	205	148	559	404	30-150	32	30	M1,R1
Benzo(b)fluoranthene	ug/kg	ND	36.5	36.6	201	135	551	370	30-150	39	30	M1,R1
Benzo(g,h,i)perylene	ug/kg	0.16 mg/kg	36.5	36.6	275	218	317	158	30-150	23	30	M1
Benzo(k)fluoranthene	ug/kg	ND	36.5	36.6	94.9J	67.8J	260	185	30-150		30	M1
Chrysene	ug/kg	ND	36.5	36.6	148	83.8J	406	229	30-150		30	M1
Dibenz(a,h)anthracene	ug/kg	ND	36.5	36.6	80.8J	61.4J	221	168	30-131		30	M1
Fluoranthene	ug/kg	ND	36.5	36.6	139	80.6J	380	220	30-150		30	M1
Fluorene	ug/kg	ND	36.5	36.6	32J	26.3J	88	72	30-147		30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	36.5	36.6	169	125	463	342	30-150	30	30	M1
Naphthalene	ug/kg	ND	36.5	36.6	25.2J	22.3J	69	61	30-131		30	
Phenanthrene	ug/kg	ND	36.5	36.6	41.7J	34.5J	114	94	30-150		30	
Pyrene	ug/kg	ND	36.5	36.6	139	74.2J	381	202	30-150		30	M1
2-Fluorobiphenyl (S)	%.						82	71	42-125			P3
p-Terphenyl-d14 (S)	%.						74	66	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529569 Analysis Method: EPA 8270D
QC Batch Method: EPA 3546 Analysis Description: MDA2 Solid MSSV
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2874519 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,5-T	mg/kg	ND	0.033	04/04/18 13:35	
2,4,5-TP (Silvex)	mg/kg	ND	0.033	04/04/18 13:35	
2,4-D	mg/kg	ND	0.033	04/04/18 13:35	
2,4-DB	mg/kg	ND	0.033	04/04/18 13:35	
Bentazon	mg/kg	ND	0.033	04/04/18 13:35	
Dicamba	mg/kg	ND	0.033	04/04/18 13:35	
Dinoseb	mg/kg	ND	0.033	04/04/18 13:35	
MCPA	mg/kg	ND	0.033	04/04/18 13:35	
Pentachlorophenol	mg/kg	ND	0.033	04/04/18 13:35	
Picloram	mg/kg	ND	0.033	04/04/18 13:35	
Triclopyr	mg/kg	ND	0.033	04/04/18 13:35	
2,4-DCAA (S)	%.	78	46-125	04/04/18 13:35	

LABORATORY CONTROL SAMPLE: 2874520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-T	mg/kg	.33	0.28	83	60-125	
2,4,5-TP (Silvex)	mg/kg	.33	0.26	79	61-125	
2,4-D	mg/kg	.33	0.29	86	63-125	
2,4-DB	mg/kg	.33	0.28	83	59-125	
Bentazon	mg/kg	.33	0.25	76	58-125	
Dicamba	mg/kg	.33	0.27	80	52-125	
Dinoseb	mg/kg	.33	0.18	53	35-126	
MCPA	mg/kg	.33	0.27	82	57-125	
Pentachlorophenol	mg/kg	.33	0.21	63	48-125	
Picloram	mg/kg	.33	0.24	72	47-125	
Triclopyr	mg/kg	.33	0.28	83	68-125	
2,4-DCAA (S)	%.			77	46-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874521 2874522

Parameter	Units	10425111006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2,4,5-T	mg/kg	ND	.45	.45	0.19	0.21	42	45	30-145	8	20	
2,4,5-TP (Silvex)	mg/kg	ND	.45	.45	0.28	0.26	63	58	30-130	7	20	
2,4-D	mg/kg	ND	.45	.45	0.18	0.20	40	44	30-150	9	20	
2,4-DB	mg/kg	ND	.45	.45	0.35	0.33	77	72	45-126	7	20	
Bentazon	mg/kg	ND	.45	.45	0.33	0.32	73	71	30-133	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874521 2874522

Parameter	Units	10425111006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Dicamba	mg/kg	ND	.45	.45	0.13	0.17	29	38	30-140	28	20	M1,R1
Dinoseb	mg/kg	ND	.45	.45	0.39	0.31	86	69	30-136	23	20	R1
MCPA	mg/kg	ND	.45	.45	0.24	0.22	53	49	30-136	9	20	
Pentachlorophenol	mg/kg	ND	.45	.45	0.28	0.25	63	55	44-125	13	20	
Picloram	mg/kg	ND	.45	.45	.016J	0.098	3	22	30-125		20	M1
Triclopyr	mg/kg	ND	.45	.45	0.23	0.22	51	50	30-149	3	20	
2,4-DCAA (S)	%.						65	60	46-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 529271 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 2872598 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	03/30/18 13:11	
n-Triacontane (S)	%.	83	50-150	03/30/18 13:11	

LABORATORY CONTROL SAMPLE & LCSD: 2872599 2872600

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	68.2	73.5	85	92	70-120	8	20	
n-Triacontane (S)	%.				85	78	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 435589 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10424793003

METHOD BLANK: 2011612 Matrix: Solid
Associated Lab Samples: 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/06/18 13:03	

LABORATORY CONTROL SAMPLE: 2011613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1010	916	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2011628 2011629

Parameter	Units	50192674008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1130	1120	1050	1050	93	94	75-125	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2011630 2011631

Parameter	Units	50192674008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	45.7	45.5	45.3	45.5	99	100	75-125	0	20	

SAMPLE DUPLICATE: 2011632

Parameter	Units	40166807001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	<71.3	ND		20	D3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 285232 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 1669245 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/05/18 14:27	

LABORATORY CONTROL SAMPLE: 1669246

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1669247 1669248

Parameter	Units	40166647001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.10J	2.5	2.5	2.3	2.5	88	96	80-120	7	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1669249 1669250

Parameter	Units	40166870001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.16J	2.37	2.49	2.4	2.3	94	89	80-120	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

QC Batch: 139994 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10424793001, 10424793002, 10424793003

METHOD BLANK: 554472 Matrix: Solid
Associated Lab Samples: 10424793001, 10424793002, 10424793003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.99	04/05/18 17:16	

LABORATORY CONTROL SAMPLE: 554471

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	49.8	51.6	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 554473 554474

Parameter	Units	10424793002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	1.7	50	49	23.2	28.0	43	54	80-120	19	20	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

BATCH QUALIFIERS

Batch: 435998

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	RPD value is outside control limits due to sample non-homogeneity.
2M	Sample was black in color. Sample needed to be centrifuged and decanted prior to analysis.
3M	Sample was brown in color. Sample was centrifuged and decanted prior to analysis.
4M	Sample was yellow in color.
5M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
C0	Result confirmed by second analysis.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
R1	RPD value was outside control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
T6	High boiling point hydrocarbons are present in the sample.
T7	Low boiling point hydrocarbons are present in the sample.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424793001	**FD-SB-A3-S (30-35)**	EPA 1630 (1998)	140178	EPA 1630 (1998)	140181
10424793002	**FD-SB-B3-WM (5-26)**	EPA 1630 (1998)	140178	EPA 1630 (1998)	140181
10424793003	**FD-SB-C3-WM (5-20)**	EPA 1630 (1998)	140178	EPA 1630 (1998)	140181
10424793001	**FD-SB-A3-S (30-35)**	EPA 3550	529466	EPA 8081B	530402
10424793002	**FD-SB-B3-WM (5-26)**	EPA 3550	529466	EPA 8081B	530402
10424793003	**FD-SB-C3-WM (5-20)**	EPA 3550	529466	EPA 8081B	530402
10424793001	**FD-SB-A3-S (30-35)**	EPA 3550	529467	EPA 8082A	530082
10424793002	**FD-SB-B3-WM (5-26)**	EPA 3550	529467	EPA 8082A	530082
10424793003	**FD-SB-C3-WM (5-20)**	EPA 3550	529467	EPA 8082A	530082
10424793001	**FD-SB-A3-S (30-35)**	WI MOD DRO	529271	WI MOD DRO	529930
10424793002	**FD-SB-B3-WM (5-26)**	WI MOD DRO	529271	WI MOD DRO	529930
10424793003	**FD-SB-C3-WM (5-20)**	WI MOD DRO	529271	WI MOD DRO	529930
10424793001	**FD-SB-A3-S (30-35)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424793002	**FD-SB-B3-WM (5-26)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424793003	**FD-SB-C3-WM (5-20)**	EPA 5030 Medium Soil	529815	WI MOD GRO	530199
10424793001	**FD-SB-A3-S (30-35)**	EPA 3050	529339	EPA 6010C	529383
10424793002	**FD-SB-B3-WM (5-26)**	EPA 3050	529339	EPA 6010C	529383
10424793003	**FD-SB-C3-WM (5-20)**	EPA 3050	529339	EPA 6010C	529383
10424793001	**FD-SB-A3-S (30-35)**	EPA 3050B	435596	EPA 6020	435837
10424793002	**FD-SB-B3-WM (5-26)**	EPA 3050B	435596	EPA 6020	435837
10424793003	**FD-SB-C3-WM (5-20)**	EPA 3050B	435596	EPA 6020	435837
10424793001	**FD-SB-A3-S (30-35)**	EPA 3050	529341	EPA 6020A	529455
10424793002	**FD-SB-B3-WM (5-26)**	EPA 3050	529341	EPA 6020A	529455
10424793003	**FD-SB-C3-WM (5-20)**	EPA 3050	529341	EPA 6020A	529455
10424793001	**FD-SB-A3-S (30-35)**	EPA 7471	529342	EPA 7471	529917
10424793002	**FD-SB-B3-WM (5-26)**	EPA 7471	529342	EPA 7471	529917
10424793003	**FD-SB-C3-WM (5-20)**	EPA 7471	529342	EPA 7471	529917
10424793001	**FD-SB-A3-S (30-35)**	ASTM D2974	529398		
10424793002	**FD-SB-B3-WM (5-26)**	ASTM D2974	529398		
10424793003	**FD-SB-C3-WM (5-20)**	ASTM D2974	529398		
10424793001	**FD-SB-A3-S (30-35)**	EPA 3550	529268	EPA 8270D	529887
10424793002	**FD-SB-B3-WM (5-26)**	EPA 3550	529268	EPA 8270D	529887
10424793003	**FD-SB-C3-WM (5-20)**	EPA 3550	529268	EPA 8270D	529887
10424793001	**FD-SB-A3-S (30-35)**	EPA 3550	529263	EPA 8270D by SIM	530180
10424793002	**FD-SB-B3-WM (5-26)**	EPA 3550	529263	EPA 8270D by SIM	530180
10424793003	**FD-SB-C3-WM (5-20)**	EPA 3550	529263	EPA 8270D by SIM	530180
10424793001	**FD-SB-A3-S (30-35)**	EPA 3546	529569	EPA 8270D	530638
10424793002	**FD-SB-B3-WM (5-26)**	EPA 3546	529569	EPA 8270D	530638
10424793003	**FD-SB-C3-WM (5-20)**	EPA 3546	529569	EPA 8270D	530638
10424793001	**FD-SB-A3-S (30-35)**	EPA 5035/5030B	529276	EPA 8260B	529485
10424793002	**FD-SB-B3-WM (5-26)**	EPA 5035/5030B	529276	EPA 8260B	529485
10424793003	**FD-SB-C3-WM (5-20)**	EPA 5035/5030B	529276	EPA 8260B	529485

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA FreewayLF Solids
Pace Project No.: 10424793

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424793003	**FD-SB-C3-WM (5-20)**	EPA 3060A	435589	EPA 7196A	435998
10424793003	**FD-SB-C3-WM (5-20)**	Trivalent Chromium Calculation	436173		
10424793001	**FD-SB-A3-S (30-35)**	EPA 9012A	285232	EPA 9012	285274
10424793002	**FD-SB-B3-WM (5-26)**	EPA 9012A	285232	EPA 9012	285274
10424793003	**FD-SB-C3-WM (5-20)**	EPA 9012A	285232	EPA 9012	285274
10424793001	**FD-SB-A3-S (30-35)**	EPA 300.0	139994	EPA 9056A	140024
10424793002	**FD-SB-B3-WM (5-26)**	EPA 300.0	139994	EPA 9056A	140024
10424793003	**FD-SB-C3-WM (5-20)**	EPA 300.0	139994	EPA 9056A	140024

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WO# : 10424793

10424793

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number:

COC Type

Turnaround Time:

COC ID:

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MPCA - Freeway LF Solids	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA - Freeway LF Solids	Project Task Code:	Address: 18-00383 EPIC Profile #38716
Project Manager:			
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

Location Identifier	Sample Type	Date	Time	Start Depth, ~~in feet / meters~~	End Depth, ~~in feet / meters~~	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS REQUESTED: (see attached for solids/waste (-dioxins)	+Dioxins					Lab Sample No.	#
FD-SB-A3-S (30-35)	S	3/23/18	~~1330~~ 1330	30	35	C	SO						X					001		1
FD-SB-B3-WM (5-25)	S	3/23/18	1330	5	25	C	SO							X				002		2
FD-SB-C3-WM (5-30)	S	3/23/18	1430	5	20	C	SO						X					003		3
																				4
																				5
																				6
																				7
																				8
																				9
																				10

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace	3/23/18 1600	Pace	3/23/18 1600

T = 5.4

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA - FSD

Project #: **WO#: 10424793**

PM: BM2 **Due Date: 04/06/18**

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 5.2 **Cooler Temp Corrected (°C):** 5.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** 3-23-18 DD

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: BM **Date:** 3/27/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424793 Workorder Name: 18-00383 MPCA FreewayLF Solids Owner Received Date: 3/23/2018 Results Requested By: 4/6/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						Requested Analysis: Fluoride by 9056												LAB USE ONLY
1	FD-SB-A3-S (30-35)	PS	3/23/2018 12:30	10424793001	Solid	1						X												
2	FD-SB-B3-WM (5-26)	PS	3/23/2018 13:30	10424793002	Solid	1						X												
3	FD-SB-C3-WM (5-20)	PS	3/23/2018 14:30	10424793003	Solid	1						X												
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/03/18 1545	B. Mathews	4/4/18 0935
2				
3				

Comments

Cooler Temperature on Receipt 2.1 °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace Mpls

Project #: WO#: 12106658

PM: HRZ Due Date: 04/06/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☑ Other: SD

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 140792808 Type of Ice: ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 0.8 Cooler Temp Corrected °C: 1.1 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: BM 4/4/18

Comments:

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Date: 4/4/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO#: 12106658

PM: HRZ Due Date: 04/06/18

CLIENT: PACE MPLS

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424793 Workorder Name: 18-00383 MPCA FreewayLF Solids Owner Received Date: 3/23/2018 Results Requested By: 4/6/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury by EPA 1630	LAB USE ONLY
1	FD-SB-A3-S (30-35)	PS	3/23/2018 12:30	10424793001	Solid	1	X	
2	FD-SB-B3-WM (5-26)	PS	3/23/2018 13:30	10424793002	Solid	1	X	
3	FD-SB-C3-WM (5-20)	PS	3/23/2018 14:30	10424793003	Solid	1	X	
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	4/03/18 1555	[signature]	4/4/18 09:55
2				
3				

Comments

Cooler Temperature on Receipt 3.7 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: PACE MPLS

Project #: **WO#: 12106658**

PM: HRZ Due Date: 04/06/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☒ Other: SD

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 01339252/1710 ☐ IR-1 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.7 Cooler Temp Corrected °C: 3.7 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: 0.0 Date and Initials of Person Examining Contents: 4/4/18 GP

If temperature is ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☒ NA

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☒ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☐ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Heather Stotler Date: 4/4/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

40166966

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424793 Workorder Name: 18-00383 MPCA FreewayLF Solids Owner Received Date: 3/23/2018 Results Requested By: 4/6/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Cyanide by EPA 9012	LAB USE ONLY
1	FD-SB-A3-S (30-35) 001	PS	3/23/2018 12:30	10424793001	Solid	1	X	
2	FD-SB-B3-WM (5-26) 002	PS	3/23/2018 13:30	10424793002	Solid	1	X	
3	FD-SB-C3-WM (5-20) 003	PS	3/23/2018 14:30	10424793003	Solid	1	X	
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	PACE	4/03/18 1700		
2		4-5-18 0840	PACE	4-5-18 0840
3				

Comments

Cooler Temperature on Receipt 4 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace MN

Project #: WO# : 40166966

40166966

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☑ Waltco ☐ Client ☐ Pace Other:

Tracking #: 1682502

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 4 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 4.5 /Corr: 4

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 4-5-18
Initials: SW

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☑N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☑Yes ☐No ☐N/A	7. 4-6-18 TAT 4-5-18 SW
Sufficient Volume: ☑Yes ☐No ☐N/A MS/MSD	☐Yes ☐No ☑N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☐No ☑N/A	
-Pace IR Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S		
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

No collect times on original labels. 4-5-18 SW

Project Manager Review: CR **Date:** 4/5/18

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424793 **Workorder Name:** 18-00383 MPCA FreewayLF Solids **Owner Received Date:** 3/23/2018 **Results Requested By:** 4/6/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

50193607

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Chromium III	Chromium VI	Total Cr by 6020	LAB USE ONLY
1	FD-SB-A3-S (30-35)	PS	3/23/2018 12:30	10424793001	Solid	1	X	X	X	001
2	FD-SB-B3-WM (5-26)	PS	3/23/2018 13:30	10424793002	Solid	1	X	X	X	
3	FD-SB-C3-WM (5-20)	PS	3/23/2018 14:30	10424793003	Solid	1	X	X	X	003
4										
5										

Transfers	Released By	Date/Time	Received By	Date/Time
1	Fedex Ground	4/03/18 1635	Fedex	
2				4/4/18 0800
3				

Comments

Cooler Temperature on Receipt 3.3 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50193607

Date/Time and Initials of person examining contents: MR 4/4/18 0920

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9831 9567

Custody Seal on Cooler/Box Present: ☑ Yes ☐ No **Seals Intact:** ☑ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer: 1 2 3 4 5 6 A B C D E F Ice Type: ☑ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☑ N/A

Cooler Temperature: 3.0/3.3 Ice Visible in Sample Containers?: ☐ Yes ☑ No ☐ N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☑ N/A

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		✓	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			✓
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		✓				
Chain of Custody Present:	✓		Dissolved Metals field filtered?:			✓
Chain of Custody Filled Out:	✓		Headspace Wisconsin Sulfide			✓
Short Hold Time Analysis (<72hr)?: Analysis:		✓				
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			✓
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			✓
Rush TAT Requested: 4/6/18	✓		Headspace in VOA Vials (>6mm):			✓
Containers Intact?:	✓		Trip Blank Present?:		✓	
Sample Labels Match COC?: Except TCs, which only require sample ID	✓		Trip Blank Custody Seals?:		✓	

Comments:

Sample Container Count

WO# : 50193607

50193607

CLIENT: PACE MN

COC PAGE 1 of 1

COC ID#

Project # 50193607

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	Bulk Kit R				Matrix SL (Soil/Wa Aqueous		pH <2	pH >9	pH>12
1							1														SL				
2							1														1				
3							1																		
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial
DG9H	40mL HCL amber voa vial
DG9M	40mL MeOH clear vial
DG9P	40mL TSP amber vial
DG9S	40mL H2SO4 amber vial
DG9T	40mL Na Thio amber vial
DG9U	40mL unpreserved **amber** vial
VG9H	40mL HCL clear vial
VG9T	40mL Na Thio. clear vial
VG9U	40mL unpreserved **clear** vial
VGFX	40mL w/hexane wipe vial
VSG	Headspace septa vial & HCL
WGAU	8oz unpreserved clear jar
WGFU	4oz clear soil jar
JGFU	4oz unpreserved amber wide

AG0U	100mL unpreserved amber glass
AG1H	1 liter HCL amber glass
AG1S	1 liter H2SO4 amber glass
AG1T	1 liter Na Thiosulfate amber glass
AG1U	1liter unpreserved amber glass
AG2N	500mL HNO3 amber glass
AG2S	500mL H2SO4 amber glass
AG2U	500mL unpreserved amber glass
AG3S	250mL H2SO4 glass amber
AG3U	250mL unpreserved amber glass
BG1H	1 liter HCL clear glass
BG1S	1 liter H2SO4 clear glass
BG1T	1 liter Na Thiosulfate clear glass
BG1U	1 liter unpreserved glass
BG3H	250mL HCl Clear Glass
BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic
BP1N	1 liter HNO3 plastic
BP1S	1 liter H2SO4 plastic
BP1U	1 liter unpreserved plastic
BP1Z	1 liter NaOH, Zn, Ac
BP2A	500mL NaOH, Asc Acid plastic
BP2N	500mL HNO3 plastic
BP2O	500mL NaOH plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Ac
BP3B	250mL NaOH plastic
BP3N	250mL HNO3 plastic
BP3S	250mL H2SO4 plastic
BP3U	250mL unpreserved plastic
BP3Z	250mL NaOH, Zn Ac plastic

AF	Air Filter
C	Air Cassettes
R	Terra core kit
SP5T	120mL Coliform Na Thiosulfate
U	Summa Can
ZPLC	Ziploc Bag

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

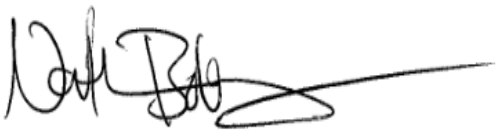
Pace Project #: 10424795
Sample Receipt Date: 03/23/2018
Client Project #: MPCA-Freeway LF Soli
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:



April 05, 2018
Nathan Boberg, Project Manager

(612) 607-6444 (fax)
nathan.boberg@pacelabs.com

Report Prepared Date:
April 5, 2018

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analysis performed on one sample submitted by a representative of Pace Analytical Services, Inc. The sample was analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report.

The isotopically-labeled TCDD internal standard in the sample extract was recovered at 66%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 102%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

WO# : 10424795

10424795

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number:

Turnaround Time:

COC T

COC ID:

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MPCA - Freeway LF solids	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA - Freeway LF solids	Project Task Code:	Address: 18-00383
Project Manager:			Epic Profile #38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

ONLY

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

PRESERV.

ANALYSIS: see attached for soils/waste (-dioxins); +Dioxins

Location Identifier	Sample Type	Date	Time	Start Depth, ft / meters	End Depth, ft / meters	Grab (G) or Composite (C)	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	Lab Sample No.	#
FD-SB-A3 S (31-35)	S	3/23/18	~~1330~~ 1430	30	35	C	SD						1
FD-SB-B3 WM (5-20)	S	3/23/18	1330	5	20	C	SD					001	2
FD-SB-C3 WM (5-20)	S	3/23/18	1432	5	20	C	SD						3
													4
													5
													6
													7
													8
													9
													10

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace	3/23/18 1600	Pace	3/23/18 1600

T=5.4

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA - FSD

Project #: WO#: 10424795

PM: SCU Due Date: 04/06/18

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☒Client ☐Commercial ☐Pace ☐SpeeDee ☐Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☒None ☐Other: **Temp Blank?** ☐Yes ☒No

Thermometer Used: ☐151401163 ☒G87A9155100842 **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Cooler Temp Read (°C): 5.2 **Cooler Temp Corrected (°C):** 5.4 **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** 3-23-18 JDJ

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☒No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☒No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒Yes	☐No		1.
Chain of Custody Filled Out?	☒Yes	☐No		2.
Chain of Custody Relinquished?	☒Yes	☐No		3.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☒Yes	☐No		5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		6.
Rush Turn Around Time Requested?	☐Yes	☒No		7.
Sufficient Volume?	☒Yes	☐No		8.
Correct Containers Used?	☒Yes	☐No		9.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☒Yes	☐No		12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☒N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☒N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐Yes	☐No	☒N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☒N/A	14.
Trip Blank Present?	☐Yes	☐No	☒N/A	15.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Nathan Boeger **Date:** 3/26/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
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Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-B3-WM (5-26)		
Lab Sample ID	10424795001		
Filename	F180402B_15		
Injected By	SMT		
Total Amount Extracted	15.9 g	Matrix	Solid
% Moisture	36.8	Dilution	NA
Dry Weight Extracted	10.0 g	Collected	03/23/2018 13:30
ICAL ID	F180329	Received	03/23/2018 16:00
CCal Filename(s)	F180402B_04 & F180402B_21	Extracted	03/27/2018 15:00
Method Blank ID	BLANK-61362	Analyzed	04/03/2018 00:37

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	1.1	-----	1.0	2,3,7,8-TCDD-13C	2.00	66
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	78

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

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Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61362	Matrix	Solid
Filename	F180401B_07	Dilution	NA
Total Amount Extracted	75.0 g	Extracted	03/27/2018 15:00
ICAL ID	F180329	Analyzed	04/01/2018 16:13
CCal Filename(s)	F180401B_01 & F180401B_17	Injected By	BAL

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	65
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	77

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

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Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61363		
Filename	F180401B_02	Matrix	Solid
Total Amount Extracted	75.3 g	Dilution	NA
ICAL ID	F180329	Extracted	03/27/2018 15:00
CCal Filename(s)	F180401B_01 & F180401B_17	Analyzed	04/01/2018 12:29
Method Blank ID	BLANK-61362	Injected By	BAL

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.20	102	2,3,7,8-TCDD-13C	2.0	64
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	68

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10424934
Sample Receipt Date: 03/27/2018
Client Project #: 18-00383
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

April 05, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
April 5, 2018

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on three samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 45-68%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 91%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Report No.....10424934

Appendix A

Sample Management

WO# : 10424934

10424934

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number:

Turnaround Time:

COC ID:

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO

Facility Code: MPCA - Freeway LF Solids

Program Code (MDH Lab Only):

Project Name: MPCA - Freeway LF Solids

Project Task Code:

Project Manager:

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name:

Address: 18-00383

EPIC Profile #38716

Phone No:

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

PRESERV.

ANALYSIS: See attached per 3015/8290 for 2,3,7,8-TCDD; + dioxins

Location Identifier	Sample Type	Date	Time	Start Depth, (in feet / meters)	End Depth, (in feet / meters)	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	See attached per 3015/8290 for 2,3,7,8-TCDD; + dioxins	+ dioxins	Lab Sample No.	#
FD-SB-E4 (5.5-17.0)	S	3/26/18	1150	5.5	17.0	C	SD				13	X			1
FD-SB-D3 (4-16 wm)	S	3/26/18	1440	4	16	C	SD				13	X	X	001	2
FD-SB-E3 (11-15 wm)	S	3/26/18	1445	11	15	C	SD				13	X			3
FD-SB-F3 (3-11 wm)	S	3/26/18	1530	3	11	C	SD				12	X			4
FD-SB-C3 (7-16 wm)	S	3/26/18	1635	7	16	C	SD				13	X	X	002	5
FD-SB-C2 (10-12 pump)	S	3/26/18	1720	10	12	C	SD				13	X	X	003	6
															7
															8
															9
															10

Sampled By: David Andersen

Sampler's Signature: David Andersen

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Andersen / Pace Analytical	3/27/18/0700	RAE 3-27-18	815

4.7°C

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: **WO# : 10424934**

PM: SCU **Due Date: 04/10/18**

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 4.5 **Cooler Temp Corrected (°C):** 4.7 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** ME 3/27/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑ Yes	☐ No		1.
Chain of Custody Filled Out?	☑ Yes	☐ No		2.
Chain of Custody Relinquished?	☑ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		6.
Rush Turn Around Time Requested?	☐ Yes	☑ No		7.
Sufficient Volume?	☑ Yes	☐ No		8.
Correct Containers Used?	☑ Yes	☐ No		9.
-Pace Containers Used?	☑ Yes	☐ No		
Containers Intact?	☑ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☐ Yes	☑ No		12. No time on Samples
All containers needing acid/base preservation have been checked? All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☑ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Nathan Boberg **Date:** 3/27/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

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Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-D3 (4-16wm)		
Lab Sample ID	10424934001		
Filename	F180403B_07		
Injected By	SMT		
Total Amount Extracted	14.1 g	Matrix	Solid
% Moisture	28.4	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	03/26/2018 14:00
ICAL ID	F180329	Received	03/27/2018 08:15
CCal Filename(s)	F180403B_01 & F180403B_18	Extracted	03/29/2018 15:05
Method Blank ID	BLANK-61419	Analyzed	04/03/2018 18:48

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	2.0	-----	1.0	2,3,7,8-TCDD-13C	2.00	58
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	64

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-G3 (7-16wm)		
Lab Sample ID	10424934002		
Filename	F180403B_08		
Injected By	SMT		
Total Amount Extracted	14.6 g	Matrix	Solid
% Moisture	30.8	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	03/26/2018 16:35
ICAL ID	F180329	Received	03/27/2018 08:15
CCal Filename(s)	F180403B_01 & F180403B_18	Extracted	03/29/2018 15:05
Method Blank ID	BLANK-61419	Analyzed	04/03/2018 19:33

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	2.5	-----	1.0	2,3,7,8-TCDD-13C	2.00	45
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	46

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-G2 (10-12wm)		
Lab Sample ID	10424934003		
Filename	F180403B_09		
Injected By	SMT		
Total Amount Extracted	14.4 g	Matrix	Solid
% Moisture	30.3	Dilution	NA
Dry Weight Extracted	10.0 g	Collected	03/26/2018 17:20
ICAL ID	F180329	Received	03/27/2018 08:15
CCal Filename(s)	F180403B_01 & F180403B_18	Extracted	03/29/2018 15:05
Method Blank ID	BLANK-61419	Analyzed	04/03/2018 20:18

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	68
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	77

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
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Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61419	Matrix	Solid
Filename	U180403A_03	Dilution	NA
Total Amount Extracted	10.6 g	Extracted	03/29/2018 15:05
ICAL ID	U171222	Analyzed	04/03/2018 05:23
CCal Filename(s)	U180402B_14 & U180403A_18	Injected By	BAL

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	63
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	82

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61420		
Filename	U180403A_01	Matrix	Solid
Total Amount Extracted	10.8 g	Dilution	NA
ICAL ID	U171222	Extracted	03/29/2018 15:05
CCal Filename(s)	U180402B_14 & U180403A_18	Analyzed	04/03/2018 03:58
Method Blank ID	BLANK-61419	Injected By	BAL

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.18	91	2,3,7,8-TCDD-13C	2.0	70
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	78

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

June 20, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 27, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This project was revised on June 20, 2018 to add manganese results for all samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ryan Thibault for
Bob Michels
bob.michels@pacelabs.com
(612)709-5046
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
California Certification #2973
Montana Certificate #CERT0103
California Certification #2973
Alaska Certification UST-107
Alaska Certification UST-107
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Minnesota Dept of Health Certification #: 1420586
Montana DHHS Certification #: CERT0102
Nevada DCNR Certification #: MN000372018-1
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10424937001	**FD-SB-G4 (15.5-17.5)**	Solid	03/26/18 11:30	03/27/18 08:15
10424937002	**FD-SB-D3 (4-16wm)**	Solid	03/26/18 14:00	03/27/18 08:15
10424937003	**FD-SB-E3 (11-15.5)**	Solid	03/26/18 14:40	03/27/18 08:15
10424937004	**FD-SB-F3 (3-11wm)**	Solid	03/26/18 15:30	03/27/18 08:15
10424937005	**FD-SB-G3 (7-16wm)**	Solid	03/26/18 16:35	03/27/18 08:15
10424937006	**FD-SB-G2 (10-12wm)**	Solid	03/26/18 17:20	03/27/18 08:15

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR, JRH	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424937002	**FD-SB-D3 (4-16wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424937003	**FD-SB-E3 (11-15.5)**	EPA 1630 (1998)	CPK	1	PASI-DUL

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JRH	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424937004	**FD-SB-F3 (3-11wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424937005	**FD-SB-G3 (7-16wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JLR	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10424937006	**FD-SB-G2 (10-12wm)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	PW1	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	JRH	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G4 (15.5-17.5) **Lab ID: 10424937001** Collected: 03/26/18 11:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	12.2	1	03/30/18 11:35	04/02/18 17:26	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	309-00-2	
alpha-BHC	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	319-84-6	
beta-BHC	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	319-85-7	
delta-BHC	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	58-89-9	
Chlordane (Technical)	ND	ug/kg	45.7	2	03/28/18 12:51	04/05/18 20:59	57-74-9	
alpha-Chlordane	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	5103-71-9	
gamma-Chlordane	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	5103-74-2	
4,4'-DDD	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 20:59	72-54-8	
4,4'-DDE	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 20:59	72-55-9	
4,4'-DDT	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 20:59	50-29-3	
Dieldrin	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 20:59	60-57-1	
Endosulfan I	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	959-98-8	
Endosulfan II	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 20:59	33213-65-9	
Endosulfan sulfate	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 20:59	1031-07-8	
Endrin	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 20:59	72-20-8	
Endrin aldehyde	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 20:59	7421-93-4	
Endrin ketone	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 20:59	53494-70-5	
Heptachlor	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	76-44-8	
Heptachlor epoxide	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 20:59	1024-57-3	
Methoxychlor	ND	ug/kg	45.7	2	03/28/18 12:51	04/05/18 20:59	72-43-5	
Toxaphene	ND	ug/kg	137	2	03/28/18 12:51	04/05/18 20:59	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	77	%.	30-150	2	03/28/18 12:51	04/05/18 20:59	877-09-8	5M,D3
Decachlorobiphenyl (S)	70	%.	30-150	2	03/28/18 12:51	04/05/18 20:59	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	11141-16-5	
PCB-1242 (Aroclor 1242)	**124**	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	11097-69-1	
PCB-1260 (Aroclor 1260)	**558**	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	37324-23-5	
PCB-1268 (Aroclor 1268)	**343**	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	11100-14-4	
PCB, Total	**1020**	ug/kg	44.9	1	03/28/18 12:51	04/02/18 12:33	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	88	%.	48-125	1	03/28/18 12:51	04/02/18 12:33	877-09-8	
Decachlorobiphenyl (S)	84	%.	30-134	1	03/28/18 12:51	04/02/18 12:33	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**409**	mg/kg	88.2	5	03/27/18 16:31	03/30/18 13:39		T6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G4 (15.5-17.5) **Lab ID: 10424937001** Collected: 03/26/18 11:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	87	%.	50-150	5	03/27/18 16:31	03/30/18 13:39	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**31.0**	mg/kg	24.2	1	04/03/18 09:56	04/04/18 12:19		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/03/18 09:56	04/04/18 12:19	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**4370**	mg/kg	13.0	1	03/28/18 04:51	04/02/18 12:51	7429-90-5	
Barium	**104**	mg/kg	0.65	1	03/28/18 04:51	04/02/18 12:51	7440-39-3	
Boron	**124**	mg/kg	9.8	1	03/28/18 04:51	04/02/18 12:51	7440-42-8	
Copper	**38.1**	mg/kg	0.65	1	03/28/18 04:51	04/02/18 12:51	7440-50-8	
Iron	**10600**	mg/kg	3.3	1	03/28/18 04:51	04/02/18 12:51	7439-89-6	
Manganese	**834**	mg/kg	1.6	5	03/28/18 04:51	06/19/18 08:54	7439-96-5	
Nickel	**9.6**	mg/kg	1.3	1	03/28/18 04:51	04/02/18 12:51	7440-02-0	
Silver	ND	mg/kg	0.65	1	03/28/18 04:51	04/02/18 12:51	7440-22-4	
Tin	ND	mg/kg	4.9	1	03/28/18 04:51	04/02/18 12:51	7440-31-5	
Titanium	**206**	mg/kg	1.6	1	03/28/18 04:51	04/02/18 12:51	7440-32-6	
Zinc	**35.7**	mg/kg	1.3	1	03/28/18 04:51	04/02/18 12:51	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**19.0**	mg/kg	1.2	5	03/30/18 09:43	03/31/18 06:05	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.68	20	03/28/18 04:52	03/30/18 17:17	7440-36-0	
Arsenic	**1.4**	mg/kg	0.68	20	03/28/18 04:52	03/30/18 17:17	7440-38-2	
Beryllium	ND	mg/kg	0.27	20	03/28/18 04:52	03/30/18 17:17	7440-41-7	
Cadmium	**0.14**	mg/kg	0.11	20	03/28/18 04:52	03/30/18 17:17	7440-43-9	
Cobalt	**3.2**	mg/kg	0.68	20	03/28/18 04:52	03/30/18 17:17	7440-48-4	
Lead	**5.7**	mg/kg	0.14	20	03/28/18 04:52	03/30/18 17:17	7439-92-1	
Lithium	**1.9**	mg/kg	0.68	20	03/28/18 04:52	03/30/18 17:17	7439-93-2	
Selenium	ND	mg/kg	0.68	20	03/28/18 04:52	03/30/18 17:17	7782-49-2	
Strontium	**36.9**	mg/kg	0.68	20	03/28/18 04:52	03/30/18 17:17	7440-24-6	
Vanadium	**12.0**	mg/kg	1.4	20	03/28/18 04:52	03/30/18 17:17	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.023	1	03/28/18 04:53	03/30/18 12:55	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**26.9**	%	0.10	1		03/28/18 12:45		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	83-32-9	
Acenaphthylene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	208-96-8	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G4 (15.5-17.5) **Lab ID: 10424937001** Collected: 03/26/18 11:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	120-12-7	
Benzo(a)anthracene	**2900**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	56-55-3	
Benzo(a)pyrene	**3550**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	50-32-8	
Benzo(b)fluoranthene	**4160**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	205-99-2	
Benzo(g,h,i)perylene	**2190**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	191-24-2	
Benzo(k)fluoranthene	**2010**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	101-55-3	
Butylbenzylphthalate	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	85-68-7	
Carbazole	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	59-50-7	
4-Chloroaniline	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	108-60-1	
2-Chloronaphthalene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	91-58-7	
2-Chlorophenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	7005-72-3	
Chrysene	**3360**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	53-70-3	
Dibenzofuran	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	120-83-2	
Diethylphthalate	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	105-67-9	
Dimethylphthalate	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	131-11-3	
Di-n-butylphthalate	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2320	1	03/27/18 12:47	03/30/18 14:49	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	606-20-2	
Di-n-octylphthalate	**576**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	122-66-7	
bis(2-Ethylhexyl)phthalate	**45300**	ug/kg	9010	20	03/27/18 12:47	03/30/18 19:53	117-81-7	
Fluoranthene	**3560**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	206-44-0	
Fluorene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	87-68-3	
Hexachlorobenzene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	118-74-1	
Hexachloroethane	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	67-72-1	
Indeno(1,2,3-cd)pyrene	**1970**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	193-39-5	
Isophorone	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	78-59-1	
1-Methylnaphthalene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	90-12-0	
2-Methylnaphthalene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G4 (15.5-17.5) **Lab ID: 10424937001** Collected: 03/26/18 11:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	901	1	03/27/18 12:47	03/30/18 14:49		
Naphthalene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	91-20-3	
2-Nitroaniline	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	88-74-4	
3-Nitroaniline	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	99-09-2	
4-Nitroaniline	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	100-01-6	
Nitrobenzene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	98-95-3	
2-Nitrophenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	88-75-5	
4-Nitrophenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	86-30-6	
Pentachlorophenol	ND	ug/kg	915	1	03/27/18 12:47	03/30/18 14:49	87-86-5	
Phenanthrene	**1020**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	85-01-8	
Phenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	108-95-2	
Pyrene	**3880**	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	451	1	03/27/18 12:47	03/30/18 14:49	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	81	%.	43-125	1	03/27/18 12:47	03/30/18 14:49	4165-60-0	
2-Fluorobiphenyl (S)	90	%.	30-132	1	03/27/18 12:47	03/30/18 14:49	321-60-8	
p-Terphenyl-d14 (S)	91	%.	62-125	1	03/27/18 12:47	03/30/18 14:49	1718-51-0	
Phenol-d6 (S)	82	%.	48-125	1	03/27/18 12:47	03/30/18 14:49	13127-88-3	
2-Fluorophenol (S)	75	%.	40-125	1	03/27/18 12:47	03/30/18 14:49	367-12-4	
2,4,6-Tribromophenol (S)	86	%.	60-125	1	03/27/18 12:47	03/30/18 14:49	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**18.9**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	83-32-9	
Acenaphthylene	ND	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	208-96-8	
Anthracene	**19.4**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	120-12-7	
Benzo(a)anthracene	**197**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	56-55-3	
Benzo(a)pyrene	**283**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	50-32-8	
Benzo(b)fluoranthene	**335**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	205-99-2	
Benzo(g,h,i)perylene	**197**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	191-24-2	
Benzo(k)fluoranthene	**124**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	207-08-9	
Chrysene	**241**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	218-01-9	
Dibenz(a,h)anthracene	**41.3**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	53-70-3	
Fluoranthene	**272**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	206-44-0	
Fluorene	ND	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	86-73-7	
Indeno(1,2,3-cd)pyrene	**150**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	193-39-5	
Naphthalene	**36.0**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	91-20-3	
Phenanthrene	**72.3**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	85-01-8	
Pyrene	**285**	ug/kg	13.7	1	03/27/18 15:20	04/02/18 21:22	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	77	%.	42-125	1	03/27/18 15:20	04/02/18 21:22	321-60-8	
p-Terphenyl-d14 (S)	101	%.	57-125	1	03/27/18 15:20	04/02/18 21:22	1718-51-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G4 (15.5-17.5) **Lab ID: 10424937001** Collected: 03/26/18 11:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	25057-89-0	
2,4-D	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	94-75-7	
2,4-DB	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	94-82-6	
Dicamba	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	1918-00-9	
Dinoseb	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	88-85-7	
MCPA	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	94-74-6	
Pentachlorophenol	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	87-86-5	
Picloram	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	1918-02-1	
2,4,5-T	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	93-72-1	
Triclopyr	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 16:46	55335-06-3	
Surrogates								
2,4-DCAA (S)	56	%.	46-125	1	03/29/18 07:30	04/04/18 16:46	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2400	1	03/27/18 14:03	03/27/18 17:42	67-64-1	
Allyl chloride	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	107-05-1	
Benzene	ND	ug/kg	47.9	1	03/27/18 14:03	03/27/18 17:42	71-43-2	
Bromobenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	108-86-1	
Bromochloromethane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	74-97-5	
Bromodichloromethane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	75-27-4	
Bromoform	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	75-25-2	
Bromomethane	ND	ug/kg	1200	1	03/27/18 14:03	03/27/18 17:42	74-83-9	
2-Butanone (MEK)	ND	ug/kg	599	1	03/27/18 14:03	03/27/18 17:42	78-93-3	
n-Butylbenzene	**137**	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	104-51-8	
sec-Butylbenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	135-98-8	
tert-Butylbenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	98-06-6	
Carbon tetrachloride	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	56-23-5	
Chlorobenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	108-90-7	
Chloroethane	ND	ug/kg	1200	1	03/27/18 14:03	03/27/18 17:42	75-00-3	
Chloroform	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	67-66-3	
Chloromethane	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	74-87-3	
2-Chlorotoluene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	95-49-8	
4-Chlorotoluene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1200	1	03/27/18 14:03	03/27/18 17:42	96-12-8	
Dibromochloromethane	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	106-93-4	
Dibromomethane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	75-71-8	
1,1-Dichloroethane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	75-34-3	
1,2-Dichloroethane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	107-06-2	
1,1-Dichloroethene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	156-59-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G4 (15.5-17.5) **Lab ID: 10424937001** Collected: 03/26/18 11:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
trans-1,2-Dichloroethene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1200	1	03/27/18 14:03	03/27/18 17:42	75-43-4	
1,2-Dichloropropane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	78-87-5	
1,3-Dichloropropane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	142-28-9	
2,2-Dichloropropane	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	594-20-7	
1,1-Dichloropropene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	60-29-7	
Ethylbenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	599	1	03/27/18 14:03	03/27/18 17:42	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	98-82-8	
p-Isopropyltoluene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	99-87-6	
Methylene Chloride	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	599	1	03/27/18 14:03	03/27/18 17:42	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	1634-04-4	
Naphthalene	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	91-20-3	
n-Propylbenzene	**190**	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	103-65-1	
Styrene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	79-34-5	N2
Tetrachloroethene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	127-18-4	
Tetrahydrofuran	ND	ug/kg	4790	1	03/27/18 14:03	03/27/18 17:42	109-99-9	
Toluene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	79-00-5	
Trichloroethene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	479	1	03/27/18 14:03	03/27/18 17:42	76-13-1	
1,2,4-Trimethylbenzene	**302**	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	120	1	03/27/18 14:03	03/27/18 17:42	108-67-8	
Vinyl chloride	ND	ug/kg	47.9	1	03/27/18 14:03	03/27/18 17:42	75-01-4	
Xylene (Total)	**525**	ug/kg	360	1	03/27/18 14:03	03/27/18 17:42	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1	03/27/18 14:03	03/27/18 17:42	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/27/18 14:03	03/27/18 17:42	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	03/27/18 14:03	03/27/18 17:42	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	273	100	04/02/18 15:00	04/04/18 12:50	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**19.0**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G4 (15.5-17.5) **Lab ID: 10424937001** Collected: 03/26/18 11:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.90**	mg/kg	0.49	1	03/29/18 10:55	03/29/18 13:16	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.98	1	03/30/18 14:00	04/02/18 21:55	16984-48-8	

Sample: FD-SB-D3 (4-16wm) **Lab ID: 10424937002** Collected: 03/26/18 14:00 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.8	1	03/30/18 11:35	04/02/18 17:32	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	309-00-2	
alpha-BHC	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	319-84-6	
beta-BHC	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	319-85-7	
delta-BHC	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	58-89-9	
Chlordane (Technical)	ND	ug/kg	502	20	03/28/18 12:51	04/06/18 00:38	57-74-9	
alpha-Chlordane	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	5103-71-9	
gamma-Chlordane	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	5103-74-2	
4,4'-DDD	ND	ug/kg	100	20	03/28/18 12:51	04/06/18 00:38	72-54-8	
4,4'-DDE	ND	ug/kg	100	20	03/28/18 12:51	04/06/18 00:38	72-55-9	
4,4'-DDT	ND	ug/kg	100	20	03/28/18 12:51	04/06/18 00:38	50-29-3	
Dieldrin	ND	ug/kg	100	20	03/28/18 12:51	04/06/18 00:38	60-57-1	
Endosulfan I	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	959-98-8	
Endosulfan II	ND	ug/kg	100	20	03/28/18 12:51	04/06/18 00:38	33213-65-9	
Endosulfan sulfate	ND	ug/kg	100	20	03/28/18 12:51	04/06/18 00:38	1031-07-8	
Endrin	ND	ug/kg	100	20	03/28/18 12:51	04/06/18 00:38	72-20-8	
Endrin aldehyde	ND	ug/kg	100	20	03/28/18 12:51	04/06/18 00:38	7421-93-4	
Endrin ketone	ND	ug/kg	100	20	03/28/18 12:51	04/06/18 00:38	53494-70-5	
Heptachlor	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	76-44-8	
Heptachlor epoxide	ND	ug/kg	50.2	20	03/28/18 12:51	04/06/18 00:38	1024-57-3	
Methoxychlor	ND	ug/kg	502	20	03/28/18 12:51	04/06/18 00:38	72-43-5	
Toxaphene	ND	ug/kg	1500	20	03/28/18 12:51	04/06/18 00:38	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	03/28/18 12:51	04/06/18 00:38	877-09-8	4M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	03/28/18 12:51	04/06/18 00:38	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	11141-16-5	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-D3 (4-16wm) **Lab ID: 10424937002** Collected: 03/26/18 14:00 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1242 (Aroclor 1242)	**1870**	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	12672-29-6	
PCB-1254 (Aroclor 1254)	**322**	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	11100-14-4	
PCB, Total	**2190**	ug/kg	49.6	1	03/28/18 12:51	04/02/18 12:18	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	89	%.	48-125	1	03/28/18 12:51	04/02/18 12:18	877-09-8	
Decachlorobiphenyl (S)	82	%.	30-134	1	03/28/18 12:51	04/02/18 12:18	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**3830**	mg/kg	1430	1	03/27/18 16:31	03/30/18 14:07		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	1	03/27/18 16:31	03/30/18 14:07	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**512**	mg/kg	26.5	1	04/03/18 09:56	04/04/18 12:43		
Surrogates								
a,a,a-Trifluorotoluene (S)	94	%.	80-150	1	04/03/18 09:56	04/04/18 12:43	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**12800**	mg/kg	14.9	1	03/28/18 04:51	04/02/18 12:59	7429-90-5	
Barium	**167**	mg/kg	0.75	1	03/28/18 04:51	04/02/18 12:59	7440-39-3	
Boron	**12.7**	mg/kg	11.2	1	03/28/18 04:51	04/02/18 12:59	7440-42-8	
Copper	**36.4**	mg/kg	0.75	1	03/28/18 04:51	04/02/18 12:59	7440-50-8	
Iron	**23000**	mg/kg	37.3	10	03/28/18 04:51	04/02/18 13:37	7439-89-6	
Manganese	**353**	mg/kg	0.37	1	03/28/18 04:51	04/02/18 12:59	7439-96-5	
Nickel	**19.2**	mg/kg	1.5	1	03/28/18 04:51	04/02/18 12:59	7440-02-0	
Silver	ND	mg/kg	0.75	1	03/28/18 04:51	04/02/18 12:59	7440-22-4	
Tin	**9.9**	mg/kg	5.6	1	03/28/18 04:51	04/02/18 12:59	7440-31-5	
Titanium	**165**	mg/kg	1.9	1	03/28/18 04:51	04/02/18 12:59	7440-32-6	
Zinc	**63.6**	mg/kg	1.5	1	03/28/18 04:51	04/02/18 12:59	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**26.8**	mg/kg	1.3	5	03/30/18 09:43	03/31/18 06:18	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.75	20	03/28/18 04:52	03/30/18 18:02	7440-36-0	
Arsenic	**3.3**	mg/kg	0.75	20	03/28/18 04:52	03/30/18 18:02	7440-38-2	
Beryllium	**0.61**	mg/kg	0.30	20	03/28/18 04:52	03/30/18 18:02	7440-41-7	
Cadmium	**0.62**	mg/kg	0.12	20	03/28/18 04:52	03/30/18 18:02	7440-43-9	
Cobalt	**6.2**	mg/kg	0.75	20	03/28/18 04:52	03/30/18 18:02	7440-48-4	
Lead	**49.8**	mg/kg	0.15	20	03/28/18 04:52	03/30/18 18:02	7439-92-1	
Lithium	**7.2**	mg/kg	0.75	20	03/28/18 04:52	03/30/18 18:02	7439-93-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-D3 (4-16wm) **Lab ID: 10424937002** Collected: 03/26/18 14:00 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Selenium	**1.1**	mg/kg	0.75	20	03/28/18 04:52	03/30/18 18:02	7782-49-2	
Strontium	**42.5**	mg/kg	0.75	20	03/28/18 04:52	03/30/18 18:02	7440-24-6	
Vanadium	**28.5**	mg/kg	1.5	20	03/28/18 04:52	03/30/18 18:02	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.089**	mg/kg	0.030	1	03/28/18 04:53	03/30/18 12:58	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**33.6**	%	0.10	1		03/28/18 12:45		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	83-32-9	
Acenaphthylene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	208-96-8	
Anthracene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	120-12-7	
Benzo(a)anthracene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	56-55-3	
Benzo(a)pyrene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	101-55-3	
Butylbenzylphthalate	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	85-68-7	
Carbazole	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	59-50-7	
4-Chloroaniline	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	108-60-1	
2-Chloronaphthalene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	91-58-7	
2-Chlorophenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	7005-72-3	
Chrysene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	53-70-3	
Dibenzofuran	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	120-83-2	
Diethylphthalate	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	105-67-9	
Dimethylphthalate	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	131-11-3	
Di-n-butylphthalate	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2560	1	03/27/18 12:47	03/31/18 19:35	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	121-14-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-D3 (4-16wm) **Lab ID: 10424937002** Collected: 03/26/18 14:00 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2,6-Dinitrotoluene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	606-20-2	
Di-n-octylphthalate	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	122-66-7	
bis(2-Ethylhexyl)phthalate	**40000**	ug/kg	4960	10	03/27/18 12:47	03/31/18 20:04	117-81-7	
Fluoranthene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	206-44-0	
Fluorene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	87-68-3	
Hexachlorobenzene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	118-74-1	
Hexachloroethane	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	193-39-5	
Isophorone	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	78-59-1	
1-Methylnaphthalene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	90-12-0	
2-Methylnaphthalene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	992	1	03/27/18 12:47	03/31/18 19:35		
Naphthalene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	91-20-3	
2-Nitroaniline	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	88-74-4	
3-Nitroaniline	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	99-09-2	
4-Nitroaniline	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	100-01-6	
Nitrobenzene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	98-95-3	
2-Nitrophenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	88-75-5	
4-Nitrophenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	86-30-6	
Pentachlorophenol	ND	ug/kg	1010	1	03/27/18 12:47	03/31/18 19:35	87-86-5	
Phenanthrene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	85-01-8	
Phenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	108-95-2	
Pyrene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	496	1	03/27/18 12:47	03/31/18 19:35	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	59	%.	43-125	1	03/27/18 12:47	03/31/18 19:35	4165-60-0	
2-Fluorobiphenyl (S)	76	%.	30-132	1	03/27/18 12:47	03/31/18 19:35	321-60-8	
p-Terphenyl-d14 (S)	75	%.	62-125	1	03/27/18 12:47	03/31/18 19:35	1718-51-0	
Phenol-d6 (S)	68	%.	48-125	1	03/27/18 12:47	03/31/18 19:35	13127-88-3	
2-Fluorophenol (S)	60	%.	40-125	1	03/27/18 12:47	03/31/18 19:35	367-12-4	
2,4,6-Tribromophenol (S)	68	%.	60-125	1	03/27/18 12:47	03/31/18 19:35	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	83-32-9	
Acenaphthylene	ND	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	208-96-8	
Anthracene	**177**	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	120-12-7	
Benzo(a)anthracene	**204**	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	56-55-3	
Benzo(a)pyrene	**229**	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	50-32-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-D3 (4-16wm) **Lab ID: 10424937002** Collected: 03/26/18 14:00 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Benzo(b)fluoranthene	**262**	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	207-08-9	
Chrysene	**331**	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	53-70-3	
Fluoranthene	**418**	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	206-44-0	
Fluorene	ND	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	193-39-5	
Naphthalene	**167**	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	91-20-3	
Phenanthrene	**380**	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	85-01-8	
Pyrene	**325**	ug/kg	150	1	03/27/18 15:20	04/03/18 22:56	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	1	03/27/18 15:20	04/03/18 22:56	321-60-8	P3,S4
p-Terphenyl-d14 (S)	0	%.	57-125	1	03/27/18 15:20	04/03/18 22:56	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	25057-89-0	
2,4-D	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	94-75-7	
2,4-DB	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	94-82-6	
Dicamba	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	1918-00-9	
Dinoseb	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	88-85-7	
MCPA	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	94-74-6	
Pentachlorophenol	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	87-86-5	
Picloram	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	1918-02-1	
2,4,5-T	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	93-72-1	
Triclopyr	ND	mg/kg	0.49	5	03/29/18 07:30	04/04/18 18:44	55335-06-3	
Surrogates								
2,4-DCAA (S)	75	%.	46-125	5	03/29/18 07:30	04/04/18 18:44	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2290	1	03/27/18 14:03	03/27/18 17:59	67-64-1	
Allyl chloride	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	107-05-1	
Benzene	**199**	ug/kg	45.8	1	03/27/18 14:03	03/27/18 17:59	71-43-2	
Bromobenzene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	108-86-1	
Bromochloromethane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	74-97-5	
Bromodichloromethane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	75-27-4	
Bromoform	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	75-25-2	
Bromomethane	ND	ug/kg	1150	1	03/27/18 14:03	03/27/18 17:59	74-83-9	
2-Butanone (MEK)	ND	ug/kg	573	1	03/27/18 14:03	03/27/18 17:59	78-93-3	
n-Butylbenzene	**1360**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	104-51-8	
sec-Butylbenzene	**1060**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	135-98-8	
tert-Butylbenzene	**164**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	98-06-6	
Carbon tetrachloride	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	56-23-5	
Chlorobenzene	**26400**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	108-90-7	
Chloroethane	ND	ug/kg	1150	1	03/27/18 14:03	03/27/18 17:59	75-00-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-D3 (4-16wm) **Lab ID: 10424937002** Collected: 03/26/18 14:00 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Chloroform	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	67-66-3	
Chloromethane	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	74-87-3	
2-Chlorotoluene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	95-49-8	
4-Chlorotoluene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1150	1	03/27/18 14:03	03/27/18 17:59	96-12-8	
Dibromochloromethane	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	106-93-4	
Dibromomethane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	74-95-3	
1,2-Dichlorobenzene	**935**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	95-50-1	
1,3-Dichlorobenzene	**2660**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	541-73-1	
1,4-Dichlorobenzene	**17100**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	75-71-8	
1,1-Dichloroethane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	75-34-3	
1,2-Dichloroethane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	107-06-2	
1,1-Dichloroethene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1150	1	03/27/18 14:03	03/27/18 17:59	75-43-4	
1,2-Dichloropropane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	78-87-5	
1,3-Dichloropropane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	142-28-9	
2,2-Dichloropropane	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	594-20-7	
1,1-Dichloropropene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	60-29-7	
Ethylbenzene	**1210**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	573	1	03/27/18 14:03	03/27/18 17:59	87-68-3	
Isopropylbenzene (Cumene)	**684**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	98-82-8	
p-Isopropyltoluene	**408**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	99-87-6	
Methylene Chloride	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	573	1	03/27/18 14:03	03/27/18 17:59	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	1634-04-4	
Naphthalene	**1850**	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	91-20-3	
n-Propylbenzene	**1280**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	103-65-1	
Styrene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	79-34-5	N2
Tetrachloroethene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	127-18-4	
Tetrahydrofuran	ND	ug/kg	4580	1	03/27/18 14:03	03/27/18 17:59	109-99-9	
Toluene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	87-61-6	
1,2,4-Trichlorobenzene	**298**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	79-00-5	
Trichloroethene	ND	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	75-69-4	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-D3 (4-16wm) **Lab ID: 10424937002** Collected: 03/26/18 14:00 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,2,3-Trichloropropane	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	458	1	03/27/18 14:03	03/27/18 17:59	76-13-1	
1,2,4-Trimethylbenzene	**5000**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	95-63-6	
1,3,5-Trimethylbenzene	**1570**	ug/kg	115	1	03/27/18 14:03	03/27/18 17:59	108-67-8	
Vinyl chloride	ND	ug/kg	45.8	1	03/27/18 14:03	03/27/18 17:59	75-01-4	
Xylene (Total)	**5190**	ug/kg	344	1	03/27/18 14:03	03/27/18 17:59	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	90	%.	75-125	1	03/27/18 14:03	03/27/18 17:59	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1	03/27/18 14:03	03/27/18 17:59	2037-26-5	
4-Bromofluorobenzene (S)	112	%.	75-125	1	03/27/18 14:03	03/27/18 17:59	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	30.2	10	04/02/18 15:00	04/04/18 13:17	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**26.8**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.56**	mg/kg	0.48	1	03/29/18 10:55	03/29/18 13:16	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	03/30/18 14:00	03/31/18 03:07	16984-48-8	

Sample: FD-SB-E3 (11-15.5) **Lab ID: 10424937003** Collected: 03/26/18 14:40 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.4	1	03/30/18 11:35	04/02/18 17:39	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	309-00-2	
alpha-BHC	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	319-84-6	
beta-BHC	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	319-85-7	
delta-BHC	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	58-89-9	
Chlordane (Technical)	ND	ug/kg	24.4	1	03/28/18 12:51	04/05/18 20:22	57-74-9	
alpha-Chlordane	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	5103-71-9	
gamma-Chlordane	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	5103-74-2	
4,4'-DDD	ND	ug/kg	4.9	1	03/28/18 12:51	04/05/18 20:22	72-54-8	
4,4'-DDE	ND	ug/kg	4.9	1	03/28/18 12:51	04/05/18 20:22	72-55-9	
4,4'-DDT	ND	ug/kg	4.9	1	03/28/18 12:51	04/05/18 20:22	50-29-3	
Dieldrin	ND	ug/kg	4.9	1	03/28/18 12:51	04/05/18 20:22	60-57-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-E3 (11-15.5) **Lab ID: 10424937003** Collected: 03/26/18 14:40 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Endosulfan I	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	959-98-8	
Endosulfan II	ND	ug/kg	4.9	1	03/28/18 12:51	04/05/18 20:22	33213-65-9	
Endosulfan sulfate	ND	ug/kg	4.9	1	03/28/18 12:51	04/05/18 20:22	1031-07-8	
Endrin	ND	ug/kg	4.9	1	03/28/18 12:51	04/05/18 20:22	72-20-8	
Endrin aldehyde	ND	ug/kg	4.9	1	03/28/18 12:51	04/05/18 20:22	7421-93-4	
Endrin ketone	ND	ug/kg	4.9	1	03/28/18 12:51	04/05/18 20:22	53494-70-5	
Heptachlor	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	76-44-8	
Heptachlor epoxide	ND	ug/kg	2.4	1	03/28/18 12:51	04/05/18 20:22	1024-57-3	
Methoxychlor	ND	ug/kg	24.4	1	03/28/18 12:51	04/05/18 20:22	72-43-5	
Toxaphene	ND	ug/kg	72.9	1	03/28/18 12:51	04/05/18 20:22	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	53	%.	30-150	1	03/28/18 12:51	04/05/18 20:22	877-09-8	
Decachlorobiphenyl (S)	79	%.	30-150	1	03/28/18 12:51	04/05/18 20:22	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	11100-14-4	
PCB, Total	ND	ug/kg	48.3	1	03/28/18 12:51	04/02/18 14:56	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	82	%.	48-125	1	03/28/18 12:51	04/02/18 14:56	877-09-8	
Decachlorobiphenyl (S)	83	%.	30-134	1	03/28/18 12:51	04/02/18 14:56	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	11.6	1	03/27/18 16:31	03/30/18 14:57		
Surrogates								
n-Triacontane (S)	63	%.	50-150	1	03/27/18 16:31	03/30/18 14:57	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	14.2	1	04/03/18 09:56	04/04/18 11:54		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/03/18 09:56	04/04/18 11:54	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**12900**	mg/kg	14.3	1	03/28/18 04:51	04/02/18 13:02	7429-90-5	
Barium	**104**	mg/kg	0.71	1	03/28/18 04:51	04/02/18 13:02	7440-39-3	
Boron	**188**	mg/kg	10.7	1	03/28/18 04:51	04/02/18 13:02	7440-42-8	
Copper	**25.2**	mg/kg	0.71	1	03/28/18 04:51	04/02/18 13:02	7440-50-8	
Iron	**36000**	mg/kg	35.6	10	03/28/18 04:51	04/02/18 13:40	7439-89-6	
Manganese	**146**	mg/kg	0.36	1	03/28/18 04:51	04/02/18 13:02	7439-96-5	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-E3 (11-15.5) **Lab ID: 10424937003** Collected: 03/26/18 14:40 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Nickel	**26.8**	mg/kg	1.4	1	03/28/18 04:51	04/02/18 13:02	7440-02-0	
Silver	ND	mg/kg	0.71	1	03/28/18 04:51	04/02/18 13:02	7440-22-4	
Tin	ND	mg/kg	5.3	1	03/28/18 04:51	04/02/18 13:02	7440-31-5	
Titanium	**589**	mg/kg	1.8	1	03/28/18 04:51	04/02/18 13:02	7440-32-6	
Zinc	**149**	mg/kg	1.4	1	03/28/18 04:51	04/02/18 13:02	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**45.1**	mg/kg	1.4	5	03/30/18 09:43	03/31/18 06:23	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.1**	mg/kg	0.73	20	03/28/18 04:52	03/30/18 18:06	7440-36-0	
Arsenic	**16.9**	mg/kg	0.73	20	03/28/18 04:52	03/30/18 18:06	7440-38-2	
Beryllium	**2.9**	mg/kg	0.29	20	03/28/18 04:52	03/30/18 18:06	7440-41-7	
Cadmium	**1.8**	mg/kg	0.12	20	03/28/18 04:52	03/30/18 18:06	7440-43-9	
Cobalt	**7.9**	mg/kg	0.73	20	03/28/18 04:52	03/30/18 18:06	7440-48-4	
Lead	**20.5**	mg/kg	0.15	20	03/28/18 04:52	03/30/18 18:06	7439-92-1	
Lithium	**10.4**	mg/kg	0.73	20	03/28/18 04:52	03/30/18 18:06	7439-93-2	
Selenium	**5.6**	mg/kg	0.73	20	03/28/18 04:52	03/30/18 18:06	7782-49-2	
Strontium	**69.7**	mg/kg	0.73	20	03/28/18 04:52	03/30/18 18:06	7440-24-6	
Vanadium	**86.8**	mg/kg	1.5	20	03/28/18 04:52	03/30/18 18:06	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.075**	mg/kg	0.027	1	03/28/18 04:53	03/30/18 13:00	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**31.9**	%	0.10	1		03/28/18 12:46		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	83-32-9	
Acenaphthylene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	208-96-8	
Anthracene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	120-12-7	
Benzo(a)anthracene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	56-55-3	
Benzo(a)pyrene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	101-55-3	
Butylbenzylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	85-68-7	
Carbazole	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	59-50-7	
4-Chloroaniline	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	108-60-1	
2-Chloronaphthalene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	91-58-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-E3 (11-15.5) **Lab ID: 10424937003** Collected: 03/26/18 14:40 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Chlorophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	7005-72-3	
Chrysene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	53-70-3	
Dibenzofuran	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	120-83-2	
Diethylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	105-67-9	
Dimethylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	131-11-3	
Di-n-butylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2490	1	03/27/18 12:47	03/30/18 12:48	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	606-20-2	
Di-n-octylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	117-81-7	
Fluoranthene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	206-44-0	
Fluorene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	87-68-3	
Hexachlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	118-74-1	
Hexachloroethane	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	193-39-5	
Isophorone	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	78-59-1	
1-Methylnaphthalene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	90-12-0	
2-Methylnaphthalene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	968	1	03/27/18 12:47	03/30/18 12:48		
Naphthalene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	91-20-3	
2-Nitroaniline	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	88-74-4	
3-Nitroaniline	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	99-09-2	
4-Nitroaniline	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	100-01-6	
Nitrobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	98-95-3	
2-Nitrophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	88-75-5	
4-Nitrophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	86-30-6	
Pentachlorophenol	ND	ug/kg	983	1	03/27/18 12:47	03/30/18 12:48	87-86-5	
Phenanthrene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	85-01-8	
Phenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	108-95-2	
Pyrene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	129-00-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-E3 (11-15.5) **Lab ID: 10424937003** Collected: 03/26/18 14:40 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
1,2,4-Trichlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 12:48	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	78	%.	43-125	1	03/27/18 12:47	03/30/18 12:48	4165-60-0	
2-Fluorobiphenyl (S)	79	%.	30-132	1	03/27/18 12:47	03/30/18 12:48	321-60-8	
p-Terphenyl-d14 (S)	94	%.	62-125	1	03/27/18 12:47	03/30/18 12:48	1718-51-0	
Phenol-d6 (S)	79	%.	48-125	1	03/27/18 12:47	03/30/18 12:48	13127-88-3	
2-Fluorophenol (S)	79	%.	40-125	1	03/27/18 12:47	03/30/18 12:48	367-12-4	
2,4,6-Tribromophenol (S)	86	%.	60-125	1	03/27/18 12:47	03/30/18 12:48	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	83-32-9	
Acenaphthylene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	208-96-8	
Anthracene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	120-12-7	
Benzo(a)anthracene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	56-55-3	
Benzo(a)pyrene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	207-08-9	
Chrysene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	53-70-3	
Fluoranthene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	206-44-0	
Fluorene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	193-39-5	
Naphthalene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	91-20-3	
Phenanthrene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	85-01-8	
Pyrene	ND	ug/kg	14.7	1	03/27/18 15:20	04/02/18 21:43	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	73	%.	42-125	1	03/27/18 15:20	04/02/18 21:43	321-60-8	
p-Terphenyl-d14 (S)	90	%.	57-125	1	03/27/18 15:20	04/02/18 21:43	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	25057-89-0	
2,4-D	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	94-75-7	
2,4-DB	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	94-82-6	
Dicamba	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	1918-00-9	
Dinoseb	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	88-85-7	
MCPA	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	94-74-6	
Pentachlorophenol	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	87-86-5	
Picloram	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	1918-02-1	
2,4,5-T	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	93-72-1	
Triclopyr	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:01	55335-06-3	
Surrogates								
2,4-DCAA (S)	67	%.	46-125	1	03/29/18 07:30	04/04/18 17:01	19719-28-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-E3 (11-15.5) **Lab ID: 10424937003** Collected: 03/26/18 14:40 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1580	1	03/27/18 14:03	03/27/18 18:15	67-64-1	
Allyl chloride	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	107-05-1	
Benzene	ND	ug/kg	31.6	1	03/27/18 14:03	03/27/18 18:15	71-43-2	
Bromobenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	108-86-1	
Bromochloromethane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	74-97-5	
Bromodichloromethane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	75-27-4	
Bromoform	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	75-25-2	
Bromomethane	ND	ug/kg	790	1	03/27/18 14:03	03/27/18 18:15	74-83-9	
2-Butanone (MEK)	ND	ug/kg	395	1	03/27/18 14:03	03/27/18 18:15	78-93-3	
n-Butylbenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	104-51-8	
sec-Butylbenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	135-98-8	
tert-Butylbenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	98-06-6	
Carbon tetrachloride	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	56-23-5	
Chlorobenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	108-90-7	
Chloroethane	ND	ug/kg	790	1	03/27/18 14:03	03/27/18 18:15	75-00-3	
Chloroform	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	67-66-3	
Chloromethane	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	74-87-3	
2-Chlorotoluene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	95-49-8	
4-Chlorotoluene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	790	1	03/27/18 14:03	03/27/18 18:15	96-12-8	
Dibromochloromethane	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	106-93-4	
Dibromomethane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	75-71-8	
1,1-Dichloroethane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	75-34-3	
1,2-Dichloroethane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	107-06-2	
1,1-Dichloroethene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	156-60-5	
Dichlorofluoromethane	ND	ug/kg	790	1	03/27/18 14:03	03/27/18 18:15	75-43-4	
1,2-Dichloropropane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	78-87-5	
1,3-Dichloropropane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	142-28-9	
2,2-Dichloropropane	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	594-20-7	
1,1-Dichloropropene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	60-29-7	
Ethylbenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	395	1	03/27/18 14:03	03/27/18 18:15	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	98-82-8	
p-Isopropyltoluene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	99-87-6	
Methylene Chloride	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	395	1	03/27/18 14:03	03/27/18 18:15	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-E3 (11-15.5) **Lab ID: 10424937003** Collected: 03/26/18 14:40 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	1634-04-4	
Naphthalene	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	91-20-3	
n-Propylbenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	103-65-1	
Styrene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	79-34-5	N2
Tetrachloroethene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	127-18-4	
Tetrahydrofuran	ND	ug/kg	3160	1	03/27/18 14:03	03/27/18 18:15	109-99-9	
Toluene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	79-00-5	
Trichloroethene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	316	1	03/27/18 14:03	03/27/18 18:15	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	79.0	1	03/27/18 14:03	03/27/18 18:15	108-67-8	
Vinyl chloride	ND	ug/kg	31.6	1	03/27/18 14:03	03/27/18 18:15	75-01-4	
Xylene (Total)	ND	ug/kg	237	1	03/27/18 14:03	03/27/18 18:15	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1	03/27/18 14:03	03/27/18 18:15	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/27/18 14:03	03/27/18 18:15	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1	03/27/18 14:03	03/27/18 18:15	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	14.7	5	04/02/18 15:00	04/04/18 13:18	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**45.1**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.59	1	03/29/18 10:55	03/29/18 13:17	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**3.5**	mg/kg	0.99	1	03/30/18 14:00	03/31/18 05:04	16984-48-8	M1

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-F3 (3-11wm) **Lab ID: 10424937004** Collected: 03/26/18 15:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	9.70	1	03/30/18 11:35	04/02/18 17:46	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	309-00-2	
alpha-BHC	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	319-84-6	
beta-BHC	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	319-85-7	
delta-BHC	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	58-89-9	
Chlordane (Technical)	ND	ug/kg	438	20	03/28/18 12:51	04/06/18 00:56	57-74-9	
alpha-Chlordane	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	5103-71-9	
gamma-Chlordane	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	5103-74-2	
4,4'-DDD	ND	ug/kg	87.4	20	03/28/18 12:51	04/06/18 00:56	72-54-8	
4,4'-DDE	ND	ug/kg	87.4	20	03/28/18 12:51	04/06/18 00:56	72-55-9	
4,4'-DDT	ND	ug/kg	87.4	20	03/28/18 12:51	04/06/18 00:56	50-29-3	
Dieldrin	ND	ug/kg	87.4	20	03/28/18 12:51	04/06/18 00:56	60-57-1	
Endosulfan I	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	959-98-8	
Endosulfan II	ND	ug/kg	87.4	20	03/28/18 12:51	04/06/18 00:56	33213-65-9	
Endosulfan sulfate	ND	ug/kg	87.4	20	03/28/18 12:51	04/06/18 00:56	1031-07-8	
Endrin	ND	ug/kg	87.4	20	03/28/18 12:51	04/06/18 00:56	72-20-8	
Endrin aldehyde	ND	ug/kg	87.4	20	03/28/18 12:51	04/06/18 00:56	7421-93-4	
Endrin ketone	ND	ug/kg	87.4	20	03/28/18 12:51	04/06/18 00:56	53494-70-5	
Heptachlor	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	76-44-8	
Heptachlor epoxide	ND	ug/kg	43.8	20	03/28/18 12:51	04/06/18 00:56	1024-57-3	
Methoxychlor	ND	ug/kg	438	20	03/28/18 12:51	04/06/18 00:56	72-43-5	
Toxaphene	ND	ug/kg	1310	20	03/28/18 12:51	04/06/18 00:56	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	03/28/18 12:51	04/06/18 00:56	877-09-8	4M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	03/28/18 12:51	04/06/18 00:56	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	53469-21-9	
PCB-1248 (Aroclor 1248)	**928**	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	12672-29-6	
PCB-1254 (Aroclor 1254)	**1280**	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	11100-14-4	
PCB, Total	**2200**	ug/kg	43.3	1	03/28/18 12:51	04/02/18 14:40	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	82	%.	48-125	1	03/28/18 12:51	04/02/18 14:40	877-09-8	
Decachlorobiphenyl (S)	77	%.	30-134	1	03/28/18 12:51	04/02/18 14:40	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-F3 (3-11wm) **Lab ID: 10424937004** Collected: 03/26/18 15:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**229**	mg/kg	55.1	5	03/27/18 16:31	03/30/18 13:46		T6
Surrogates								
n-Triacontane (S)	43	%.	50-150	5	03/27/18 16:31	03/30/18 13:46	638-68-6	S5
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**734**	mg/kg	43.9	1	04/03/18 09:56	04/04/18 13:07		
Surrogates								
a,a,a-Trifluorotoluene (S)	96	%.	80-150	1	04/03/18 09:56	04/04/18 13:07	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**8730**	mg/kg	12.4	1	03/28/18 04:51	04/02/18 13:05	7429-90-5	
Barium	**489**	mg/kg	0.62	1	03/28/18 04:51	04/02/18 13:05	7440-39-3	
Boron	**163**	mg/kg	9.3	1	03/28/18 04:51	04/02/18 13:05	7440-42-8	
Copper	**47.2**	mg/kg	0.62	1	03/28/18 04:51	04/02/18 13:05	7440-50-8	
Iron	**43500**	mg/kg	31.1	10	03/28/18 04:51	04/02/18 13:43	7439-89-6	
Manganese	**230**	mg/kg	0.31	1	03/28/18 04:51	04/02/18 13:05	7439-96-5	
Nickel	**33.7**	mg/kg	1.2	1	03/28/18 04:51	04/02/18 13:05	7440-02-0	
Silver	ND	mg/kg	0.62	1	03/28/18 04:51	04/02/18 13:05	7440-22-4	
Tin	**102**	mg/kg	4.7	1	03/28/18 04:51	04/02/18 13:05	7440-31-5	
Titanium	**340**	mg/kg	1.6	1	03/28/18 04:51	04/02/18 13:05	7440-32-6	
Zinc	**312**	mg/kg	1.2	1	03/28/18 04:51	04/02/18 13:05	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**45.0**	mg/kg	1.3	5	03/30/18 09:43	03/31/18 06:28	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**2.5**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:11	7440-36-0	
Arsenic	**20.6**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:11	7440-38-2	
Beryllium	**1.9**	mg/kg	0.26	20	03/28/18 04:52	03/30/18 18:11	7440-41-7	
Cadmium	**3.4**	mg/kg	0.10	20	03/28/18 04:52	03/30/18 18:11	7440-43-9	
Cobalt	**8.3**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:11	7440-48-4	
Lead	**352**	mg/kg	0.13	20	03/28/18 04:52	03/30/18 18:11	7439-92-1	
Lithium	**7.6**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:11	7439-93-2	
Selenium	**4.2**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:11	7782-49-2	
Strontium	**72.9**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:11	7440-24-6	
Vanadium	**76.5**	mg/kg	1.3	20	03/28/18 04:52	03/30/18 18:11	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.40**	mg/kg	0.023	1	03/28/18 04:53	03/30/18 13:02	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**24.1**	%	0.10	1		03/28/18 12:46		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-F3 (3-11wm) **Lab ID: 10424937004** Collected: 03/26/18 15:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	208-96-8	
Anthracene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	120-12-7	
Benzo(a)anthracene	**3470**	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	56-55-3	
Benzo(a)pyrene	**2690**	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	50-32-8	
Benzo(b)fluoranthene	**3300**	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	101-55-3	
Butylbenzylphthalate	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	85-68-7	
Carbazole	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	59-50-7	
4-Chloroaniline	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	108-60-1	
2-Chloronaphthalene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	91-58-7	
2-Chlorophenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	7005-72-3	
Chrysene	**3150**	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	53-70-3	
Dibenzofuran	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	120-83-2	
Diethylphthalate	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	105-67-9	
Dimethylphthalate	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	131-11-3	
Di-n-butylphthalate	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	11200	5	03/27/18 12:47	03/30/18 21:24	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	606-20-2	
Di-n-octylphthalate	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	117-81-7	
Fluoranthene	**7320**	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	206-44-0	
Fluorene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	87-68-3	
Hexachlorobenzene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	118-74-1	
Hexachloroethane	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	193-39-5	
Isophorone	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	78-59-1	
1-Methylnaphthalene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	90-12-0	
2-Methylnaphthalene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	91-57-6	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-F3 (3-11wm) **Lab ID: 10424937004** Collected: 03/26/18 15:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	4340	5	03/27/18 12:47	03/30/18 21:24		
Naphthalene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	91-20-3	
2-Nitroaniline	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	88-74-4	
3-Nitroaniline	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	99-09-2	
4-Nitroaniline	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	100-01-6	
Nitrobenzene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	98-95-3	
2-Nitrophenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	88-75-5	
4-Nitrophenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	86-30-6	
Pentachlorophenol	ND	ug/kg	4400	5	03/27/18 12:47	03/30/18 21:24	87-86-5	
Phenanthrene	**8430**	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	85-01-8	
Phenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	108-95-2	
Pyrene	**6380**	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	2170	5	03/27/18 12:47	03/30/18 21:24	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	67	%.	43-125	5	03/27/18 12:47	03/30/18 21:24	4165-60-0	D4
2-Fluorobiphenyl (S)	80	%.	30-132	5	03/27/18 12:47	03/30/18 21:24	321-60-8	
p-Terphenyl-d14 (S)	81	%.	62-125	5	03/27/18 12:47	03/30/18 21:24	1718-51-0	
Phenol-d6 (S)	75	%.	48-125	5	03/27/18 12:47	03/30/18 21:24	13127-88-3	
2-Fluorophenol (S)	66	%.	40-125	5	03/27/18 12:47	03/30/18 21:24	367-12-4	
2,4,6-Tribromophenol (S)	74	%.	60-125	5	03/27/18 12:47	03/30/18 21:24	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**243**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	83-32-9	
Acenaphthylene	ND	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	208-96-8	
Anthracene	**541**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	120-12-7	
Benzo(a)anthracene	**936**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	56-55-3	
Benzo(a)pyrene	**937**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	50-32-8	
Benzo(b)fluoranthene	**1120**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	205-99-2	
Benzo(g,h,i)perylene	**434**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	191-24-2	
Benzo(k)fluoranthene	**1040**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	207-08-9	
Chrysene	**1040**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	218-01-9	
Dibenz(a,h)anthracene	**145**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	53-70-3	
Fluoranthene	**1770**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	206-44-0	
Fluorene	**328**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	86-73-7	
Indeno(1,2,3-cd)pyrene	**389**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	193-39-5	
Naphthalene	**232**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	91-20-3	
Phenanthrene	**1540**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	85-01-8	
Pyrene	**1310**	ug/kg	65.7	5	03/27/18 15:20	04/03/18 23:20	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	82	%.	42-125	5	03/27/18 15:20	04/03/18 23:20	321-60-8	D3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-F3 (3-11wm) **Lab ID: 10424937004** Collected: 03/26/18 15:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	84	%.	57-125	5	03/27/18 15:20	04/03/18 23:20	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	25057-89-0	
2,4-D	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	94-75-7	
2,4-DB	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	94-82-6	
Dicamba	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	1918-00-9	
Dinoseb	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	88-85-7	
MCPA	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	94-74-6	
Pentachlorophenol	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	87-86-5	
Picloram	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	1918-02-1	
2,4,5-T	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	93-72-1	
Triclopyr	ND	mg/kg	0.22	5	03/29/18 07:30	04/04/18 19:58	55335-06-3	
Surrogates								
2,4-DCAA (S)	61	%.	46-125	5	03/29/18 07:30	04/04/18 19:58	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	4330	1	03/27/18 14:03	03/27/18 19:06	67-64-1	
Allyl chloride	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	107-05-1	
Benzene	**142**	ug/kg	86.6	1	03/27/18 14:03	03/27/18 19:06	71-43-2	
Bromobenzene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	108-86-1	
Bromochloromethane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	74-97-5	
Bromodichloromethane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	75-27-4	
Bromoform	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	75-25-2	
Bromomethane	ND	ug/kg	2170	1	03/27/18 14:03	03/27/18 19:06	74-83-9	
2-Butanone (MEK)	ND	ug/kg	1080	1	03/27/18 14:03	03/27/18 19:06	78-93-3	
n-Butylbenzene	**3350**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	104-51-8	
sec-Butylbenzene	**4440**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	135-98-8	
tert-Butylbenzene	**412**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	98-06-6	
Carbon tetrachloride	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	56-23-5	
Chlorobenzene	**487**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	108-90-7	
Chloroethane	ND	ug/kg	2170	1	03/27/18 14:03	03/27/18 19:06	75-00-3	
Chloroform	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	67-66-3	
Chloromethane	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	74-87-3	
2-Chlorotoluene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	95-49-8	
4-Chlorotoluene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	2170	1	03/27/18 14:03	03/27/18 19:06	96-12-8	
Dibromochloromethane	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	106-93-4	
Dibromomethane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	74-95-3	
1,2-Dichlorobenzene	**79700**	ug/kg	433	2	03/27/18 14:03	03/28/18 19:41	95-50-1	
1,3-Dichlorobenzene	**974**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	541-73-1	
1,4-Dichlorobenzene	**32700**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	75-71-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-F3 (3-11wm) **Lab ID: 10424937004** Collected: 03/26/18 15:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,1-Dichloroethane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	75-34-3	
1,2-Dichloroethane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	107-06-2	
1,1-Dichloroethene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	156-60-5	
Dichlorofluoromethane	ND	ug/kg	2170	1	03/27/18 14:03	03/27/18 19:06	75-43-4	
1,2-Dichloropropane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	78-87-5	
1,3-Dichloropropane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	142-28-9	
2,2-Dichloropropane	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	594-20-7	
1,1-Dichloropropene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	60-29-7	
Ethylbenzene	**12200**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	1080	1	03/27/18 14:03	03/27/18 19:06	87-68-3	
Isopropylbenzene (Cumene)	**2390**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	98-82-8	
p-Isopropyltoluene	**13000**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	99-87-6	
Methylene Chloride	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	1080	1	03/27/18 14:03	03/27/18 19:06	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	1634-04-4	
Naphthalene	**41000**	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	91-20-3	
n-Propylbenzene	**3550**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	103-65-1	
Styrene	**903**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	79-34-5	N2
Tetrachloroethene	**5880**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	127-18-4	
Tetrahydrofuran	ND	ug/kg	8660	1	03/27/18 14:03	03/27/18 19:06	109-99-9	
Toluene	**744**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	108-88-3	
1,2,3-Trichlorobenzene	**725**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	87-61-6	
1,2,4-Trichlorobenzene	**4380**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	79-00-5	
Trichloroethene	ND	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	866	1	03/27/18 14:03	03/27/18 19:06	76-13-1	
1,2,4-Trimethylbenzene	**17000**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	95-63-6	
1,3,5-Trimethylbenzene	**5920**	ug/kg	217	1	03/27/18 14:03	03/27/18 19:06	108-67-8	
Vinyl chloride	ND	ug/kg	86.6	1	03/27/18 14:03	03/27/18 19:06	75-01-4	
Xylene (Total)	**13700**	ug/kg	650	1	03/27/18 14:03	03/27/18 19:06	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	90	%.	75-125	1	03/27/18 14:03	03/27/18 19:06	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1	03/27/18 14:03	03/27/18 19:06	2037-26-5	
4-Bromofluorobenzene (S)	115	%.	75-125	1	03/27/18 14:03	03/27/18 19:06	460-00-4	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-F3 (3-11wm) **Lab ID: 10424937004** Collected: 03/26/18 15:30 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	13.0	5	04/02/18 15:00	04/04/18 13:18	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**45.0**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.58**	mg/kg	0.36	1	03/29/18 10:55	03/29/18 13:18	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	03/30/18 14:00	03/31/18 02:08	16984-48-8	

Sample: FD-SB-G3 (7-16wm) **Lab ID: 10424937005** Collected: 03/26/18 16:35 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	8.04	1	03/30/18 11:35	04/02/18 17:52	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	309-00-2	
alpha-BHC	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	319-84-6	
beta-BHC	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	319-85-7	
delta-BHC	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	58-89-9	
Chlordane (Technical)	ND	ug/kg	2170	100	03/28/18 12:51	04/05/18 23:07	57-74-9	
alpha-Chlordane	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	5103-71-9	
gamma-Chlordane	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	5103-74-2	
4,4'-DDD	**511**	ug/kg	432	100	03/28/18 12:51	04/05/18 23:07	72-54-8	
4,4'-DDE	ND	ug/kg	432	100	03/28/18 12:51	04/05/18 23:07	72-55-9	
4,4'-DDT	ND	ug/kg	432	100	03/28/18 12:51	04/05/18 23:07	50-29-3	
Dieldrin	ND	ug/kg	432	100	03/28/18 12:51	04/05/18 23:07	60-57-1	
Endosulfan I	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	959-98-8	
Endosulfan II	ND	ug/kg	432	100	03/28/18 12:51	04/05/18 23:07	33213-65-9	
Endosulfan sulfate	ND	ug/kg	432	100	03/28/18 12:51	04/05/18 23:07	1031-07-8	
Endrin	ND	ug/kg	432	100	03/28/18 12:51	04/05/18 23:07	72-20-8	
Endrin aldehyde	ND	ug/kg	432	100	03/28/18 12:51	04/05/18 23:07	7421-93-4	
Endrin ketone	**701**	ug/kg	432	100	03/28/18 12:51	04/05/18 23:07	53494-70-5	
Heptachlor	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	76-44-8	
Heptachlor epoxide	ND	ug/kg	217	100	03/28/18 12:51	04/05/18 23:07	1024-57-3	
Methoxychlor	ND	ug/kg	2170	100	03/28/18 12:51	04/05/18 23:07	72-43-5	
Toxaphene	ND	ug/kg	6490	100	03/28/18 12:51	04/05/18 23:07	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	100	03/28/18 12:51	04/05/18 23:07	877-09-8	3M, D4, S4

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G3 (7-16wm) **Lab ID: 10424937005** Collected: 03/26/18 16:35 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Surrogates								
Decachlorobiphenyl (S)	0	%.	30-150	100	03/28/18 12:51	04/05/18 23:07	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	11141-16-5	
PCB-1242 (Aroclor 1242)	**1110**	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	11097-69-1	
PCB-1260 (Aroclor 1260)	**639**	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	11100-14-4	
PCB, Total	**1750**	ug/kg	42.9	1	03/28/18 12:51	04/02/18 14:08	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	73	%.	48-125	1	03/28/18 12:51	04/02/18 14:08	877-09-8	
Decachlorobiphenyl (S)	72	%.	30-134	1	03/28/18 12:51	04/02/18 14:08	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**83.8**	mg/kg	57.6	5	03/27/18 16:31	03/30/18 13:53		T6
Surrogates								
n-Triacontane (S)	71	%.	50-150	5	03/27/18 16:31	03/30/18 13:53	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	24.0	1	04/03/18 09:56	04/05/18 17:32		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/03/18 09:56	04/05/18 17:32	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**10600**	mg/kg	12.9	1	03/28/18 04:51	04/02/18 13:08	7429-90-5	
Barium	**179**	mg/kg	0.64	1	03/28/18 04:51	04/02/18 13:08	7440-39-3	
Boron	**163**	mg/kg	9.7	1	03/28/18 04:51	04/02/18 13:08	7440-42-8	
Copper	**66.2**	mg/kg	0.64	1	03/28/18 04:51	04/02/18 13:08	7440-50-8	
Iron	**42300**	mg/kg	32.2	10	03/28/18 04:51	04/02/18 13:53	7439-89-6	
Manganese	**225**	mg/kg	0.32	1	03/28/18 04:51	04/02/18 13:08	7439-96-5	
Nickel	**24.4**	mg/kg	1.3	1	03/28/18 04:51	04/02/18 13:08	7440-02-0	
Silver	**0.66**	mg/kg	0.64	1	03/28/18 04:51	04/02/18 13:08	7440-22-4	
Tin	**89.2**	mg/kg	4.8	1	03/28/18 04:51	04/02/18 13:08	7440-31-5	
Titanium	**408**	mg/kg	1.6	1	03/28/18 04:51	04/02/18 13:08	7440-32-6	
Zinc	**1540**	mg/kg	1.3	1	03/28/18 04:51	04/02/18 13:08	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**40.2**	mg/kg	1.2	5	03/30/18 09:43	03/31/18 06:32	7440-47-3	N2

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G3 (7-16wm) **Lab ID: 10424937005** Collected: 03/26/18 16:35 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**2.1**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:16	7440-36-0	
Arsenic	**13.8**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:16	7440-38-2	
Beryllium	**1.2**	mg/kg	0.26	20	03/28/18 04:52	03/30/18 18:16	7440-41-7	
Cadmium	**4.8**	mg/kg	0.10	20	03/28/18 04:52	03/30/18 18:16	7440-43-9	
Cobalt	**6.7**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:16	7440-48-4	
Lead	**311**	mg/kg	0.13	20	03/28/18 04:52	03/30/18 18:16	7439-92-1	
Lithium	**7.0**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:16	7439-93-2	
Selenium	**3.5**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:16	7782-49-2	
Strontium	**73.5**	mg/kg	0.65	20	03/28/18 04:52	03/30/18 18:16	7440-24-6	
Vanadium	**54.0**	mg/kg	1.3	20	03/28/18 04:52	03/30/18 18:16	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.27**	mg/kg	0.024	1	03/28/18 04:53	03/30/18 13:04	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**23.1**	%	0.10	1		03/28/18 12:46		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	**72100**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	83-32-9	
Acenaphthylene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	208-96-8	
Anthracene	**173000**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	120-12-7	
Benzo(a)anthracene	**162000**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	56-55-3	
Benzo(a)pyrene	**117000**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	50-32-8	
Benzo(b)fluoranthene	**145000**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	205-99-2	
Benzo(g,h,i)perylene	**61700**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	191-24-2	
Benzo(k)fluoranthene	**64300**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	101-55-3	
Butylbenzylphthalate	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	85-68-7	
Carbazole	**74600**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	59-50-7	
4-Chloroaniline	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	108-60-1	
2-Chloronaphthalene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	91-58-7	
2-Chlorophenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	7005-72-3	
Chrysene	**154000**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	53-70-3	
Dibenzofuran	**65300**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	120-83-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G3 (7-16wm) **Lab ID: 10424937005** Collected: 03/26/18 16:35 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Diethylphthalate	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	105-67-9	
Dimethylphthalate	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	131-11-3	
Di-n-butylphthalate	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	110000	10	03/27/18 12:47	03/31/18 20:34	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	606-20-2	
Di-n-octylphthalate	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	117-81-7	
Fluoranthene	**394000**	ug/kg	107000	50	03/27/18 12:47	03/31/18 21:03	206-44-0	
Fluorene	**104000**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	87-68-3	
Hexachlorobenzene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	118-74-1	
Hexachloroethane	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	67-72-1	
Indeno(1,2,3-cd)pyrene	**56300**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	193-39-5	
Isophorone	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	78-59-1	
1-Methylnaphthalene	**30000**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	90-12-0	
2-Methylnaphthalene	**47600**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	42700	10	03/27/18 12:47	03/31/18 20:34		
Naphthalene	**66500**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	91-20-3	
2-Nitroaniline	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	88-74-4	
3-Nitroaniline	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	99-09-2	
4-Nitroaniline	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	100-01-6	
Nitrobenzene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	98-95-3	
2-Nitrophenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	88-75-5	
4-Nitrophenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	86-30-6	
Pentachlorophenol	ND	ug/kg	43400	10	03/27/18 12:47	03/31/18 20:34	87-86-5	
Phenanthrene	**545000**	ug/kg	107000	50	03/27/18 12:47	03/31/18 21:03	85-01-8	
Phenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	108-95-2	
Pyrene	**327000**	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	21400	10	03/27/18 12:47	03/31/18 20:34	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	10	03/27/18 12:47	03/31/18 20:34	4165-60-0	D3,P3, S4
2-Fluorobiphenyl (S)	0	%.	30-132	10	03/27/18 12:47	03/31/18 20:34	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	62-125	10	03/27/18 12:47	03/31/18 20:34	1718-51-0	S4
Phenol-d6 (S)	0	%.	48-125	10	03/27/18 12:47	03/31/18 20:34	13127-88-3	S4
2-Fluorophenol (S)	0	%.	40-125	10	03/27/18 12:47	03/31/18 20:34	367-12-4	S4

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G3 (7-16wm) **Lab ID: 10424937005** Collected: 03/26/18 16:35 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Surrogates								
2,4,6-Tribromophenol (S)	0	%.	60-125	10	03/27/18 12:47	03/31/18 20:34	118-79-6	S4
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**45000**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	83-32-9	
Acenaphthylene	ND	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	208-96-8	
Anthracene	**105000**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	120-12-7	
Benzo(a)anthracene	**99600**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	56-55-3	
Benzo(a)pyrene	**73000**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	50-32-8	
Benzo(b)fluoranthene	**85300**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	205-99-2	
Benzo(g,h,i)perylene	**38500**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	191-24-2	
Benzo(k)fluoranthene	**37900**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	207-08-9	
Chrysene	**83700**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	218-01-9	
Dibenz(a,h)anthracene	**11700**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	53-70-3	
Fluoranthene	**243000**	ug/kg	16200	250	03/27/18 15:20	04/04/18 12:05	206-44-0	
Fluorene	**61800**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	86-73-7	
Indeno(1,2,3-cd)pyrene	**38800**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	193-39-5	
Naphthalene	**42700**	ug/kg	3240	50	03/27/18 15:20	04/04/18 11:45	91-20-3	
Phenanthrene	**325000**	ug/kg	16200	250	03/27/18 15:20	04/04/18 12:05	85-01-8	
Pyrene	**195000**	ug/kg	16200	250	03/27/18 15:20	04/04/18 12:05	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	50	03/27/18 15:20	04/04/18 11:45	321-60-8	D4,P3, S4
p-Terphenyl-d14 (S)	0	%.	57-125	50	03/27/18 15:20	04/04/18 11:45	1718-51-0	S4
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	25057-89-0	
2,4-D	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	94-75-7	
2,4-DB	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	94-82-6	
Dicamba	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	1918-00-9	
Dinoseb	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	88-85-7	
MCPA	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	94-74-6	
Pentachlorophenol	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	87-86-5	
Picloram	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	1918-02-1	
2,4,5-T	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	93-72-1	
Triclopyr	ND	mg/kg	0.43	5	04/02/18 05:42	04/04/18 14:49	55335-06-3	
Surrogates								
2,4-DCAA (S)	69	%.	46-125	5	04/02/18 05:42	04/04/18 14:49	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1890	1	03/27/18 14:03	03/27/18 18:32	67-64-1	
Allyl chloride	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	107-05-1	
Benzene	ND	ug/kg	37.7	1	03/27/18 14:03	03/27/18 18:32	71-43-2	
Bromobenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	108-86-1	
Bromochloromethane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	74-97-5	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G3 (7-16wm) **Lab ID: 10424937005** Collected: 03/26/18 16:35 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Bromodichloromethane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	75-27-4	
Bromoform	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	75-25-2	
Bromomethane	ND	ug/kg	943	1	03/27/18 14:03	03/27/18 18:32	74-83-9	
2-Butanone (MEK)	ND	ug/kg	472	1	03/27/18 14:03	03/27/18 18:32	78-93-3	
n-Butylbenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	104-51-8	
sec-Butylbenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	135-98-8	
tert-Butylbenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	98-06-6	
Carbon tetrachloride	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	56-23-5	
Chlorobenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	108-90-7	
Chloroethane	ND	ug/kg	943	1	03/27/18 14:03	03/27/18 18:32	75-00-3	
Chloroform	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	67-66-3	
Chloromethane	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	74-87-3	
2-Chlorotoluene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	95-49-8	
4-Chlorotoluene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	943	1	03/27/18 14:03	03/27/18 18:32	96-12-8	
Dibromochloromethane	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	106-93-4	
Dibromomethane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	541-73-1	
1,4-Dichlorobenzene	**132**	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	75-71-8	
1,1-Dichloroethane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	75-34-3	
1,2-Dichloroethane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	107-06-2	
1,1-Dichloroethene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	156-60-5	
Dichlorofluoromethane	ND	ug/kg	943	1	03/27/18 14:03	03/27/18 18:32	75-43-4	
1,2-Dichloropropane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	78-87-5	
1,3-Dichloropropane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	142-28-9	
2,2-Dichloropropane	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	594-20-7	
1,1-Dichloropropene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	60-29-7	
Ethylbenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	472	1	03/27/18 14:03	03/27/18 18:32	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	98-82-8	
p-Isopropyltoluene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	99-87-6	
Methylene Chloride	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	472	1	03/27/18 14:03	03/27/18 18:32	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	1634-04-4	
Naphthalene	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	91-20-3	
n-Propylbenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	103-65-1	
Styrene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	630-20-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G3 (7-16wm) **Lab ID: 10424937005** Collected: 03/26/18 16:35 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,1,2,2-Tetrachloroethane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	79-34-5	N2
Tetrachloroethene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	127-18-4	
Tetrahydrofuran	ND	ug/kg	3770	1	03/27/18 14:03	03/27/18 18:32	109-99-9	
Toluene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	79-00-5	
Trichloroethene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	377	1	03/27/18 14:03	03/27/18 18:32	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	94.3	1	03/27/18 14:03	03/27/18 18:32	108-67-8	
Vinyl chloride	ND	ug/kg	37.7	1	03/27/18 14:03	03/27/18 18:32	75-01-4	
Xylene (Total)	ND	ug/kg	283	1	03/27/18 14:03	03/27/18 18:32	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1	03/27/18 14:03	03/27/18 18:32	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	03/27/18 14:03	03/27/18 18:32	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1	03/27/18 14:03	03/27/18 18:32	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	12.8	5	04/02/18 15:00	04/04/18 13:18	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**40.2**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.62**	mg/kg	0.52	1	03/29/18 10:55	03/29/18 13:22	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**2.0**	mg/kg	0.99	1	03/30/18 14:00	04/02/18 20:37	16984-48-8	

Sample: FD-SB-G2 (10-12wm) **Lab ID: 10424937006** Collected: 03/26/18 17:20 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	9.03	1	03/30/18 11:35	04/02/18 17:59	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	309-00-2	
alpha-BHC	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	319-84-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G2 (10-12wm) **Lab ID: 10424937006** Collected: 03/26/18 17:20 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
beta-BHC	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	319-85-7	
delta-BHC	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	58-89-9	
Chlordane (Technical)	ND	ug/kg	48.9	2	03/28/18 12:51	04/05/18 20:41	57-74-9	
alpha-Chlordane	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	5103-71-9	
gamma-Chlordane	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	5103-74-2	
4,4'-DDD	**19.8**	ug/kg	9.8	2	03/28/18 12:51	04/05/18 20:41	72-54-8	
4,4'-DDE	ND	ug/kg	9.8	2	03/28/18 12:51	04/05/18 20:41	72-55-9	
4,4'-DDT	ND	ug/kg	9.8	2	03/28/18 12:51	04/05/18 20:41	50-29-3	
Dieldrin	ND	ug/kg	9.8	2	03/28/18 12:51	04/05/18 20:41	60-57-1	
Endosulfan I	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	959-98-8	
Endosulfan II	ND	ug/kg	9.8	2	03/28/18 12:51	04/05/18 20:41	33213-65-9	
Endosulfan sulfate	ND	ug/kg	9.8	2	03/28/18 12:51	04/05/18 20:41	1031-07-8	
Endrin	ND	ug/kg	9.8	2	03/28/18 12:51	04/05/18 20:41	72-20-8	
Endrin aldehyde	ND	ug/kg	9.8	2	03/28/18 12:51	04/05/18 20:41	7421-93-4	
Endrin ketone	ND	ug/kg	9.8	2	03/28/18 12:51	04/05/18 20:41	53494-70-5	
Heptachlor	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	76-44-8	
Heptachlor epoxide	ND	ug/kg	4.9	2	03/28/18 12:51	04/05/18 20:41	1024-57-3	
Methoxychlor	ND	ug/kg	48.9	2	03/28/18 12:51	04/05/18 20:41	72-43-5	
Toxaphene	ND	ug/kg	146	2	03/28/18 12:51	04/05/18 20:41	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	30-150	2	03/28/18 12:51	04/05/18 20:41	877-09-8	5M,D4
Decachlorobiphenyl (S)	82	%.	30-150	2	03/28/18 12:51	04/05/18 20:41	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	11141-16-5	
PCB-1242 (Aroclor 1242)	**134**	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	11100-14-4	
PCB, Total	**134**	ug/kg	48.4	1	03/28/18 12:51	04/02/18 11:15	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	89	%.	48-125	1	03/28/18 12:51	04/02/18 11:15	877-09-8	
Decachlorobiphenyl (S)	83	%.	30-134	1	03/28/18 12:51	04/02/18 11:15	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**287**	mg/kg	63.9	5	03/27/18 16:31	03/30/18 14:00		T6
Surrogates								
n-Triacontane (S)	94	%.	50-150	5	03/27/18 16:31	03/30/18 14:00	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**69.0**	mg/kg	19.9	1	04/03/18 09:56	04/04/18 13:55		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G2 (10-12wm) **Lab ID: 10424937006** Collected: 03/26/18 17:20 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Surrogates								
a,a,a-Trifluorotoluene (S)	97	%.	80-150	1	04/03/18 09:56	04/04/18 13:55	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**13200**	mg/kg	13.8	1	03/28/18 04:51	04/02/18 13:10	7429-90-5	
Barium	**130**	mg/kg	0.69	1	03/28/18 04:51	04/02/18 13:10	7440-39-3	
Boron	**1930**	mg/kg	10.4	1	03/28/18 04:51	04/02/18 13:10	7440-42-8	
Copper	**29.1**	mg/kg	0.69	1	03/28/18 04:51	04/02/18 13:10	7440-50-8	
Iron	**39400**	mg/kg	34.6	10	03/28/18 04:51	04/02/18 13:55	7439-89-6	
Manganese	**188**	mg/kg	0.35	1	03/28/18 04:51	04/02/18 13:10	7439-96-5	
Nickel	**27.8**	mg/kg	1.4	1	03/28/18 04:51	04/02/18 13:10	7440-02-0	
Silver	ND	mg/kg	0.69	1	03/28/18 04:51	04/02/18 13:10	7440-22-4	
Tin	**5.3**	mg/kg	5.2	1	03/28/18 04:51	04/02/18 13:10	7440-31-5	
Titanium	**597**	mg/kg	1.7	1	03/28/18 04:51	04/02/18 13:10	7440-32-6	
Zinc	**209**	mg/kg	1.4	1	03/28/18 04:51	04/02/18 13:10	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**57.6**	mg/kg	1.4	5	03/30/18 09:43	03/31/18 06:37	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**2.0**	mg/kg	0.71	20	03/28/18 04:52	03/30/18 18:21	7440-36-0	
Arsenic	**28.4**	mg/kg	0.71	20	03/28/18 04:52	03/30/18 18:21	7440-38-2	
Beryllium	**3.0**	mg/kg	0.28	20	03/28/18 04:52	03/30/18 18:21	7440-41-7	
Cadmium	**3.1**	mg/kg	0.11	20	03/28/18 04:52	03/30/18 18:21	7440-43-9	
Cobalt	**7.4**	mg/kg	0.71	20	03/28/18 04:52	03/30/18 18:21	7440-48-4	
Lead	**40.8**	mg/kg	0.14	20	03/28/18 04:52	03/30/18 18:21	7439-92-1	
Lithium	**13.0**	mg/kg	0.71	20	03/28/18 04:52	03/30/18 18:21	7439-93-2	
Selenium	**7.4**	mg/kg	0.71	20	03/28/18 04:52	03/30/18 18:21	7782-49-2	
Strontium	**83.5**	mg/kg	0.71	20	03/28/18 04:52	03/30/18 18:21	7440-24-6	
Vanadium	**120**	mg/kg	1.4	20	03/28/18 04:52	03/30/18 18:21	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.094**	mg/kg	0.028	1	03/28/18 04:53	03/30/18 13:06	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**31.8**	%	0.10	1		03/28/18 12:46		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	83-32-9	
Acenaphthylene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	208-96-8	
Anthracene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	120-12-7	
Benzo(a)anthracene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	56-55-3	
Benzo(a)pyrene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	191-24-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G2 (10-12wm) **Lab ID: 10424937006** Collected: 03/26/18 17:20 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Benzo(k)fluoranthene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	101-55-3	
Butylbenzylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	85-68-7	
Carbazole	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	59-50-7	
4-Chloroaniline	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	108-60-1	
2-Chloronaphthalene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	91-58-7	
2-Chlorophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	7005-72-3	
Chrysene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	53-70-3	
Dibenzofuran	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	120-83-2	
Diethylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	105-67-9	
Dimethylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	131-11-3	
Di-n-butylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2490	1	03/27/18 12:47	03/30/18 13:48	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	606-20-2	
Di-n-octylphthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	117-81-7	
Fluoranthene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	206-44-0	
Fluorene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	87-68-3	
Hexachlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	118-74-1	
Hexachloroethane	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	193-39-5	
Isophorone	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	78-59-1	
1-Methylnaphthalene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	90-12-0	
2-Methylnaphthalene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	967	1	03/27/18 12:47	03/30/18 13:48		
Naphthalene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	91-20-3	
2-Nitroaniline	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	88-74-4	
3-Nitroaniline	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	99-09-2	
4-Nitroaniline	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	100-01-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G2 (10-12wm) **Lab ID: 10424937006** Collected: 03/26/18 17:20 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Nitrobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	98-95-3	
2-Nitrophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	88-75-5	
4-Nitrophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	86-30-6	
Pentachlorophenol	ND	ug/kg	982	1	03/27/18 12:47	03/30/18 13:48	87-86-5	
Phenanthrene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	85-01-8	
Phenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	108-95-2	
Pyrene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	484	1	03/27/18 12:47	03/30/18 13:48	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	72	%.	43-125	1	03/27/18 12:47	03/30/18 13:48	4165-60-0	
2-Fluorobiphenyl (S)	79	%.	30-132	1	03/27/18 12:47	03/30/18 13:48	321-60-8	
p-Terphenyl-d14 (S)	98	%.	62-125	1	03/27/18 12:47	03/30/18 13:48	1718-51-0	
Phenol-d6 (S)	70	%.	48-125	1	03/27/18 12:47	03/30/18 13:48	13127-88-3	
2-Fluorophenol (S)	69	%.	40-125	1	03/27/18 12:47	03/30/18 13:48	367-12-4	
2,4,6-Tribromophenol (S)	83	%.	60-125	1	03/27/18 12:47	03/30/18 13:48	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	83-32-9	
Acenaphthylene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	208-96-8	
Anthracene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	120-12-7	
Benzo(a)anthracene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	56-55-3	
Benzo(a)pyrene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	207-08-9	
Chrysene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	53-70-3	
Fluoranthene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	206-44-0	
Fluorene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	193-39-5	
Naphthalene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	91-20-3	
Phenanthrene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	85-01-8	
Pyrene	ND	ug/kg	14.6	1	03/27/18 15:20	04/02/18 22:05	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	74	%.	42-125	1	03/27/18 15:20	04/02/18 22:05	321-60-8	
p-Terphenyl-d14 (S)	89	%.	57-125	1	03/27/18 15:20	04/02/18 22:05	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	25057-89-0	
2,4-D	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	94-75-7	
2,4-DB	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	94-82-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G2 (10-12wm) **Lab ID: 10424937006** Collected: 03/26/18 17:20 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Dicamba	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	1918-00-9	
Dinoseb	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	88-85-7	
MCPA	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	94-74-6	
Pentachlorophenol	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	87-86-5	
Picloram	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	1918-02-1	
2,4,5-T	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	93-72-1	
Triclopyr	ND	mg/kg	0.048	1	03/29/18 07:30	04/04/18 17:16	55335-06-3	
Surrogates								
2,4-DCAA (S)	65	%.	46-125	1	03/29/18 07:30	04/04/18 17:16	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1650	1	03/27/18 14:03	03/27/18 18:49	67-64-1	
Allyl chloride	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	107-05-1	
Benzene	ND	ug/kg	33.1	1	03/27/18 14:03	03/27/18 18:49	71-43-2	
Bromobenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	108-86-1	
Bromochloromethane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	74-97-5	
Bromodichloromethane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	75-27-4	
Bromoform	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	75-25-2	
Bromomethane	ND	ug/kg	827	1	03/27/18 14:03	03/27/18 18:49	74-83-9	
2-Butanone (MEK)	ND	ug/kg	414	1	03/27/18 14:03	03/27/18 18:49	78-93-3	
n-Butylbenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	104-51-8	
sec-Butylbenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	135-98-8	
tert-Butylbenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	98-06-6	
Carbon tetrachloride	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	56-23-5	
Chlorobenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	108-90-7	
Chloroethane	ND	ug/kg	827	1	03/27/18 14:03	03/27/18 18:49	75-00-3	
Chloroform	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	67-66-3	
Chloromethane	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	74-87-3	
2-Chlorotoluene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	95-49-8	
4-Chlorotoluene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	827	1	03/27/18 14:03	03/27/18 18:49	96-12-8	
Dibromochloromethane	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	106-93-4	
Dibromomethane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	75-71-8	
1,1-Dichloroethane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	75-34-3	
1,2-Dichloroethane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	107-06-2	
1,1-Dichloroethene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	75-35-4	
cis-1,2-Dichloroethene	**263**	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	156-60-5	
Dichlorofluoromethane	ND	ug/kg	827	1	03/27/18 14:03	03/27/18 18:49	75-43-4	
1,2-Dichloropropane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	78-87-5	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G2 (10-12wm) **Lab ID: 10424937006** Collected: 03/26/18 17:20 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,3-Dichloropropane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	142-28-9	
2,2-Dichloropropane	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	594-20-7	
1,1-Dichloropropene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	60-29-7	
Ethylbenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	414	1	03/27/18 14:03	03/27/18 18:49	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	98-82-8	
p-Isopropyltoluene	**131**	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	99-87-6	
Methylene Chloride	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	414	1	03/27/18 14:03	03/27/18 18:49	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	1634-04-4	
Naphthalene	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	91-20-3	
n-Propylbenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	103-65-1	
Styrene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	79-34-5	N2
Tetrachloroethene	**363**	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	127-18-4	
Tetrahydrofuran	ND	ug/kg	3310	1	03/27/18 14:03	03/27/18 18:49	109-99-9	
Toluene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	79-00-5	
Trichloroethene	ND	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	331	1	03/27/18 14:03	03/27/18 18:49	76-13-1	
1,2,4-Trimethylbenzene	**341**	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	95-63-6	
1,3,5-Trimethylbenzene	**172**	ug/kg	82.7	1	03/27/18 14:03	03/27/18 18:49	108-67-8	
Vinyl chloride	ND	ug/kg	33.1	1	03/27/18 14:03	03/27/18 18:49	75-01-4	
Xylene (Total)	ND	ug/kg	248	1	03/27/18 14:03	03/27/18 18:49	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%.	75-125	1	03/27/18 14:03	03/27/18 18:49	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1	03/27/18 14:03	03/27/18 18:49	2037-26-5	
4-Bromofluorobenzene (S)	105	%.	75-125	1	03/27/18 14:03	03/27/18 18:49	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	14.6	5	04/02/18 15:00	04/04/18 13:18	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**57.6**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Sample: FD-SB-G2 (10-12wm) **Lab ID: 10424937006** Collected: 03/26/18 17:20 Received: 03/27/18 08:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.56**	mg/kg	0.56	1	03/29/18 10:55	03/29/18 13:22	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**7.4**	mg/kg	1.0	1	03/30/18 14:00	04/02/18 21:35	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 139779 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 553598 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.16	04/02/18 14:39	N3

METHOD BLANK: 553599 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.14	04/02/18 14:46	N3

METHOD BLANK: 553600 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.19	04/02/18 14:52	N3

LABORATORY CONTROL SAMPLE: 553601

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	104	109	105	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553602 553603

Parameter	Units	10424249001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	22.5	480	482	389	390	76	76	65-135	0	35	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553604 553605

Parameter	Units	10424609001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	1000	932	788	743	79	80	65-135	6	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 530309 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2878459 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	04/03/18 12:36	
a,a,a-Trifluorotoluene (S)	%.	98	80-150	04/03/18 12:36	

LABORATORY CONTROL SAMPLE & LCSD: 2878460 2878461

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	43.7	49.5	87	99	80-120	12	20	
a,a,a-Trifluorotoluene (S)	%.				99	99	80-150			

MATRIX SPIKE SAMPLE: 2878564

Parameter	Units	10424937003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	70.3	70.9	100	80-120	
a,a,a-Trifluorotoluene (S)	%.				99	80-150	

SAMPLE DUPLICATE: 2878565

Parameter	Units	10425027002 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	ND	ND		20	
a,a,a-Trifluorotoluene (S)	%.	99	100	8		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529342 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2873298 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.020	03/30/18 12:37	

LABORATORY CONTROL SAMPLE: 2873299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.45	0.51	112	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873300 2873301

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.12	2.2	2.4	2.6	2.6	109	105	80-120	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529339 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2873286 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	10.0	04/02/18 12:22	
Barium	mg/kg	ND	0.50	04/02/18 12:22	
Boron	mg/kg	ND	7.5	04/02/18 12:22	
Copper	mg/kg	ND	0.50	04/02/18 12:22	
Iron	mg/kg	24.4	2.5	04/02/18 12:22	
Manganese	mg/kg	ND	0.25	04/02/18 12:22	
Nickel	mg/kg	ND	1.0	04/02/18 12:22	
Silver	mg/kg	ND	0.50	04/02/18 12:22	
Tin	mg/kg	ND	3.8	04/02/18 12:22	
Titanium	mg/kg	ND	1.2	04/02/18 12:22	
Zinc	mg/kg	ND	1.0	04/02/18 12:22	

LABORATORY CONTROL SAMPLE: 2873287

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	962	978	102	80-120	
Barium	mg/kg	48.1	50.1	104	80-120	
Boron	mg/kg	48.1	45.5	95	80-120	
Copper	mg/kg	48.1	47.2	98	80-120	
Iron	mg/kg	962	1000	104	80-120	
Manganese	mg/kg	48.1	50.6	105	80-120	
Nickel	mg/kg	48.1	49.2	102	80-120	
Silver	mg/kg	24	22.4	93	80-120	
Tin	mg/kg	48.1	49.1	102	80-120	
Titanium	mg/kg	48.1	48.7	101	80-120	
Zinc	mg/kg	48.1	48.2	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873288 2873289

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	5600	4830	4830	12100	12700	134	147	75-125	5	20	M1
Barium	mg/kg	252	241	241	474	480	92	95	75-125	1	20	
Boron	mg/kg	524	241	241	778	802	105	115	75-125	3	20	
Copper	mg/kg	24.2	241	241	275	298	104	113	75-125	8	20	
Iron	mg/kg	15500	4830	4830	18100	23200	55	161	75-125	25	20	M1,R1
Manganese	mg/kg	423	241	241	614	675	79	104	75-125	9	20	
Nickel	mg/kg	11.3	241	241	256	262	101	104	75-125	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873288 2873289

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	ND	121	121	113	110	93	91	75-125	2	20	
Tin	mg/kg	44.1	241	241	272	273	95	95	75-125	0	20	
Titanium	mg/kg	158	241	241	391	406	96	103	75-125	4	20	
Zinc	mg/kg	232	241	241	411	487	74	106	75-125	17	20	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 434613 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2007430 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.18	03/31/18 04:29	N2

LABORATORY CONTROL SAMPLE: 2007431

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.6	97	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2007432 2007433

Parameter	Units	10424609003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	31.2	4.74	4.74	36.1	22.7	103	-179	75-125	46	20	1M, M0, N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529341 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2873294 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.50	03/30/18 17:03	
Arsenic	mg/kg	ND	0.50	03/30/18 17:03	
Beryllium	mg/kg	ND	0.20	03/30/18 17:03	
Cadmium	mg/kg	ND	0.080	03/30/18 17:03	
Cobalt	mg/kg	ND	0.50	03/30/18 17:03	
Lead	mg/kg	ND	0.10	03/30/18 17:03	
Lithium	mg/kg	ND	0.50	03/30/18 17:03	
Selenium	mg/kg	ND	0.50	03/30/18 17:03	
Strontium	mg/kg	ND	0.50	03/30/18 17:03	
Vanadium	mg/kg	ND	1.0	03/30/18 17:03	

LABORATORY CONTROL SAMPLE: 2873295

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	49.5	49.3	100	80-120	
Arsenic	mg/kg	49.5	49.1	99	80-120	
Beryllium	mg/kg	49.5	46.9	95	80-120	
Cadmium	mg/kg	49.5	48.8	99	80-120	
Cobalt	mg/kg	49.5	49.6	100	80-120	
Lead	mg/kg	49.5	50.3	102	80-120	
Lithium	mg/kg	49.5	45.7	92	80-120	
Selenium	mg/kg	49.5	48.0	97	80-120	
Strontium	mg/kg	49.5	48.3	98	80-120	
Vanadium	mg/kg	49.5	51.0	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873296 2873297

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	ND	239	239	192	203	80	85	75-125	5	20	
Arsenic	mg/kg	3.8	239	239	223	236	92	97	75-125	5	20	
Beryllium	mg/kg	ND	239	239	219	234	91	98	75-125	7	20	
Cadmium	mg/kg	0.72	239	239	221	234	92	98	75-125	6	20	
Cobalt	mg/kg	3.4	239	239	228	242	94	100	75-125	6	20	
Lead	mg/kg	308	239	239	641	734	139	178	75-125	14	20	M6
Lithium	mg/kg	4.6	239	239	216	232	88	95	75-125	7	20	
Selenium	mg/kg	ND	239	239	215	223	90	93	75-125	4	20	
Strontium	mg/kg	47.6	239	239	265	304	91	107	75-125	14	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873296 2873297

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vanadium	mg/kg	15.0	239	239	247	275	97	109	75-125	11	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529398 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

SAMPLE DUPLICATE: 2873484

Parameter	Units	10424937006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	31.8	32.4	2	30	

SAMPLE DUPLICATE: 2873740

Parameter	Units	10424803007 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	5.4	4.9	10	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529276 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2872633 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,1,1-Trichloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	03/27/18 16:35	N2
1,1,2-Trichloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	03/27/18 16:35	
1,1-Dichloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,1-Dichloroethene	ug/kg	ND	50.0	03/27/18 16:35	
1,1-Dichloropropene	ug/kg	ND	50.0	03/27/18 16:35	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,2,3-Trichloropropane	ug/kg	ND	200	03/27/18 16:35	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	03/27/18 16:35	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	03/27/18 16:35	
1,2-Dichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,2-Dichloroethane	ug/kg	ND	50.0	03/27/18 16:35	
1,2-Dichloropropane	ug/kg	ND	50.0	03/27/18 16:35	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,3-Dichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
1,3-Dichloropropane	ug/kg	ND	50.0	03/27/18 16:35	
1,4-Dichlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
2,2-Dichloropropane	ug/kg	ND	200	03/27/18 16:35	
2-Butanone (MEK)	ug/kg	ND	250	03/27/18 16:35	
2-Chlorotoluene	ug/kg	ND	50.0	03/27/18 16:35	
4-Chlorotoluene	ug/kg	ND	50.0	03/27/18 16:35	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	03/27/18 16:35	
Acetone	ug/kg	ND	1000	03/27/18 16:35	
Allyl chloride	ug/kg	ND	200	03/27/18 16:35	
Benzene	ug/kg	ND	20.0	03/27/18 16:35	
Bromobenzene	ug/kg	ND	50.0	03/27/18 16:35	
Bromochloromethane	ug/kg	ND	50.0	03/27/18 16:35	
Bromodichloromethane	ug/kg	ND	50.0	03/27/18 16:35	
Bromoform	ug/kg	ND	200	03/27/18 16:35	
Bromomethane	ug/kg	ND	500	03/27/18 16:35	
Carbon tetrachloride	ug/kg	ND	50.0	03/27/18 16:35	
Chlorobenzene	ug/kg	ND	50.0	03/27/18 16:35	
Chloroethane	ug/kg	ND	500	03/27/18 16:35	
Chloroform	ug/kg	ND	50.0	03/27/18 16:35	
Chloromethane	ug/kg	ND	200	03/27/18 16:35	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	03/27/18 16:35	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	03/27/18 16:35	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

METHOD BLANK: 2872633 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	03/27/18 16:35	
Dibromomethane	ug/kg	ND	50.0	03/27/18 16:35	
Dichlorodifluoromethane	ug/kg	ND	200	03/27/18 16:35	
Dichlorofluoromethane	ug/kg	ND	500	03/27/18 16:35	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	03/27/18 16:35	
Ethylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
Hexachloro-1,3-butadiene	ug/kg	ND	250	03/27/18 16:35	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	03/27/18 16:35	
Methyl-tert-butyl ether	ug/kg	ND	50.0	03/27/18 16:35	
Methylene Chloride	ug/kg	ND	200	03/27/18 16:35	
n-Butylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
n-Propylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
Naphthalene	ug/kg	ND	200	03/27/18 16:35	
p-Isopropyltoluene	ug/kg	ND	50.0	03/27/18 16:35	
sec-Butylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
Styrene	ug/kg	ND	50.0	03/27/18 16:35	
tert-Butylbenzene	ug/kg	ND	50.0	03/27/18 16:35	
Tetrachloroethene	ug/kg	ND	50.0	03/27/18 16:35	
Tetrahydrofuran	ug/kg	ND	2000	03/27/18 16:35	
Toluene	ug/kg	ND	50.0	03/27/18 16:35	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	03/27/18 16:35	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	03/27/18 16:35	
Trichloroethene	ug/kg	ND	50.0	03/27/18 16:35	N2
Trichlorofluoromethane	ug/kg	ND	200	03/27/18 16:35	
Vinyl chloride	ug/kg	ND	20.0	03/27/18 16:35	
Xylene (Total)	ug/kg	ND	150	03/27/18 16:35	
1,2-Dichloroethane-d4 (S)	%.	91	75-125	03/27/18 16:35	
4-Bromofluorobenzene (S)	%.	101	75-125	03/27/18 16:35	
Toluene-d8 (S)	%.	98	75-125	03/27/18 16:35	

LABORATORY CONTROL SAMPLE & LCSD: 2872634 2872635

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	936	912	94	91	59-125	3	20	
1,1,1-Trichloroethane	ug/kg	1000	910	885	91	89	59-125	3	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	923	898	92	90	58-125	3	20	N2
1,1,2-Trichloroethane	ug/kg	1000	913	861	91	86	64-125	6	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	876	853	88	85	65-125	3	20	
1,1-Dichloroethane	ug/kg	1000	853	825	85	82	63-125	3	20	
1,1-Dichloroethene	ug/kg	1000	918	900	92	90	59-125	2	20	
1,1-Dichloropropene	ug/kg	1000	918	913	92	91	64-125	1	20	
1,2,3-Trichlorobenzene	ug/kg	1000	898	866	90	87	55-126	4	20	
1,2,3-Trichloropropane	ug/kg	1000	847	792	85	79	62-125	7	20	
1,2,4-Trichlorobenzene	ug/kg	1000	907	899	91	90	62-125	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

LABORATORY CONTROL SAMPLE & LCSD: 2872634 2872635

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	895	876	90	88	59-125	2	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2070	2030	83	81	54-125	2	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	865	861	87	86	64-125	1	20	
1,2-Dichlorobenzene	ug/kg	1000	858	840	86	84	63-125	2	20	
1,2-Dichloroethane	ug/kg	1000	784	767	78	77	57-125	2	20	
1,2-Dichloropropane	ug/kg	1000	889	873	89	87	67-125	2	20	
1,3,5-Trimethylbenzene	ug/kg	1000	899	870	90	87	59-125	3	20	
1,3-Dichlorobenzene	ug/kg	1000	864	833	86	83	64-125	4	20	
1,3-Dichloropropane	ug/kg	1000	875	859	87	86	64-125	2	20	
1,4-Dichlorobenzene	ug/kg	1000	840	843	84	84	63-125	0	20	
2,2-Dichloropropane	ug/kg	1000	975	934	98	93	37-126	4	20	
2-Butanone (MEK)	ug/kg	5000	4040	4150	81	83	48-125	3	20	
2-Chlorotoluene	ug/kg	1000	870	844	87	84	62-125	3	20	
4-Chlorotoluene	ug/kg	1000	893	868	89	87	63-125	3	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4230	4170	85	83	52-135	1	20	
Acetone	ug/kg	5000	5930	5540	119	111	65-125	7	20	
Allyl chloride	ug/kg	1000	861	838	86	84	52-125	3	20	
Benzene	ug/kg	1000	870	836	87	84	61-125	4	20	
Bromobenzene	ug/kg	1000	896	858	90	86	64-125	4	20	
Bromochloromethane	ug/kg	1000	902	848	90	85	65-125	6	20	
Bromodichloromethane	ug/kg	1000	956	912	96	91	57-125	5	20	
Bromoform	ug/kg	1000	857	861	86	86	57-125	0	20	
Bromomethane	ug/kg	1000	761	842	76	84	60-125	10	20	
Carbon tetrachloride	ug/kg	1000	936	894	94	89	58-125	5	20	
Chlorobenzene	ug/kg	1000	891	868	89	87	66-125	3	20	
Chloroethane	ug/kg	1000	808	861	81	86	62-125	6	20	
Chloroform	ug/kg	1000	780	773	78	77	59-125	1	20	
Chloromethane	ug/kg	1000	777	793	78	79	50-125	2	20	
cis-1,2-Dichloroethene	ug/kg	1000	871	844	87	84	61-125	3	20	
cis-1,3-Dichloropropene	ug/kg	1000	920	884	92	88	61-125	4	20	
Dibromochloromethane	ug/kg	1000	873	836	87	84	60-125	4	20	
Dibromomethane	ug/kg	1000	919	879	92	88	69-125	4	20	
Dichlorodifluoromethane	ug/kg	1000	692	727	69	73	38-125	5	20	
Dichlorofluoromethane	ug/kg	1000	781	830	78	83	67-125	6	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1440	1560	144	156	60-125	8	20	L3
Ethylbenzene	ug/kg	1000	885	876	89	88	62-125	1	20	
Hexachloro-1,3-butadiene	ug/kg	1000	929	952	93	95	56-125	2	20	
Isopropylbenzene (Cumene)	ug/kg	1000	945	925	94	92	65-125	2	20	
Methyl-tert-butyl ether	ug/kg	1000	834	815	83	82	59-125	2	20	
Methylene Chloride	ug/kg	1000	905	859	91	86	64-125	5	20	
n-Butylbenzene	ug/kg	1000	931	914	93	91	59-125	2	20	
n-Propylbenzene	ug/kg	1000	920	887	92	89	61-125	4	20	
Naphthalene	ug/kg	1000	909	917	91	92	53-125	1	20	
p-Isopropyltoluene	ug/kg	1000	911	904	91	90	63-125	1	20	
sec-Butylbenzene	ug/kg	1000	937	918	94	92	62-125	2	20	
Styrene	ug/kg	1000	939	902	94	90	66-125	4	20	
tert-Butylbenzene	ug/kg	1000	914	898	91	90	64-125	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

LABORATORY CONTROL SAMPLE & LCSD: 2872634 2872635

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	916	895	92	89	67-125	2	20	
Tetrahydrofuran	ug/kg	10000	12300	11600	123	116	62-125	6	20	
Toluene	ug/kg	1000	886	876	89	88	61-125	1	20	
trans-1,2-Dichloroethene	ug/kg	1000	901	885	90	89	64-125	2	20	
trans-1,3-Dichloropropene	ug/kg	1000	931	929	93	93	56-125	0	20	
Trichloroethene	ug/kg	1000	892	866	89	87	67-125	3	20	N2
Trichlorofluoromethane	ug/kg	1000	753	816	75	82	65-125	8	20	
Vinyl chloride	ug/kg	1000	851	883	85	88	57-125	4	20	
Xylene (Total)	ug/kg	3000	2710	2690	90	90	62-125	1	20	
1,2-Dichloroethane-d4 (S)	%.				92	91	75-125			
4-Bromofluorobenzene (S)	%.				100	102	75-125			
Toluene-d8 (S)	%.				99	101	75-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529466 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2873686 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/05/18 18:14	
4,4'-DDE	ug/kg	ND	3.3	04/05/18 18:14	
4,4'-DDT	ug/kg	ND	3.3	04/05/18 18:14	
Aldrin	ug/kg	ND	1.7	04/05/18 18:14	
alpha-BHC	ug/kg	ND	1.7	04/05/18 18:14	
alpha-Chlordane	ug/kg	ND	1.7	04/05/18 18:14	
beta-BHC	ug/kg	ND	1.7	04/05/18 18:14	
Chlordane (Technical)	ug/kg	ND	16.7	04/05/18 18:14	
delta-BHC	ug/kg	ND	1.7	04/05/18 18:14	
Dieldrin	ug/kg	ND	3.3	04/05/18 18:14	
Endosulfan I	ug/kg	ND	1.7	04/05/18 18:14	
Endosulfan II	ug/kg	ND	3.3	04/05/18 18:14	
Endosulfan sulfate	ug/kg	ND	3.3	04/05/18 18:14	
Endrin	ug/kg	ND	3.3	04/05/18 18:14	
Endrin aldehyde	ug/kg	ND	3.3	04/05/18 18:14	
Endrin ketone	ug/kg	ND	3.3	04/05/18 18:14	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/05/18 18:14	
gamma-Chlordane	ug/kg	ND	1.7	04/05/18 18:14	
Heptachlor	ug/kg	ND	1.7	04/05/18 18:14	
Heptachlor epoxide	ug/kg	ND	1.7	04/05/18 18:14	
Methoxychlor	ug/kg	ND	16.7	04/05/18 18:14	
Toxaphene	ug/kg	ND	50.0	04/05/18 18:14	
Decachlorobiphenyl (S)	%.	95	30-150	04/05/18 18:14	
Tetrachloro-m-xylene (S)	%.	91	30-150	04/05/18 18:14	

LABORATORY CONTROL SAMPLE: 2873687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	33.1	99	62-127	
4,4'-DDE	ug/kg	33.3	32.4	97	66-125	
4,4'-DDT	ug/kg	33.3	33.2	99	67-128	CH
Aldrin	ug/kg	16.7	14.5	87	66-125	
alpha-BHC	ug/kg	16.7	14.8	89	64-125	
alpha-Chlordane	ug/kg	16.7	15.2	91	68-125	
beta-BHC	ug/kg	16.7	15.3	92	69-125	
delta-BHC	ug/kg	16.7	9.8	59	42-133	
Dieldrin	ug/kg	33.3	33.7	101	69-126	
Endosulfan I	ug/kg	16.7	14.1	85	63-125	
Endosulfan II	ug/kg	33.3	33.0	99	69-125	
Endosulfan sulfate	ug/kg	33.3	27.6	83	56-137	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

LABORATORY CONTROL SAMPLE: 2873687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	31.1	93	69-125	
Endrin aldehyde	ug/kg	33.3	31.3	94	65-125	
Endrin ketone	ug/kg	33.3	34.0	102	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	15.3	92	67-125	
gamma-Chlordane	ug/kg	16.7	13.8	83	63-125	
Heptachlor	ug/kg	16.7	15.3	92	69-125	
Heptachlor epoxide	ug/kg	16.7	15.3	92	68-125	
Methoxychlor	ug/kg	167	165	99	65-134	CH
Decachlorobiphenyl (S)	%.			90	30-150	
Tetrachloro-m-xylene (S)	%.			86	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873688 2873689

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	166	166	147	154	89	93	56-125	5	20	
4,4'-DDE	ug/kg	ND	166	166	154	164	93	99	32-150	6	20	
4,4'-DDT	ug/kg	ND	166	166	154	158	93	95	60-132	2	20	CH
Aldrin	ug/kg	ND	82.5	83	61.8	64.2	75	78	56-125	4	20	
alpha-BHC	ug/kg	ND	82.5	83	74.1	80.9	90	98	54-136	9	20	
alpha-Chlordane	ug/kg	147	82.5	83	169	140	26	-9	54-133	19	20	M1
beta-BHC	ug/kg	64.3	82.5	83	79.8	87.9	19	28	30-150	10	20	M1
delta-BHC	ug/kg	ND	82.5	83	49.8	54.9	60	66	45-145	10	20	
Dieldrin	ug/kg	ND	166	166	142	143	86	86	47-150	0	20	
Endosulfan I	ug/kg	ND	82.5	83	66.2	70.2	80	85	35-145	6	20	
Endosulfan II	ug/kg	ND	166	166	139	142	84	86	50-147	2	20	
Endosulfan sulfate	ug/kg	ND	166	166	118	120	71	73	54-132	2	20	
Endrin	ug/kg	ND	166	166	126	128	76	78	62-125	2	20	
Endrin aldehyde	ug/kg	ND	166	166	132	132	80	80	33-150	1	20	
Endrin ketone	ug/kg	ND	166	166	144	146	87	88	56-144	1	20	
gamma-BHC (Lindane)	ug/kg	ND	82.5	83	66.3	68.3	80	82	63-125	3	20	
gamma-Chlordane	ug/kg	129	82.5	83	141	118	14	-14	45-132	18	20	M1
Heptachlor	ug/kg	ND	82.5	83	77.5	95.3	94	115	51-142	21	20	R1
Heptachlor epoxide	ug/kg	ND	82.5	83	65.2	69.5	79	84	50-142	6	20	
Methoxychlor	ug/kg	ND	825	830	810	820	98	99	58-139	1	20	CH
Decachlorobiphenyl (S)	%.						60	64	30-150			
Tetrachloro-m-xylene (S)	%.						57	64	30-150			5M, D4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529467 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2873690 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/02/18 10:11	
Decachlorobiphenyl (S)	%.	88	30-134	04/02/18 10:11	
Tetrachloro-m-xylene (S)	%.	88	48-125	04/02/18 10:11	

LABORATORY CONTROL SAMPLE: 2873691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	569	85	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	575	86	62-125	
Decachlorobiphenyl (S)	%.			90	30-134	
Tetrachloro-m-xylene (S)	%.			90	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873692 2873693

Parameter	Units	10424793002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	930	930	789	769	85	83	30-150	3	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	930	930	906	896	97	96	30-138	1	30	
Decachlorobiphenyl (S)	%.						77	74	30-134			
Tetrachloro-m-xylene (S)	%.						76	69	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529268 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2872570 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1,2-Dichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1,2-Diphenylhydrazine	ug/kg	ND	330	03/30/18 11:47	
1,3-Dichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1,4-Dichlorobenzene	ug/kg	ND	330	03/30/18 11:47	
1-Methylnaphthalene	ug/kg	ND	330	03/30/18 11:47	
2,4,5-Trichlorophenol	ug/kg	ND	330	03/30/18 11:47	
2,4,6-Trichlorophenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dichlorophenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dimethylphenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dinitrophenol	ug/kg	ND	330	03/30/18 11:47	
2,4-Dinitrotoluene	ug/kg	ND	330	03/30/18 11:47	
2,6-Dinitrotoluene	ug/kg	ND	330	03/30/18 11:47	
2-Chloronaphthalene	ug/kg	ND	330	03/30/18 11:47	
2-Chlorophenol	ug/kg	ND	330	03/30/18 11:47	
2-Methylnaphthalene	ug/kg	ND	330	03/30/18 11:47	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	03/30/18 11:47	
2-Nitroaniline	ug/kg	ND	330	03/30/18 11:47	
2-Nitrophenol	ug/kg	ND	330	03/30/18 11:47	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	03/30/18 11:47	
3,3'-Dichlorobenzidine	ug/kg	ND	330	03/30/18 11:47	
3-Nitroaniline	ug/kg	ND	330	03/30/18 11:47	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	03/30/18 11:47	
4-Bromophenylphenyl ether	ug/kg	ND	330	03/30/18 11:47	
4-Chloro-3-methylphenol	ug/kg	ND	330	03/30/18 11:47	
4-Chloroaniline	ug/kg	ND	330	03/30/18 11:47	
4-Chlorophenylphenyl ether	ug/kg	ND	330	03/30/18 11:47	
4-Nitroaniline	ug/kg	ND	330	03/30/18 11:47	
4-Nitrophenol	ug/kg	ND	330	03/30/18 11:47	
Acenaphthene	ug/kg	ND	330	03/30/18 11:47	
Acenaphthylene	ug/kg	ND	330	03/30/18 11:47	
Anthracene	ug/kg	ND	330	03/30/18 11:47	
Benzo(a)anthracene	ug/kg	ND	330	03/30/18 11:47	
Benzo(a)pyrene	ug/kg	ND	330	03/30/18 11:47	
Benzo(b)fluoranthene	ug/kg	ND	330	03/30/18 11:47	
Benzo(g,h,i)perylene	ug/kg	ND	330	03/30/18 11:47	
Benzo(k)fluoranthene	ug/kg	ND	330	03/30/18 11:47	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	03/30/18 11:47	
bis(2-Chloroethyl) ether	ug/kg	ND	330	03/30/18 11:47	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	03/30/18 11:47	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	03/30/18 11:47	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

METHOD BLANK: 2872570 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	03/30/18 11:47	
Carbazole	ug/kg	ND	330	03/30/18 11:47	
Chrysene	ug/kg	ND	330	03/30/18 11:47	
Di-n-butylphthalate	ug/kg	ND	330	03/30/18 11:47	
Di-n-octylphthalate	ug/kg	ND	330	03/30/18 11:47	
Dibenz(a,h)anthracene	ug/kg	ND	330	03/30/18 11:47	
Dibenzofuran	ug/kg	ND	330	03/30/18 11:47	
Diethylphthalate	ug/kg	ND	330	03/30/18 11:47	
Dimethylphthalate	ug/kg	ND	330	03/30/18 11:47	
Fluoranthene	ug/kg	ND	330	03/30/18 11:47	
Fluorene	ug/kg	ND	330	03/30/18 11:47	
Hexachloro-1,3-butadiene	ug/kg	ND	330	03/30/18 11:47	
Hexachlorobenzene	ug/kg	ND	330	03/30/18 11:47	
Hexachloroethane	ug/kg	ND	330	03/30/18 11:47	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	03/30/18 11:47	
Isophorone	ug/kg	ND	330	03/30/18 11:47	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	03/30/18 11:47	
N-Nitrosodimethylamine	ug/kg	ND	330	03/30/18 11:47	
N-Nitrosodiphenylamine	ug/kg	ND	330	03/30/18 11:47	
Naphthalene	ug/kg	ND	330	03/30/18 11:47	
Nitrobenzene	ug/kg	ND	330	03/30/18 11:47	
Pentachlorophenol	ug/kg	ND	670	03/30/18 11:47	
Phenanthrene	ug/kg	ND	330	03/30/18 11:47	
Phenol	ug/kg	ND	330	03/30/18 11:47	
Pyrene	ug/kg	ND	330	03/30/18 11:47	
2,4,6-Tribromophenol (S)	%.	73	60-125	03/30/18 11:47	
2-Fluorobiphenyl (S)	%.	58	30-132	03/30/18 11:47	
2-Fluorophenol (S)	%.	55	40-125	03/30/18 11:47	
Nitrobenzene-d5 (S)	%.	54	43-125	03/30/18 11:47	
p-Terphenyl-d14 (S)	%.	90	62-125	03/30/18 11:47	
Phenol-d6 (S)	%.	56	48-125	03/30/18 11:47	

LABORATORY CONTROL SAMPLE: 2872571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1020	61	46-125	
1,2-Dichlorobenzene	ug/kg	1670	999	60	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1310	78	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1010	61	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1010	61	39-125	
1-Methylnaphthalene	ug/kg	1670	1080	65	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1220	73	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1200	72	61-125	
2,4-Dichlorophenol	ug/kg	1670	1060	64	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

LABORATORY CONTROL SAMPLE: 2872571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1030	62	51-125	
2,4-Dinitrophenol	ug/kg	1670	1200	72	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1250	75	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1240	74	63-125	
2-Chloronaphthalene	ug/kg	1670	1130	68	61-125	
2-Chlorophenol	ug/kg	1670	1020	61	46-125	
2-Methylnaphthalene	ug/kg	1670	1080	65	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1080	65	50-125	
2-Nitroaniline	ug/kg	1670	1380	83	61-125	
2-Nitrophenol	ug/kg	1670	1030	62	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1080	65	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1290	78	47-125	
3-Nitroaniline	ug/kg	1670	1220	73	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1380J	83	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1350	81	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1180	71	64-125	
4-Chloroaniline	ug/kg	1670	944	57	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1210	73	64-125	
4-Nitroaniline	ug/kg	1670	1180	71	59-125	
4-Nitrophenol	ug/kg	1670	1320	79	54-125	
Acenaphthene	ug/kg	1670	1190	72	62-125	
Acenaphthylene	ug/kg	1670	1140	69	61-125	
Anthracene	ug/kg	1670	1280	77	66-125	
Benzo(a)anthracene	ug/kg	1670	1300	78	69-125	
Benzo(a)pyrene	ug/kg	1670	1310	79	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1380	83	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1320	79	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1300	78	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1120	67	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1090	65	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1180	71	37-125	
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1330	80	69-131	
Butylbenzylphthalate	ug/kg	1670	1340	81	69-129	
Carbazole	ug/kg	1670	1290	77	66-125	
Chrysene	ug/kg	1670	1300	78	68-125	
Di-n-butylphthalate	ug/kg	1670	1360	81	69-125	
Di-n-octylphthalate	ug/kg	1670	1310	79	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1340	81	64-125	
Dibenzofuran	ug/kg	1670	1200	72	65-125	
Diethylphthalate	ug/kg	1670	1280	77	67-125	
Dimethylphthalate	ug/kg	1670	1240	75	67-125	
Fluoranthene	ug/kg	1670	1280	77	66-125	
Fluorene	ug/kg	1670	1190	71	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1040	62	40-125	
Hexachlorobenzene	ug/kg	1670	1320	79	62-125	
Hexachloroethane	ug/kg	1670	1010	61	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1320	79	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

LABORATORY CONTROL SAMPLE: 2872571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1130	68	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1150	69	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1090	65	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1320	79	65-125	
Naphthalene	ug/kg	1670	1050	63	48-125	
Nitrobenzene	ug/kg	1670	1130	68	48-125	
Pentachlorophenol	ug/kg	1670	1220	73	41-125	
Phenanthrene	ug/kg	1670	1300	78	66-125	
Phenol	ug/kg	1670	1110	67	46-125	
Pyrene	ug/kg	1670	1360	82	69-125	
2,4,6-Tribromophenol (S)	%.			85	60-125	
2-Fluorobiphenyl (S)	%.			76	30-132	
2-Fluorophenol (S)	%.			69	40-125	
Nitrobenzene-d5 (S)	%.			71	43-125	
p-Terphenyl-d14 (S)	%.			89	62-125	
Phenol-d6 (S)	%.			72	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872788 2872789

Parameter	Units	10424792001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	1720	1710	1460J	1420J	85	83	30-127		30	
1,2-Dichlorobenzene	ug/kg	ND	1720	1710	1360J	1370J	79	80	30-125		30	
1,2-Diphenylhydrazine	ug/kg	ND	1720	1710	1710	1620J	100	95	30-150		30	
1,3-Dichlorobenzene	ug/kg	ND	1720	1710	1400J	1320J	82	77	30-125		30	
1,4-Dichlorobenzene	ug/kg	ND	1720	1710	1400J	1350J	82	79	30-125		30	
1-Methylnaphthalene	ug/kg	ND	1720	1710	1540J	1510J	90	88	42-125		30	
2,4,5-Trichlorophenol	ug/kg	ND	1720	1710	1470J	1350J	86	79	30-150		30	
2,4,6-Trichlorophenol	ug/kg	ND	1720	1710	1330J	1320J	78	77	30-150		30	
2,4-Dichlorophenol	ug/kg	ND	1720	1710	1550J	1480J	91	87	30-135		30	
2,4-Dimethylphenol	ug/kg	ND	1720	1710	1440J	1430J	84	84	30-148		30	
2,4-Dinitrophenol	ug/kg	ND	1720	1710	ND	ND	5	4	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	ND	1720	1710	1560J	1560J	91	92	30-150		30	
2,6-Dinitrotoluene	ug/kg	ND	1720	1710	1650J	1720	96	100	30-150		30	
2-Chloronaphthalene	ug/kg	ND	1720	1710	1580J	1500J	92	88	30-138		30	
2-Chlorophenol	ug/kg	ND	1720	1710	1500J	1450J	88	85	30-130		30	
2-Methylnaphthalene	ug/kg	ND	1720	1710	1530J	1640J	89	96	46-125		30	
2-Methylphenol(o-Cresol)	ug/kg	ND	1720	1710	1590J	1490J	93	87	30-133		30	
2-Nitroaniline	ug/kg	ND	1720	1710	1650J	1750	97	103	30-150		30	
2-Nitrophenol	ug/kg	ND	1720	1710	1360J	1410J	79	83	30-134		30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	1720	1710	1600J	1590J	94	93	30-138		30	
3,3'-Dichlorobenzidine	ug/kg	ND	1720	1710	1340J	1500J	78	88	30-149		30	6M
3-Nitroaniline	ug/kg	ND	1720	1710	1300J	1180J	76	69	30-150		30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1720	1710	ND	ND	19	20	30-133		30	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872788 2872789

Parameter	Units	10424792001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	1720	1710	1670J	1600J	97	94	44-125		30	
4-Chloro-3-methylphenol	ug/kg	ND	1720	1710	1580J	ND	92	99	30-150		30	
4-Chloroaniline	ug/kg	ND	1720	1710	1010J	930J	59	54	30-125		30	
4-Chlorophenylphenyl ether	ug/kg	ND	1720	1710	1630J	1540J	95	90	44-125		30	
4-Nitroaniline	ug/kg	ND	1720	1710	1500J	1440J	87	84	30-150		30	
4-Nitrophenol	ug/kg	ND	1720	1710	1450J	1370J	85	80	30-150		30	
Acenaphthene	ug/kg	ND	1720	1710	1490J	1430J	87	84	40-125		30	
Acenaphthylene	ug/kg	ND	1720	1710	1560J	1470J	91	86	30-150		30	
Anthracene	ug/kg	ND	1720	1710	1770	1800	103	106	30-150	2	30	
Benzo(a)anthracene	ug/kg	ND	1720	1710	1970	1970	115	115	30-150	0	30	
Benzo(a)pyrene	ug/kg	ND	1720	1710	1860	1850	109	108	30-150	1	30	
Benzo(b)fluoranthene	ug/kg	ND	1720	1710	1560J	1770	91	104	30-150		30	
Benzo(g,h,i)perylene	ug/kg	ND	1720	1710	1600J	1710	93	100	30-150		30	
Benzo(k)fluoranthene	ug/kg	ND	1720	1710	1660J	1550J	97	91	30-150		30	
bis(2-Chloroethoxy)methane	ug/kg	ND	1720	1710	1520J	1460J	89	85	30-134		30	
bis(2-Chloroethyl) ether	ug/kg	ND	1720	1710	1570J	1550J	91	91	30-125		30	6M
bis(2-Chloroisopropyl) ether	ug/kg	ND	1720	1710	1780	1600J	104	94	30-125		30	6M
bis(2-Ethylhexyl)phthalate	ug/kg	ND	1720	1710	1780	1880	104	110	30-150	5	30	
Butylbenzylphthalate	ug/kg	ND	1720	1710	1740	1790	102	105	30-150	3	30	
Carbazole	ug/kg	ND	1720	1710	1660J	1710	97	100	41-125		30	
Chrysene	ug/kg	ND	1720	1710	2070	2030	121	119	30-150	2	30	
Di-n-butylphthalate	ug/kg	ND	1720	1710	1730	1740	101	102	30-150	0	30	
Di-n-octylphthalate	ug/kg	ND	1720	1710	1840	1870	108	110	30-150	2	30	
Dibenz(a,h)anthracene	ug/kg	ND	1720	1710	1540J	1680J	90	98	30-150		30	
Dibenzofuran	ug/kg	ND	1720	1710	1620J	1590J	95	93	45-125		30	
Diethylphthalate	ug/kg	ND	1720	1710	1680J	1660J	98	97	30-150		30	
Dimethylphthalate	ug/kg	ND	1720	1710	1650J	1630J	97	96	30-150		30	
Fluoranthene	ug/kg	ND	1720	1710	1750	1740	102	102	30-150	0	30	
Fluorene	ug/kg	ND	1720	1710	1620J	1660J	95	97	30-150		30	
Hexachloro-1,3-butadiene	ug/kg	ND	1720	1710	1380J	1460J	80	86	30-128		30	
Hexachlorobenzene	ug/kg	ND	1720	1710	1500J	1500J	87	88	30-150		30	
Hexachloroethane	ug/kg	ND	1720	1710	1440J	1350J	84	79	30-125		30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	1720	1710	1500J	1650J	88	97	30-150		30	
Isophorone	ug/kg	ND	1720	1710	1570J	1550J	92	91	30-140		30	
N-Nitroso-di-n-propylamine	ug/kg	ND	1720	1710	1680J	1570J	98	92	30-147		30	6M
N-Nitrosodimethylamine	ug/kg	ND	1720	1710	1420J	1330J	83	78	30-125		30	
N-Nitrosodiphenylamine	ug/kg	ND	1720	1710	1610J	1720	94	101	30-150		30	
Naphthalene	ug/kg	ND	1720	1710	1520J	1480J	89	86	44-125		30	
Nitrobenzene	ug/kg	ND	1720	1710	1580J	1550J	92	91	30-136		30	
Pentachlorophenol	ug/kg	ND	1720	1710	ND	ND	23	22	30-150		30	M1
Phenanthrene	ug/kg	ND	1720	1710	1890	1950	110	114	30-150	3	30	
Phenol	ug/kg	ND	1720	1710	1530J	1490J	89	87	30-129		30	
Pyrene	ug/kg	ND	1720	1710	2160	2260	126	132	30-150	4	30	
2,4,6-Tribromophenol (S)	%.						86	83	60-125			
2-Fluorobiphenyl (S)	%.						98	95	30-132			
2-Fluorophenol (S)	%.						95	88	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872788 2872789

Parameter	Units	10424792001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						93	93	43-125			
p-Terphenyl-d14 (S)	%.						97	103	62-125			
Phenol-d6 (S)	%.						95	93	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529263 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2872540 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/02/18 12:14	
Acenaphthylene	ug/kg	ND	10.0	04/02/18 12:14	
Anthracene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(a)anthracene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(a)pyrene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/02/18 12:14	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/02/18 12:14	
Chrysene	ug/kg	ND	10.0	04/02/18 12:14	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/02/18 12:14	
Fluoranthene	ug/kg	ND	10.0	04/02/18 12:14	
Fluorene	ug/kg	ND	10.0	04/02/18 12:14	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/02/18 12:14	
Naphthalene	ug/kg	ND	10.0	04/02/18 12:14	
Phenanthrene	ug/kg	ND	10.0	04/02/18 12:14	
Pyrene	ug/kg	ND	10.0	04/02/18 12:14	
2-Fluorobiphenyl (S)	%.	84	42-125	04/02/18 12:14	
p-Terphenyl-d14 (S)	%.	100	57-125	04/02/18 12:14	

LABORATORY CONTROL SAMPLE: 2872541

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	24.2	73	52-125	
Acenaphthylene	ug/kg	33.3	26.1	78	50-125	
Anthracene	ug/kg	33.3	30.0	90	65-125	
Benzo(a)anthracene	ug/kg	33.3	31.8	95	60-125	
Benzo(a)pyrene	ug/kg	33.3	30.2	90	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	31.1	93	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	26.3	79	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	29.3	88	67-125	
Chrysene	ug/kg	33.3	28.6	86	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	25.8	77	63-125	
Fluoranthene	ug/kg	33.3	30.2	91	75-125	
Fluorene	ug/kg	33.3	25.3	76	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	26.4	79	63-125	
Naphthalene	ug/kg	33.3	26.1	78	49-125	
Phenanthrene	ug/kg	33.3	25.1	75	65-125	
Pyrene	ug/kg	33.3	31.2	94	64-125	
2-Fluorobiphenyl (S)	%.			78	42-125	
p-Terphenyl-d14 (S)	%.			97	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2872542 2872543

Parameter	Units	10424778001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	36.5	36.6	27.7J	25.3J	76	69	30-125		30	
Acenaphthylene	ug/kg	ND	36.5	36.6	74.3J	57.6J	203	157	30-133		30	M1
Anthracene	ug/kg	ND	36.5	36.6	76.5J	62.4J	209	170	30-150		30	M1
Benzo(a)anthracene	ug/kg	ND	36.5	36.6	117	64.1J	319	175	30-150		30	M1
Benzo(a)pyrene	ug/kg	ND	36.5	36.6	205	148	559	404	30-150	32	30	M1,R1
Benzo(b)fluoranthene	ug/kg	ND	36.5	36.6	201	135	551	370	30-150	39	30	M1,R1
Benzo(g,h,i)perylene	ug/kg	0.16 mg/kg	36.5	36.6	275	218	317	158	30-150	23	30	M1
Benzo(k)fluoranthene	ug/kg	ND	36.5	36.6	94.9J	67.8J	260	185	30-150		30	M1
Chrysene	ug/kg	ND	36.5	36.6	148	83.8J	406	229	30-150		30	M1
Dibenz(a,h)anthracene	ug/kg	ND	36.5	36.6	80.8J	61.4J	221	168	30-131		30	M1
Fluoranthene	ug/kg	ND	36.5	36.6	139	80.6J	380	220	30-150		30	M1
Fluorene	ug/kg	ND	36.5	36.6	32J	26.3J	88	72	30-147		30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	36.5	36.6	169	125	463	342	30-150	30	30	M1
Naphthalene	ug/kg	ND	36.5	36.6	25.2J	22.3J	69	61	30-131		30	
Phenanthrene	ug/kg	ND	36.5	36.6	41.7J	34.5J	114	94	30-150		30	
Pyrene	ug/kg	ND	36.5	36.6	139	74.2J	381	202	30-150		30	M1
2-Fluorobiphenyl (S)	%.						82	71	42-125			P3
p-Terphenyl-d14 (S)	%.						74	66	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529569 Analysis Method: EPA 8270D
QC Batch Method: EPA 3546 Analysis Description: MDA2 Solid MSSV
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937006

METHOD BLANK: 2874519 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,5-T	mg/kg	ND	0.033	04/04/18 13:35	
2,4,5-TP (Silvex)	mg/kg	ND	0.033	04/04/18 13:35	
2,4-D	mg/kg	ND	0.033	04/04/18 13:35	
2,4-DB	mg/kg	ND	0.033	04/04/18 13:35	
Bentazon	mg/kg	ND	0.033	04/04/18 13:35	
Dicamba	mg/kg	ND	0.033	04/04/18 13:35	
Dinoseb	mg/kg	ND	0.033	04/04/18 13:35	
MCPA	mg/kg	ND	0.033	04/04/18 13:35	
Pentachlorophenol	mg/kg	ND	0.033	04/04/18 13:35	
Picloram	mg/kg	ND	0.033	04/04/18 13:35	
Triclopyr	mg/kg	ND	0.033	04/04/18 13:35	
2,4-DCAA (S)	%.	78	46-125	04/04/18 13:35	

LABORATORY CONTROL SAMPLE: 2874520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-T	mg/kg	.33	0.28	83	60-125	
2,4,5-TP (Silvex)	mg/kg	.33	0.26	79	61-125	
2,4-D	mg/kg	.33	0.29	86	63-125	
2,4-DB	mg/kg	.33	0.28	83	59-125	
Bentazon	mg/kg	.33	0.25	76	58-125	
Dicamba	mg/kg	.33	0.27	80	52-125	
Dinoseb	mg/kg	.33	0.18	53	35-126	
MCPA	mg/kg	.33	0.27	82	57-125	
Pentachlorophenol	mg/kg	.33	0.21	63	48-125	
Picloram	mg/kg	.33	0.24	72	47-125	
Triclopyr	mg/kg	.33	0.28	83	68-125	
2,4-DCAA (S)	%.			77	46-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874521 2874522

Parameter	Units	10425111006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2,4,5-T	mg/kg	ND	.45	.45	0.19	0.21	42	45	30-145	8	20	
2,4,5-TP (Silvex)	mg/kg	ND	.45	.45	0.28	0.26	63	58	30-130	7	20	
2,4-D	mg/kg	ND	.45	.45	0.18	0.20	40	44	30-150	9	20	
2,4-DB	mg/kg	ND	.45	.45	0.35	0.33	77	72	45-126	7	20	
Bentazon	mg/kg	ND	.45	.45	0.33	0.32	73	71	30-133	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874521 2874522

Parameter	Units	10425111006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Dicamba	mg/kg	ND	.45	.45	0.13	0.17	29	38	30-140	28	20	M1,R1
Dinoseb	mg/kg	ND	.45	.45	0.39	0.31	86	69	30-136	23	20	R1
MCPA	mg/kg	ND	.45	.45	0.24	0.22	53	49	30-136	9	20	
Pentachlorophenol	mg/kg	ND	.45	.45	0.28	0.25	63	55	44-125	13	20	
Picloram	mg/kg	ND	.45	.45	.016J	0.098	3	22	30-125		20	M1
Triclopyr	mg/kg	ND	.45	.45	0.23	0.22	51	50	30-149	3	20	
2,4-DCAA (S)	%.						65	60	46-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 530039 Analysis Method: EPA 8270D
QC Batch Method: EPA 3546 Analysis Description: MDA2 Solid MSSV
Associated Lab Samples: 10424937005

METHOD BLANK: 2877307 Matrix: Solid
Associated Lab Samples: 10424937005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,5-T	mg/kg	ND	0.033	04/04/18 14:05	
2,4,5-TP (Silvex)	mg/kg	ND	0.033	04/04/18 14:05	
2,4-D	mg/kg	ND	0.033	04/04/18 14:05	
2,4-DB	mg/kg	ND	0.033	04/04/18 14:05	
Bentazon	mg/kg	ND	0.033	04/04/18 14:05	
Dicamba	mg/kg	ND	0.033	04/04/18 14:05	
Dinoseb	mg/kg	ND	0.033	04/04/18 14:05	
MCPA	mg/kg	ND	0.033	04/04/18 14:05	
Pentachlorophenol	mg/kg	ND	0.033	04/04/18 14:05	
Picloram	mg/kg	ND	0.033	04/04/18 14:05	
Triclopyr	mg/kg	ND	0.033	04/04/18 14:05	
2,4-DCAA (S)	%.	82	46-125	04/04/18 14:05	

LABORATORY CONTROL SAMPLE & LCSD: 2877308 2877550

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,5-T	mg/kg	.33	0.31	0.30	92	91	60-125	1	20	
2,4,5-TP (Silvex)	mg/kg	.33	0.30	0.29	89	87	61-125	2	20	
2,4-D	mg/kg	.33	0.31	0.31	92	93	63-125	2	20	
2,4-DB	mg/kg	.33	0.30	0.30	91	90	59-125	1	20	
Bentazon	mg/kg	.33	0.27	0.26	82	79	58-125	4	20	
Dicamba	mg/kg	.33	0.29	0.30	86	89	52-125	4	20	
Dinoseb	mg/kg	.33	0.21	0.22	64	66	35-126	4	20	
MCPA	mg/kg	.33	0.29	0.29	88	87	57-125	2	20	
Pentachlorophenol	mg/kg	.33	0.22	0.22	65	66	48-125	1	20	
Picloram	mg/kg	.33	0.26	0.25	77	76	47-125	2	20	
Triclopyr	mg/kg	.33	0.30	0.30	89	90	68-125	2	20	
2,4-DCAA (S)	%.				84	79	46-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 529271 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2872598 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	03/30/18 13:11	
n-Triacontane (S)	%.	83	50-150	03/30/18 13:11	

LABORATORY CONTROL SAMPLE & LCSD: 2872599 2872600

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	68.2	73.5	85	92	70-120	8	20	
n-Triacontane (S)	%.				85	78	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 435086 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 2009757 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/04/18 12:49	

LABORATORY CONTROL SAMPLE: 2009758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	981	901	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2009842 2009843

Parameter	Units	10424937001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1420	1360	ND	ND	0	0	75-125		20	2M,M3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2009844 2009845

Parameter	Units	10424937001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	54.8	54.3	ND	ND	12	18	75-125		20	M3

SAMPLE DUPLICATE: 2009846

Parameter	Units	50193299003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 284583 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

METHOD BLANK: 1665486 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937002, 10424937003, 10424937004, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	03/29/18 12:56	

LABORATORY CONTROL SAMPLE: 1665487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665488 1665489

Parameter	Units	10424609003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	ND	3.62	3.62	2.8	3.2	66	77	80-120	13	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1665490 1665491

Parameter	Units	10424937006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.56	4.11	4.26	4.2	4.0	89	81	80-120	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 139650 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10424937001, 10424937005, 10424937006

METHOD BLANK: 553027 Matrix: Solid
Associated Lab Samples: 10424937001, 10424937005, 10424937006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	1.0	04/02/18 14:06	

LABORATORY CONTROL SAMPLE: 553026

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	50	51.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553028 553029

Parameter	Units	12106345001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.6	50.2	49.5	39.2	45.6	73	87	80-120	15	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553030 553031

Parameter	Units	12106346001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.9	50.2	49.3	50.6	47.0	95	90	80-120	7	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

QC Batch: 139654 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10424937002, 10424937003, 10424937004

METHOD BLANK: 553043 Matrix: Solid
Associated Lab Samples: 10424937002, 10424937003, 10424937004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.98	03/31/18 00:49	

LABORATORY CONTROL SAMPLE: 553042

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	48.9	50.2	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553044 553045

Parameter	Units	10424443004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.9	50.3	50.2	28.2	28.6	50	51	80-120	1	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553046 553047

Parameter	Units	10424937003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	3.5	49.3	49	14.1	15.9	21	25	80-120	12	20	M1

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QUALIFIERS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

1M	RPD value is outside control limits due to sample non-homogeneity.
2M	Redox (174 mv) and pH (8.13) values indicate a naturally reducing matrix. This accounts for poor recovery values on the sample per method Eh/pH phase diagram.
3M	Sample was black in color with a tint of red and viscous. After 100X dilution sample was dark orange and was centrifuged and decanted.
4M	Sample was black in color. Sample was centrifuged and decanted.
5M	Sample was yellow in color.
6M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.

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QUALIFIERS

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

ANALYTE QUALIFIERS

M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
R1	RPD value was outside control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424937002	**FD-SB-D3 (4-16wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424937003	**FD-SB-E3 (11-15.5)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424937004	**FD-SB-F3 (3-11wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424937005	**FD-SB-G3 (7-16wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424937006	**FD-SB-G2 (10-12wm)**	EPA 1630 (1998)	139779	EPA 1630 (1998)	139780
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 3550	529466	EPA 8081B	530402
10424937002	**FD-SB-D3 (4-16wm)**	EPA 3550	529466	EPA 8081B	530402
10424937003	**FD-SB-E3 (11-15.5)**	EPA 3550	529466	EPA 8081B	530402
10424937004	**FD-SB-F3 (3-11wm)**	EPA 3550	529466	EPA 8081B	530402
10424937005	**FD-SB-G3 (7-16wm)**	EPA 3550	529466	EPA 8081B	530402
10424937006	**FD-SB-G2 (10-12wm)**	EPA 3550	529466	EPA 8081B	530402
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 3550	529467	EPA 8082A	530082
10424937002	**FD-SB-D3 (4-16wm)**	EPA 3550	529467	EPA 8082A	530082
10424937003	**FD-SB-E3 (11-15.5)**	EPA 3550	529467	EPA 8082A	530082
10424937004	**FD-SB-F3 (3-11wm)**	EPA 3550	529467	EPA 8082A	530082
10424937005	**FD-SB-G3 (7-16wm)**	EPA 3550	529467	EPA 8082A	530082
10424937006	**FD-SB-G2 (10-12wm)**	EPA 3550	529467	EPA 8082A	530082
10424937001	**FD-SB-G4 (15.5-17.5)**	WI MOD DRO	529271	WI MOD DRO	529930
10424937002	**FD-SB-D3 (4-16wm)**	WI MOD DRO	529271	WI MOD DRO	529930
10424937003	**FD-SB-E3 (11-15.5)**	WI MOD DRO	529271	WI MOD DRO	529930
10424937004	**FD-SB-F3 (3-11wm)**	WI MOD DRO	529271	WI MOD DRO	529930
10424937005	**FD-SB-G3 (7-16wm)**	WI MOD DRO	529271	WI MOD DRO	529930
10424937006	**FD-SB-G2 (10-12wm)**	WI MOD DRO	529271	WI MOD DRO	529930
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 5030 Medium Soil	530309	WI MOD GRO	530384
10424937002	**FD-SB-D3 (4-16wm)**	EPA 5030 Medium Soil	530309	WI MOD GRO	530384
10424937003	**FD-SB-E3 (11-15.5)**	EPA 5030 Medium Soil	530309	WI MOD GRO	530384
10424937004	**FD-SB-F3 (3-11wm)**	EPA 5030 Medium Soil	530309	WI MOD GRO	530384
10424937005	**FD-SB-G3 (7-16wm)**	EPA 5030 Medium Soil	530309	WI MOD GRO	530384
10424937006	**FD-SB-G2 (10-12wm)**	EPA 5030 Medium Soil	530309	WI MOD GRO	530384
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 3050	529339	EPA 6010C	529383
10424937002	**FD-SB-D3 (4-16wm)**	EPA 3050	529339	EPA 6010C	529383
10424937003	**FD-SB-E3 (11-15.5)**	EPA 3050	529339	EPA 6010C	529383
10424937004	**FD-SB-F3 (3-11wm)**	EPA 3050	529339	EPA 6010C	529383
10424937005	**FD-SB-G3 (7-16wm)**	EPA 3050	529339	EPA 6010C	529383
10424937006	**FD-SB-G2 (10-12wm)**	EPA 3050	529339	EPA 6010C	529383
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 3050B	434613	EPA 6020	434971
10424937002	**FD-SB-D3 (4-16wm)**	EPA 3050B	434613	EPA 6020	434971
10424937003	**FD-SB-E3 (11-15.5)**	EPA 3050B	434613	EPA 6020	434971
10424937004	**FD-SB-F3 (3-11wm)**	EPA 3050B	434613	EPA 6020	434971
10424937005	**FD-SB-G3 (7-16wm)**	EPA 3050B	434613	EPA 6020	434971
10424937006	**FD-SB-G2 (10-12wm)**	EPA 3050B	434613	EPA 6020	434971
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 3050	529341	EPA 6020A	529455
10424937002	**FD-SB-D3 (4-16wm)**	EPA 3050	529341	EPA 6020A	529455
10424937003	**FD-SB-E3 (11-15.5)**	EPA 3050	529341	EPA 6020A	529455

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424937004	**FD-SB-F3 (3-11wm)**	EPA 3050	529341	EPA 6020A	529455
10424937005	**FD-SB-G3 (7-16wm)**	EPA 3050	529341	EPA 6020A	529455
10424937006	**FD-SB-G2 (10-12wm)**	EPA 3050	529341	EPA 6020A	529455
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 7471	529342	EPA 7471	529917
10424937002	**FD-SB-D3 (4-16wm)**	EPA 7471	529342	EPA 7471	529917
10424937003	**FD-SB-E3 (11-15.5)**	EPA 7471	529342	EPA 7471	529917
10424937004	**FD-SB-F3 (3-11wm)**	EPA 7471	529342	EPA 7471	529917
10424937005	**FD-SB-G3 (7-16wm)**	EPA 7471	529342	EPA 7471	529917
10424937006	**FD-SB-G2 (10-12wm)**	EPA 7471	529342	EPA 7471	529917
10424937001	**FD-SB-G4 (15.5-17.5)**	ASTM D2974	529398		
10424937002	**FD-SB-D3 (4-16wm)**	ASTM D2974	529398		
10424937003	**FD-SB-E3 (11-15.5)**	ASTM D2974	529398		
10424937004	**FD-SB-F3 (3-11wm)**	ASTM D2974	529398		
10424937005	**FD-SB-G3 (7-16wm)**	ASTM D2974	529398		
10424937006	**FD-SB-G2 (10-12wm)**	ASTM D2974	529398		
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 3550	529268	EPA 8270D	529887
10424937002	**FD-SB-D3 (4-16wm)**	EPA 3550	529268	EPA 8270D	529887
10424937003	**FD-SB-E3 (11-15.5)**	EPA 3550	529268	EPA 8270D	529887
10424937004	**FD-SB-F3 (3-11wm)**	EPA 3550	529268	EPA 8270D	529887
10424937005	**FD-SB-G3 (7-16wm)**	EPA 3550	529268	EPA 8270D	529887
10424937006	**FD-SB-G2 (10-12wm)**	EPA 3550	529268	EPA 8270D	529887
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 3550	529263	EPA 8270D by SIM	530180
10424937002	**FD-SB-D3 (4-16wm)**	EPA 3550	529263	EPA 8270D by SIM	530180
10424937003	**FD-SB-E3 (11-15.5)**	EPA 3550	529263	EPA 8270D by SIM	530180
10424937004	**FD-SB-F3 (3-11wm)**	EPA 3550	529263	EPA 8270D by SIM	530180
10424937005	**FD-SB-G3 (7-16wm)**	EPA 3550	529263	EPA 8270D by SIM	530180
10424937006	**FD-SB-G2 (10-12wm)**	EPA 3550	529263	EPA 8270D by SIM	530180
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 3546	529569	EPA 8270D	530638
10424937002	**FD-SB-D3 (4-16wm)**	EPA 3546	529569	EPA 8270D	530638
10424937003	**FD-SB-E3 (11-15.5)**	EPA 3546	529569	EPA 8270D	530638
10424937004	**FD-SB-F3 (3-11wm)**	EPA 3546	529569	EPA 8270D	530638
10424937005	**FD-SB-G3 (7-16wm)**	EPA 3546	530039	EPA 8270D	530639
10424937006	**FD-SB-G2 (10-12wm)**	EPA 3546	529569	EPA 8270D	530638
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 5035/5030B	529276	EPA 8260B	529485
10424937002	**FD-SB-D3 (4-16wm)**	EPA 5035/5030B	529276	EPA 8260B	529485
10424937003	**FD-SB-E3 (11-15.5)**	EPA 5035/5030B	529276	EPA 8260B	529485
10424937004	**FD-SB-F3 (3-11wm)**	EPA 5035/5030B	529276	EPA 8260B	529485
10424937005	**FD-SB-G3 (7-16wm)**	EPA 5035/5030B	529276	EPA 8260B	529485
10424937006	**FD-SB-G2 (10-12wm)**	EPA 5035/5030B	529276	EPA 8260B	529485
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 3060A	435086	EPA 7196A	435521
10424937002	**FD-SB-D3 (4-16wm)**	EPA 3060A	435086	EPA 7196A	435521
10424937003	**FD-SB-E3 (11-15.5)**	EPA 3060A	435086	EPA 7196A	435521
10424937004	**FD-SB-F3 (3-11wm)**	EPA 3060A	435086	EPA 7196A	435521
10424937005	**FD-SB-G3 (7-16wm)**	EPA 3060A	435086	EPA 7196A	435521

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Soil-Revised Report
Pace Project No.: 10424937

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10424937006	**FD-SB-G2 (10-12wm)**	EPA 3060A	435086	EPA 7196A	435521
10424937001	**FD-SB-G4 (15.5-17.5)**	Trivalent Chromium Calculation	436360		
10424937002	**FD-SB-D3 (4-16wm)**	Trivalent Chromium Calculation	436360		
10424937003	**FD-SB-E3 (11-15.5)**	Trivalent Chromium Calculation	436360		
10424937004	**FD-SB-F3 (3-11wm)**	Trivalent Chromium Calculation	436360		
10424937005	**FD-SB-G3 (7-16wm)**	Trivalent Chromium Calculation	436360		
10424937006	**FD-SB-G2 (10-12wm)**	Trivalent Chromium Calculation	436360		
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 9012A	284583	EPA 9012	284661
10424937002	**FD-SB-D3 (4-16wm)**	EPA 9012A	284583	EPA 9012	284661
10424937003	**FD-SB-E3 (11-15.5)**	EPA 9012A	284583	EPA 9012	284661
10424937004	**FD-SB-F3 (3-11wm)**	EPA 9012A	284583	EPA 9012	284661
10424937005	**FD-SB-G3 (7-16wm)**	EPA 9012A	284583	EPA 9012	284661
10424937006	**FD-SB-G2 (10-12wm)**	EPA 9012A	284583	EPA 9012	284661
10424937001	**FD-SB-G4 (15.5-17.5)**	EPA 300.0	139650	EPA 9056A	139673
10424937002	**FD-SB-D3 (4-16wm)**	EPA 300.0	139654	EPA 9056A	139672
10424937003	**FD-SB-E3 (11-15.5)**	EPA 300.0	139654	EPA 9056A	139672
10424937004	**FD-SB-F3 (3-11wm)**	EPA 300.0	139654	EPA 9056A	139672
10424937005	**FD-SB-G3 (7-16wm)**	EPA 300.0	139650	EPA 9056A	139673
10424937006	**FD-SB-G2 (10-12wm)**	EPA 300.0	139650	EPA 9056A	139673

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WO# : 10424937

10424937

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number:

Turnaround Time:

COC

PROJECT/CLIENT INFO		LABORATORY	FOR LAB USE ONLY
Facility Code:	MPCA-FreewayLF Solids Program Code (MDH Lab Only):	Lab Name:	
Project Name:	MPCA-FreewayLF Solids Project Task Code:	Address: 18-00383	
Project Manager:		Epic Profile #38716	
Potential Hazard?	If yes, add information to Sampler Comments Section	Phone No:	Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

PRESERV.

ANALYSIS: See attached for soils/waste (+dioxins); +dioxins

Location Identifier	Sample Type	Date	Time	Start Depth, in ~~feet~~ ~~meters~~	End Depth, in ~~feet~~ ~~meters~~	Grab (G) or Composite (C)	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	Lab Sample No.	#
FD-SB-G4 (15.5-17.0)	S	3/26/18	1130	15.5	17.0	C	SD				13	001	1
FD-SB-D3 (4-16WM)	S	3/26/18	1400	4	16	C	SD				13	002	2
FD-SB-E3 (11-15.5)	S	3/26/18	1440	11	15	C	SD				13	003	3
FD-SB-F3 (3-11WM)	S	3/26/18	1530	3	11	C	SD				12	004	4
FD-SB-G3 (7-16WM)	S	3/26/18	1635	7	16	C	SD				13	005	5
FD-SB-G2 (10-12WM)	S	3/26/18	1720	10	12	C	SD				13	006	6
													7
													8
													9
													10

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/27/18/0700	PACE 3-27-18	815

4.7°C

pdf "red" revision comments: BGJ-Pace 3/23/18

March 22, 2018

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*)	
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: **WO#: 10424937**

PM: BM2 **Due Date: 04/10/18**

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☑ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 4.5 **Cooler Temp Corrected (°C):** 4.7 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** ME 3/27/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑ Yes	☐ No		1.
Chain of Custody Filled Out?	☑ Yes	☐ No		2.
Chain of Custody Relinquished?	☑ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		6.
Rush Turn Around Time Requested?	☐ Yes	☑ No		7.
Sufficient Volume?	☑ Yes	☐ No		8.
Correct Containers Used?	☑ Yes	☐ No		9.
-Pace Containers Used?	☑ Yes	☐ No		
Containers Intact?	☑ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -includes Date/Time/ID/Analysis Matrix: SL	☐ Yes	☑ No		12. No time on Samples
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☑ N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☑ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: BM **Date:** 3/27/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

WO# : 12106363

PM: HRZ Due Date: 04/10/18

CLIENT: PACE MPLS

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424937 Workorder Name: 18-00383 MPCA Freeway LF Soil Owner Received Date: 3/27/2018 Results Requested By: 4/10/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury by EPA 1630	LAB USE ONLY
1	FD-SB-G4 (15.5-17.5)	PS	3/26/2018 11:30	10424937001	Solid	1	X	
2	FD-SB-D3 (4-16wm)	PS	3/26/2018 14:00	10424937002	Solid	1	X	
3	FD-SB-E3 (11-15.5)	PS	3/26/2018 14:40	10424937003	Solid	1	X	
4	FD-SB-F3 (3-11wm)	PS	3/26/2018 15:30	10424937004	Solid	1	X	
5	FD-SB-G3 (7-16wm)	PS	3/26/2018 16:35	10424937005	Solid	1	X	
6	FD-SB-G2 (10-12wm)	PS	3/26/2018 17:20	10424937006	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	3/27/18 1730	CS	3/27/18 1845
2	CS	3/27/18 2100	[signature]	3/28/18 0800
3				

Comments

Cooler Temperature on Receipt 2.9 °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace-Mpls

Project #: **WO# : 12106363**

PM: HRZ Due Date: 04/10/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 01339252/1710 ☐ IR-1 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 2.7 Cooler Temp Corrected °C: 2.7 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: 0.0° Date and Initials of Person Examining Contents: 3/27/18 CAS

If temperature ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☒ NA

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☒ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☐ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Heather Stoltz **Date:** 3/28/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

WO#: 12106363

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424937 Workorder Name: 18-00383 MPCA Freeway LF Soil Owner Received Date: 3/27/2 Results Requested By: 4/10/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Fluoride by 9056	LAB USE ONLY
1	FD-SB-G4 (15.5-17.5)	PS	3/26/2018 11:30	10424937001	Solid	1	X	
2	FD-SB-D3 (4-16wm)	PS	3/26/2018 14:00	10424937002	Solid	1	X	
3	FD-SB-E3 (11-15.5)	PS	3/26/2018 14:40	10424937003	Solid	1	X	
4	FD-SB-F3 (3-11wm)	PS	3/26/2018 15:30	10424937004	Solid	1	X	
5	FD-SB-G3 (7-16wm)	PS	3/26/2018 16:35	10424937005	Solid	1	X	
6	FD-SB-G2 (10-12wm)	PS	3/26/2018 17:20	10424937006	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/27/18 1600	CB	3/27/18 1845
2	CB	3/27/18 2230	[signature]	3/28/18 1115
3				

Comments

Cooler Temperature on Receipt 4.0 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace - Mpls.

Project #: **WO#: 12106363**

PM: HRZ Due Date: 04/10/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.7 Cooler Temp Corrected °C: 4.0 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 3/27/18 CB

Comments: dl 3/28/18

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Heather Zito Date: 3/28/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

40166516

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424937 **Workorder Name:** 18-00383 MPCA Freeway LF Soil **Owner Received Date:** 3/27/2018 **Results Requested By:** 4/10/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

OK 3/28/18 LW

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Cyanide by EPA 9012	LAB USE ONLY
1	FD-SB-G4 (15.5-17.5)	PS	3/26/2018 11:30	10424937001	Solid	1	X	
2	FD-SB-D3 (4-16wm)	PS	3/26/2018 14:00	10424937002	Solid	1	X	
3	FD-SB-E3 (11-15.5)	PS	3/26/2018 14:40	10424937003	Solid	1	X	
4	FD-SB-F3 (3-11wm)	PS	3/26/2018 15:30	10424937004	Solid	1	X	
5	FD-SB-G3 (7-16wm)	PS	3/26/2018 16:35	10424937005	Solid	1	X	
6	FD-SB-G2 (10-12wm)	PS	3/26/2018 17:20	10424937006	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	Greg Hudd PACE	3/27/18 1730		
2	Walt	3/28/18 0830	Susan Ulfig Pace	3/28/18 0830
3				

Comments

Cooler Temperature on Receipt 5 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace MN

Project #: WO#: 40166516

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other:

Tracking #: 1676708

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 4 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 5.5 /Corr: 5

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents: Date: 3-28-18 Initials: SW

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☑N/A	4. FRWO 3-28-18 SW
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume: ☑Yes ☐No ☐N/A	MS/MSD ☐Yes ☐No ☑N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☐No ☑N/A	
-Pace IR Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. Original client labels no collect times. 3-28-18 SW
-Includes date/time/ID/Analysis Matrix: S		
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: CEV **Date:** 3/28/18

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10424937 **Workorder Name:** 18-00383 MPCA Freeway LF Soil **Owner Received Date:** 3/27/2018 **Results Requested By:** 4/10/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Chromium III	Chromium VI	Total Cr by 6020	LAB USE ONLY (50193167)
1	FD-SB-G4 (15.5-17.5)	PS	3/26/2018 11:30	10424937001	Solid	1	X	X	X	001
2	FD-SB-D3 (4-16wm)	PS	3/26/2018 14:00	10424937002	Solid	1	X	X	X	002
3	FD-SB-E3 (11-15.5)	PS	3/26/2018 14:40	10424937003	Solid	1	X	X	X	003
4	FD-SB-F3 (3-11wm)	PS	3/26/2018 15:30	10424937004	Solid	1	X	X	X	004
5	FD-SB-G3 (7-16wm)	PS	3/26/2018 16:35	10424937005	Solid	1	X	X	X	005
6	FD-SB-G2 (10-12wm)	PS	3/26/2018 17:20	10424937006	Solid	1	X	X	X	006

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE FED EX	3/27/18 1645	FED EX	
2			[signature]	3/28/18 0910
3				

Comments

Cooler Temperature on Receipt 1.0 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 5049367

Date/Time and Initials of person examining contents: 3/28/18 1415 DA

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9831 7405

Custody Seal on Cooler/Box Present: ☑ Yes ☐ No **Seals Intact:** ☑ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer: 0 2 3 4 5 6 A B C D E F Ice Type: ☑ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☑ N/A

Cooler Temperature: 0.8/1.0 Ice Visible in Sample Containers?: ☐ Yes ☑ No ☐ N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☑ N/A

All discrepancies will be written out in the comments section below.

	Yes	No
Are samples from West Virginia? Document any containers out of temp.		✓
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		✓
Chain of Custody Present:	✓	
Chain of Custody Filled Out:	✓	
Short Hold Time Analysis (<72hr)?: Analysis:		✓
Time 5035A TC placed in Freezer or Short Holds To Lab:		
Rush TAT Requested:		✓
Containers Intact?:	✓	
Sample Labels Match COC?: Except TCs, which only require sample ID	✓	

	Yes	No	N/A
All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			✓
Dissolved Metals field filtered?:			
Headspace Wisconsin Sulfide			✓
	Present	Absent	N/A
Residual Chlorine Check (SVOC 625 Pest/PCB 608)			✓
Residual Chlorine Check (Total/Amenable/Free Cyanide)			
Headspace in VOA Vials (>6mm):			✓
Trip Blank Present?:		✓	
Trip Blank Custody Seals?:		✓	

Comments:

Sample Container Count

WO# : 50193167

50193167

CLIENT: Pace MN

COC PAGE 1 of 1

COC ID# _____

Project # 50193167

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	SBS DI Bulk Kit R	Matrix (Soil/Wa Aqueou	pH <2	pH >9	pH>12
1							1											Soil			
2							1														
3							1														
4							1														
5							1														
6							1														
7																					
8																					
9																					
10																					
11																					
12																					

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
WGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic	BP3U	250mL unpreserved plastic
BP1N	1 liter HNO3 plastic	BP3Z	250mL NaOH, Zn Ac plastic
BP1S	1 liter H2SO4 plastic		
BP1U	1 liter unpreserved plastic	AF	Air Filter
BP1Z	1 liter NaOH, Zn, Ac	C	Air Cassettes
BP2A	500mL NaOH, Asc Acid plastic	R	Terra core kit
BP2N	500mL HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
BP2O	500mL NaOH plastic	U	Summa Can
BP2S	500mL H2SO4 plastic	ZPLC	Ziploc Bag
BP2U	500mL unpreserved plastic		
BP2Z	500mL NaOH, Zn Ac		
BP3B	250mL NaOH plastic		
BP3N	250mL HNO3 plastic		
BP3S	250mL H2SO4 plastic		

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 03, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 27, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This report was revised on May 3, 2018 to exlude results for magnesium and include results for manganese by method 6010.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bob Michels
bob.michels@pacelabs.com
(612)709-5046
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
California Certification #2973
California Certification #2973
Alaska Certification UST-107
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Montana DHHS Certification #: CERT0102
Minnesota Dept of Health Certification #: 1382680
Nevada DCNR Certification #: MN000372018-1
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10425111001	**FD-SB-A2 (10-20 S)**	Solid	03/27/18 10:40	03/27/18 16:50
10425111002	**FD-SB-B2 (12-21 WM)**	Solid	03/27/18 11:15	03/27/18 16:50
10425111003	**FD-SB-C2 (5-17 WM)**	Solid	03/27/18 13:30	03/27/18 16:50
10425111004	**FD-SB-D2 (3-12 WM)**	Solid	03/27/18 14:10	03/27/18 16:50
10425111005	**FD-SB-E2 (11-21 S)**	Solid	03/27/18 15:15	03/27/18 16:50
10425111006	**FD-SB-F2 (7-13 WM)**	Solid	03/27/18 16:20	03/27/18 16:50

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10425111001	**FD-SB-A2 (10-20 S)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10425111005	**FD-SB-E2 (11-21 S)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8270D	STB	12	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-A2 (10-20 S) **Lab ID: 10425111001** Collected: 03/27/18 10:40 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.0	1	04/04/18 10:58	04/06/18 14:18	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	309-00-2	
alpha-BHC	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	319-84-6	
beta-BHC	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	319-85-7	
delta-BHC	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	58-89-9	
Chlordane (Technical)	ND	ug/kg	2300	100	03/28/18 12:51	04/05/18 23:25	57-74-9	
alpha-Chlordane	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	5103-71-9	
gamma-Chlordane	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	5103-74-2	
4,4'-DDD	ND	ug/kg	458	100	03/28/18 12:51	04/05/18 23:25	72-54-8	
4,4'-DDE	ND	ug/kg	458	100	03/28/18 12:51	04/05/18 23:25	72-55-9	
4,4'-DDT	ND	ug/kg	458	100	03/28/18 12:51	04/05/18 23:25	50-29-3	
Dieldrin	ND	ug/kg	458	100	03/28/18 12:51	04/05/18 23:25	60-57-1	
Endosulfan I	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	959-98-8	
Endosulfan II	ND	ug/kg	458	100	03/28/18 12:51	04/05/18 23:25	33213-65-9	
Endosulfan sulfate	ND	ug/kg	458	100	03/28/18 12:51	04/05/18 23:25	1031-07-8	
Endrin	ND	ug/kg	458	100	03/28/18 12:51	04/05/18 23:25	72-20-8	
Endrin aldehyde	ND	ug/kg	458	100	03/28/18 12:51	04/05/18 23:25	7421-93-4	
Endrin ketone	ND	ug/kg	458	100	03/28/18 12:51	04/05/18 23:25	53494-70-5	
Heptachlor	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	76-44-8	
Heptachlor epoxide	ND	ug/kg	230	100	03/28/18 12:51	04/05/18 23:25	1024-57-3	
Methoxychlor	ND	ug/kg	2300	100	03/28/18 12:51	04/05/18 23:25	72-43-5	
Toxaphene	ND	ug/kg	6870	100	03/28/18 12:51	04/05/18 23:25	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	100	03/28/18 12:51	04/05/18 23:25	877-09-8	4M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	100	03/28/18 12:51	04/05/18 23:25	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	11141-16-5	
PCB-1242 (Aroclor 1242)	**122**	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	11100-14-4	
PCB, Total	**122**	ug/kg	44.9	1	03/28/18 12:51	04/02/18 11:30	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	74	%.	48-125	1	03/28/18 12:51	04/02/18 11:30	877-09-8	
Decachlorobiphenyl (S)	83	%.	30-134	1	03/28/18 12:51	04/02/18 11:30	2051-24-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-A2 (10-20 S) **Lab ID: 10425111001** Collected: 03/27/18 10:40 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	11.5	1	03/28/18 12:37	03/29/18 12:07		
Surrogates								
n-Triacontane (S)	57	%.	50-150	1	03/28/18 12:37	03/29/18 12:07	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	14.0	1	04/03/18 15:49	04/03/18 21:58		
Surrogates								
a,a,a-Trifluorotoluene (S)	100	%.	80-150	1	04/03/18 15:49	04/03/18 21:58	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**11500**	mg/kg	13.2	1	03/30/18 05:23	04/02/18 11:41	7429-90-5	
Barium	**130**	mg/kg	0.66	1	03/30/18 05:23	04/02/18 11:41	7440-39-3	
Boron	**238**	mg/kg	9.9	1	03/30/18 05:23	04/02/18 11:41	7440-42-8	
Copper	**26.1**	mg/kg	0.66	1	03/30/18 05:23	04/02/18 11:41	7440-50-8	
Iron	**35100**	mg/kg	16.5	5	03/30/18 05:23	04/02/18 12:48	7439-89-6	
Manganese	**161**	mg/kg	0.33	1	03/30/18 05:23	04/02/18 11:41	7439-96-5	
Nickel	**26.9**	mg/kg	1.3	1	03/30/18 05:23	04/02/18 11:41	7440-02-0	
Silver	ND	mg/kg	0.66	1	03/30/18 05:23	04/02/18 11:41	7440-22-4	
Tin	ND	mg/kg	5.0	1	03/30/18 05:23	04/02/18 11:41	7440-31-5	
Titanium	**568**	mg/kg	1.7	1	03/30/18 05:23	04/02/18 11:41	7440-32-6	
Zinc	**173**	mg/kg	1.3	1	03/30/18 05:23	04/02/18 11:41	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**49.9**	mg/kg	1.3	5	04/04/18 17:21	04/08/18 14:43	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**2.0**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 11:01	7440-36-0	M6
Arsenic	**23.3**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 11:01	7440-38-2	
Beryllium	**3.1**	mg/kg	0.26	20	03/30/18 05:24	03/30/18 11:01	7440-41-7	
Cadmium	**2.3**	mg/kg	0.11	20	03/30/18 05:24	03/30/18 11:01	7440-43-9	
Cobalt	**8.3**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 11:01	7440-48-4	
Lead	**37.7**	mg/kg	0.13	20	03/30/18 05:24	03/30/18 11:01	7439-92-1	
Lithium	**14.9**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 11:01	7439-93-2	
Selenium	**5.4**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 11:01	7782-49-2	
Strontium	**77.3**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 11:01	7440-24-6	
Vanadium	**124**	mg/kg	1.3	20	03/30/18 05:24	03/30/18 11:01	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.070**	mg/kg	0.028	1	03/30/18 05:24	04/04/18 17:39	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**27.3**	%	0.10	1		03/29/18 13:23		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	**2320**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	83-32-9	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-A2 (10-20 S) **Lab ID: 10425111001** Collected: 03/27/18 10:40 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	208-96-8	
Anthracene	**8100**	ug/kg	2260	5	03/29/18 13:52	04/08/18 18:08	120-12-7	
Benzo(a)anthracene	**10800**	ug/kg	2260	5	03/29/18 13:52	04/08/18 18:08	56-55-3	
Benzo(a)pyrene	**8910**	ug/kg	2260	5	03/29/18 13:52	04/08/18 18:08	50-32-8	
Benzo(b)fluoranthene	**11200**	ug/kg	2260	5	03/29/18 13:52	04/08/18 18:08	205-99-2	
Benzo(g,h,i)perylene	**3930**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	191-24-2	
Benzo(k)fluoranthene	**4830**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	101-55-3	
Butylbenzylphthalate	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	85-68-7	
Carbazole	**2950**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	59-50-7	
4-Chloroaniline	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	108-60-1	
2-Chloronaphthalene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	91-58-7	
2-Chlorophenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	7005-72-3	
Chrysene	**11200**	ug/kg	2260	5	03/29/18 13:52	04/08/18 18:08	218-01-9	
Dibenz(a,h)anthracene	**990**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	53-70-3	
Dibenzofuran	**1590**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	120-83-2	
Diethylphthalate	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	105-67-9	
Dimethylphthalate	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	131-11-3	
Di-n-butylphthalate	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2330	1	03/29/18 13:52	04/05/18 15:37	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	606-20-2	
Di-n-octylphthalate	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	117-81-7	
Fluoranthene	**27300**	ug/kg	2260	5	03/29/18 13:52	04/08/18 18:08	206-44-0	
Fluorene	**3150**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	87-68-3	
Hexachlorobenzene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	118-74-1	
Hexachloroethane	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	67-72-1	
Indeno(1,2,3-cd)pyrene	**3610**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	193-39-5	
Isophorone	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	78-59-1	
1-Methylnaphthalene	**539**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	90-12-0	
2-Methylnaphthalene	**523**	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-A2 (10-20 S) **Lab ID: 10425111001** Collected: 03/27/18 10:40 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	904	1	03/29/18 13:52	04/05/18 15:37		
Naphthalene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	91-20-3	
2-Nitroaniline	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	88-74-4	
3-Nitroaniline	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	99-09-2	
4-Nitroaniline	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	100-01-6	
Nitrobenzene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	98-95-3	
2-Nitrophenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	88-75-5	
4-Nitrophenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	86-30-6	
Pentachlorophenol	ND	ug/kg	918	1	03/29/18 13:52	04/05/18 15:37	87-86-5	
Phenanthrene	**23700**	ug/kg	2260	5	03/29/18 13:52	04/08/18 18:08	85-01-8	
Phenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	108-95-2	
Pyrene	**23000**	ug/kg	2260	5	03/29/18 13:52	04/08/18 18:08	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	452	1	03/29/18 13:52	04/05/18 15:37	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	54	%.	43-125	1	03/29/18 13:52	04/05/18 15:37	4165-60-0	D4
2-Fluorobiphenyl (S)	66	%.	30-132	1	03/29/18 13:52	04/05/18 15:37	321-60-8	
p-Terphenyl-d14 (S)	77	%.	62-125	1	03/29/18 13:52	04/05/18 15:37	1718-51-0	
Phenol-d6 (S)	63	%.	48-125	1	03/29/18 13:52	04/05/18 15:37	13127-88-3	
2-Fluorophenol (S)	60	%.	40-125	1	03/29/18 13:52	04/05/18 15:37	367-12-4	
2,4,6-Tribromophenol (S)	69	%.	60-125	1	03/29/18 13:52	04/05/18 15:37	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**3930**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	83-32-9	
Acenaphthylene	**204**	ug/kg	68.7	5	03/28/18 19:00	03/30/18 20:56	208-96-8	
Anthracene	**11300**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	120-12-7	
Benzo(a)anthracene	**14400**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	56-55-3	
Benzo(a)pyrene	**11700**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	50-32-8	
Benzo(b)fluoranthene	**13300**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	205-99-2	
Benzo(g,h,i)perylene	**5310**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	191-24-2	
Benzo(k)fluoranthene	**6960**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	207-08-9	
Chrysene	**13900**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	218-01-9	
Dibenz(a,h)anthracene	**1700**	ug/kg	68.7	5	03/28/18 19:00	03/30/18 20:56	53-70-3	
Fluoranthene	**40000**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	206-44-0	
Fluorene	**4970**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	86-73-7	
Indeno(1,2,3-cd)pyrene	**4480**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	193-39-5	
Naphthalene	**644**	ug/kg	68.7	5	03/28/18 19:00	03/30/18 20:56	91-20-3	
Phenanthrene	**30900**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	85-01-8	
Pyrene	**32500**	ug/kg	1370	100	03/28/18 19:00	04/02/18 14:04	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	52	%.	42-125	5	03/28/18 19:00	03/30/18 20:56	321-60-8	D3

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-A2 (10-20 S) **Lab ID: 10425111001** Collected: 03/27/18 10:40 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	64	%.	57-125	5	03/28/18 19:00	03/30/18 20:56	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	25057-89-0	
2,4-D	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	94-75-7	
2,4-DB	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	94-82-6	
Dicamba	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	1918-00-9	
Dinoseb	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	88-85-7	
MCPA	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	94-74-6	
Pentachlorophenol	**0.30**	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	87-86-5	
Picloram	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	1918-02-1	
2,4,5-T	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	93-72-1	
Triclopyr	ND	mg/kg	0.23	5	03/29/18 07:30	04/04/18 18:58	55335-06-3	
Surrogates								
2,4-DCAA (S)	69	%.	46-125	5	03/29/18 07:30	04/04/18 18:58	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1350	1	03/28/18 15:25	03/29/18 11:41	67-64-1	
Allyl chloride	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	107-05-1	
Benzene	ND	ug/kg	27.1	1	03/28/18 15:25	03/29/18 11:41	71-43-2	
Bromobenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	108-86-1	
Bromochloromethane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	74-97-5	
Bromodichloromethane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	75-27-4	
Bromoform	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	75-25-2	
Bromomethane	ND	ug/kg	677	1	03/28/18 15:25	03/29/18 11:41	74-83-9	
2-Butanone (MEK)	ND	ug/kg	339	1	03/28/18 15:25	03/29/18 11:41	78-93-3	
n-Butylbenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	104-51-8	
sec-Butylbenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	135-98-8	
tert-Butylbenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	98-06-6	
Carbon tetrachloride	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	56-23-5	
Chlorobenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	108-90-7	
Chloroethane	ND	ug/kg	677	1	03/28/18 15:25	03/29/18 11:41	75-00-3	
Chloroform	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	67-66-3	
Chloromethane	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	74-87-3	
2-Chlorotoluene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	95-49-8	
4-Chlorotoluene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	677	1	03/28/18 15:25	03/29/18 11:41	96-12-8	
Dibromochloromethane	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	106-93-4	
Dibromomethane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	75-71-8	

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1700 Elm Street - Suite 200
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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-A2 (10-20 S) **Lab ID: 10425111001** Collected: 03/27/18 10:40 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,1-Dichloroethane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	75-34-3	
1,2-Dichloroethane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	107-06-2	
1,1-Dichloroethene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	156-60-5	
Dichlorofluoromethane	ND	ug/kg	677	1	03/28/18 15:25	03/29/18 11:41	75-43-4	
1,2-Dichloropropane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	78-87-5	
1,3-Dichloropropane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	142-28-9	
2,2-Dichloropropane	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	594-20-7	
1,1-Dichloropropene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	60-29-7	
Ethylbenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	339	1	03/28/18 15:25	03/29/18 11:41	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	98-82-8	
p-Isopropyltoluene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	99-87-6	
Methylene Chloride	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	339	1	03/28/18 15:25	03/29/18 11:41	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	1634-04-4	
Naphthalene	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	91-20-3	
n-Propylbenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	103-65-1	
Styrene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	79-34-5	N2
Tetrachloroethene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	127-18-4	
Tetrahydrofuran	ND	ug/kg	2710	1	03/28/18 15:25	03/29/18 11:41	109-99-9	
Toluene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	79-00-5	
Trichloroethene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	271	1	03/28/18 15:25	03/29/18 11:41	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	67.7	1	03/28/18 15:25	03/29/18 11:41	108-67-8	
Vinyl chloride	ND	ug/kg	27.1	1	03/28/18 15:25	03/29/18 11:41	75-01-4	
Xylene (Total)	ND	ug/kg	203	1	03/28/18 15:25	03/29/18 11:41	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1	03/28/18 15:25	03/29/18 11:41	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	03/28/18 15:25	03/29/18 11:41	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	03/28/18 15:25	03/29/18 11:41	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-A2 (10-20 S) **Lab ID: 10425111001** Collected: 03/27/18 10:40 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	13.5	5	04/02/18 15:00	04/04/18 13:19	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**49.9**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.41	1	04/05/18 10:35	04/05/18 14:31	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**2.3**	mg/kg	1.0	1	04/02/18 15:30	04/03/18 16:03	16984-48-8	M1,R1

Sample: FD-SB-B2 (12-21 WM) **Lab ID: 10425111002** Collected: 03/27/18 11:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.9	1	04/04/18 10:58	04/06/18 14:38	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	309-00-2	
alpha-BHC	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	319-84-6	
beta-BHC	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	319-85-7	
delta-BHC	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	58-89-9	
Chlordane (Technical)	ND	ug/kg	121	5	03/28/18 12:51	04/05/18 21:54	57-74-9	
alpha-Chlordane	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	5103-71-9	
gamma-Chlordane	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	5103-74-2	
4,4'-DDD	ND	ug/kg	24.1	5	03/28/18 12:51	04/05/18 21:54	72-54-8	
4,4'-DDE	ND	ug/kg	24.1	5	03/28/18 12:51	04/05/18 21:54	72-55-9	
4,4'-DDT	ND	ug/kg	24.1	5	03/28/18 12:51	04/05/18 21:54	50-29-3	
Dieldrin	ND	ug/kg	24.1	5	03/28/18 12:51	04/05/18 21:54	60-57-1	
Endosulfan I	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	959-98-8	
Endosulfan II	ND	ug/kg	24.1	5	03/28/18 12:51	04/05/18 21:54	33213-65-9	
Endosulfan sulfate	ND	ug/kg	24.1	5	03/28/18 12:51	04/05/18 21:54	1031-07-8	
Endrin	ND	ug/kg	24.1	5	03/28/18 12:51	04/05/18 21:54	72-20-8	
Endrin aldehyde	ND	ug/kg	24.1	5	03/28/18 12:51	04/05/18 21:54	7421-93-4	
Endrin ketone	ND	ug/kg	24.1	5	03/28/18 12:51	04/05/18 21:54	53494-70-5	
Heptachlor	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	76-44-8	
Heptachlor epoxide	ND	ug/kg	12.1	5	03/28/18 12:51	04/05/18 21:54	1024-57-3	
Methoxychlor	ND	ug/kg	121	5	03/28/18 12:51	04/05/18 21:54	72-43-5	
Toxaphene	ND	ug/kg	362	5	03/28/18 12:51	04/05/18 21:54	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	78	%.	30-150	5	03/28/18 12:51	04/05/18 21:54	877-09-8	5M,D3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-B2 (12-21 WM) **Lab ID: 10425111002** Collected: 03/27/18 11:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Surrogates								
Decachlorobiphenyl (S)	117	%.	30-150	5	03/28/18 12:51	04/05/18 21:54	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	11100-14-4	
PCB, Total	ND	ug/kg	47.7	1	03/28/18 12:51	04/02/18 11:46	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	86	%.	48-125	1	03/28/18 12:51	04/02/18 11:46	877-09-8	
Decachlorobiphenyl (S)	77	%.	30-134	1	03/28/18 12:51	04/02/18 11:46	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**139**	mg/kg	60.0	5	03/28/18 18:58	03/29/18 16:50		T6
Surrogates								
n-Triacontane (S)	76	%.	50-150	5	03/28/18 18:58	03/29/18 16:50	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	16.7	1	04/03/18 15:49	04/03/18 22:21		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/03/18 15:49	04/03/18 22:21	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**8890**	mg/kg	13.9	1	03/30/18 05:23	04/02/18 11:45	7429-90-5	
Barium	**129**	mg/kg	0.70	1	03/30/18 05:23	04/02/18 11:45	7440-39-3	
Boron	**196**	mg/kg	10.5	1	03/30/18 05:23	04/02/18 11:45	7440-42-8	
Copper	**20.7**	mg/kg	0.70	1	03/30/18 05:23	04/02/18 11:45	7440-50-8	
Iron	**27900**	mg/kg	17.4	5	03/30/18 05:23	04/02/18 12:52	7439-89-6	
Manganese	**250**	mg/kg	0.35	1	03/30/18 05:23	04/02/18 11:45	7439-96-5	
Nickel	**30.9**	mg/kg	1.4	1	03/30/18 05:23	04/02/18 11:45	7440-02-0	
Silver	ND	mg/kg	0.70	1	03/30/18 05:23	04/02/18 11:45	7440-22-4	
Tin	ND	mg/kg	5.2	1	03/30/18 05:23	04/02/18 11:45	7440-31-5	
Titanium	**426**	mg/kg	1.7	1	03/30/18 05:23	04/02/18 11:45	7440-32-6	
Zinc	**1050**	mg/kg	1.4	1	03/30/18 05:23	04/02/18 11:45	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**46.8**	mg/kg	1.3	5	04/04/18 17:21	04/08/18 14:47	7440-47-3	N2

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-B2 (12-21 WM) **Lab ID: 10425111002** Collected: 03/27/18 11:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.9**	mg/kg	0.68	20	03/30/18 05:24	03/30/18 10:47	7440-36-0	
Arsenic	**14.8**	mg/kg	0.68	20	03/30/18 05:24	03/30/18 10:47	7440-38-2	
Beryllium	**2.3**	mg/kg	0.27	20	03/30/18 05:24	03/30/18 10:47	7440-41-7	
Cadmium	**3.8**	mg/kg	0.11	20	03/30/18 05:24	03/30/18 10:47	7440-43-9	
Cobalt	**6.8**	mg/kg	0.68	20	03/30/18 05:24	03/30/18 10:47	7440-48-4	
Lead	**56.8**	mg/kg	0.14	20	03/30/18 05:24	03/30/18 10:47	7439-92-1	
Lithium	**12.1**	mg/kg	0.68	20	03/30/18 05:24	03/30/18 10:47	7439-93-2	
Selenium	**3.9**	mg/kg	0.68	20	03/30/18 05:24	03/30/18 10:47	7782-49-2	
Strontium	**63.2**	mg/kg	0.68	20	03/30/18 05:24	03/30/18 10:47	7440-24-6	
Vanadium	**135**	mg/kg	1.4	20	03/30/18 05:24	03/30/18 10:47	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.056**	mg/kg	0.026	1	03/30/18 05:24	04/04/18 17:45	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**31.0**	%	0.10	1		03/29/18 13:23		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	83-32-9	
Acenaphthylene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	208-96-8	
Anthracene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	120-12-7	
Benzo(a)anthracene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	56-55-3	
Benzo(a)pyrene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	101-55-3	
Butylbenzylphthalate	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	85-68-7	
Carbazole	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	59-50-7	
4-Chloroaniline	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	108-60-1	
2-Chloronaphthalene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	91-58-7	
2-Chlorophenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	7005-72-3	
Chrysene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	53-70-3	
Dibenzofuran	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	120-83-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-B2 (12-21 WM) **Lab ID: 10425111002** Collected: 03/27/18 11:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Diethylphthalate	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	105-67-9	
Dimethylphthalate	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	131-11-3	
Di-n-butylphthalate	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2450	1	03/29/18 13:52	04/05/18 16:06	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	606-20-2	
Di-n-octylphthalate	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	117-81-7	
Fluoranthene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	206-44-0	
Fluorene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	87-68-3	
Hexachlorobenzene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	118-74-1	
Hexachloroethane	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	193-39-5	
Isophorone	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	78-59-1	
1-Methylnaphthalene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	90-12-0	
2-Methylnaphthalene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	951	1	03/29/18 13:52	04/05/18 16:06		
Naphthalene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	91-20-3	
2-Nitroaniline	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	88-74-4	
3-Nitroaniline	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	99-09-2	
4-Nitroaniline	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	100-01-6	
Nitrobenzene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	98-95-3	
2-Nitrophenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	88-75-5	
4-Nitrophenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	86-30-6	
Pentachlorophenol	ND	ug/kg	965	1	03/29/18 13:52	04/05/18 16:06	87-86-5	
Phenanthrene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	85-01-8	
Phenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	108-95-2	
Pyrene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	475	1	03/29/18 13:52	04/05/18 16:06	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	52	%.	43-125	1	03/29/18 13:52	04/05/18 16:06	4165-60-0	
2-Fluorobiphenyl (S)	66	%.	30-132	1	03/29/18 13:52	04/05/18 16:06	321-60-8	
p-Terphenyl-d14 (S)	87	%.	62-125	1	03/29/18 13:52	04/05/18 16:06	1718-51-0	
Phenol-d6 (S)	65	%.	48-125	1	03/29/18 13:52	04/05/18 16:06	13127-88-3	
2-Fluorophenol (S)	60	%.	40-125	1	03/29/18 13:52	04/05/18 16:06	367-12-4	
2,4,6-Tribromophenol (S)	76	%.	60-125	1	03/29/18 13:52	04/05/18 16:06	118-79-6	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-B2 (12-21 WM) **Lab ID: 10425111002** Collected: 03/27/18 11:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**339**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	83-32-9	
Acenaphthylene	ND	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	208-96-8	
Anthracene	**106**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	120-12-7	
Benzo(a)anthracene	**82.8**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	56-55-3	
Benzo(a)pyrene	**83.3**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	50-32-8	
Benzo(b)fluoranthene	**104**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	207-08-9	
Chrysene	**94.4**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	53-70-3	
Fluoranthene	**242**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	206-44-0	
Fluorene	**331**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	193-39-5	
Naphthalene	ND	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	91-20-3	
Phenanthrene	**219**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	85-01-8	
Pyrene	**225**	ug/kg	72.5	5	03/28/18 19:00	03/30/18 21:18	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	67	%.	42-125	5	03/28/18 19:00	03/30/18 21:18	321-60-8	D3
p-Terphenyl-d14 (S)	78	%.	57-125	5	03/28/18 19:00	03/30/18 21:18	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	25057-89-0	
2,4-D	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	94-75-7	
2,4-DB	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	94-82-6	
Dicamba	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	1918-00-9	
Dinoseb	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	88-85-7	
MCPA	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	94-74-6	
Pentachlorophenol	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	87-86-5	
Picloram	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	1918-02-1	
2,4,5-T	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	93-72-1	
Triclopyr	ND	mg/kg	0.047	1	03/29/18 07:30	04/04/18 17:30	55335-06-3	
Surrogates								
2,4-DCAA (S)	68	%.	46-125	1	03/29/18 07:30	04/04/18 17:30	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1440	1	03/28/18 15:25	03/29/18 12:31	67-64-1	
Allyl chloride	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	107-05-1	
Benzene	ND	ug/kg	28.9	1	03/28/18 15:25	03/29/18 12:31	71-43-2	
Bromobenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	108-86-1	
Bromochloromethane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	74-97-5	
Bromodichloromethane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	75-27-4	
Bromoform	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	75-25-2	
Bromomethane	ND	ug/kg	722	1	03/28/18 15:25	03/29/18 12:31	74-83-9	
2-Butanone (MEK)	ND	ug/kg	361	1	03/28/18 15:25	03/29/18 12:31	78-93-3	
n-Butylbenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	104-51-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-B2 (12-21 WM) **Lab ID: 10425111002** Collected: 03/27/18 11:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
sec-Butylbenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	135-98-8	
tert-Butylbenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	98-06-6	
Carbon tetrachloride	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	56-23-5	
Chlorobenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	108-90-7	
Chloroethane	ND	ug/kg	722	1	03/28/18 15:25	03/29/18 12:31	75-00-3	
Chloroform	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	67-66-3	
Chloromethane	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	74-87-3	
2-Chlorotoluene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	95-49-8	
4-Chlorotoluene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	722	1	03/28/18 15:25	03/29/18 12:31	96-12-8	
Dibromochloromethane	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	106-93-4	
Dibromomethane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	75-71-8	
1,1-Dichloroethane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	75-34-3	
1,2-Dichloroethane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	107-06-2	
1,1-Dichloroethene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	156-60-5	
Dichlorofluoromethane	ND	ug/kg	722	1	03/28/18 15:25	03/29/18 12:31	75-43-4	
1,2-Dichloropropane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	78-87-5	
1,3-Dichloropropane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	142-28-9	
2,2-Dichloropropane	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	594-20-7	
1,1-Dichloropropene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	60-29-7	
Ethylbenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	361	1	03/28/18 15:25	03/29/18 12:31	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	98-82-8	
p-Isopropyltoluene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	99-87-6	
Methylene Chloride	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	361	1	03/28/18 15:25	03/29/18 12:31	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	1634-04-4	
Naphthalene	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	91-20-3	
n-Propylbenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	103-65-1	
Styrene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	79-34-5	N2
Tetrachloroethene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	127-18-4	
Tetrahydrofuran	ND	ug/kg	2890	1	03/28/18 15:25	03/29/18 12:31	109-99-9	
Toluene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	87-61-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-B2 (12-21 WM) **Lab ID: 10425111002** Collected: 03/27/18 11:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,2,4-Trichlorobenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	79-00-5	
Trichloroethene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	289	1	03/28/18 15:25	03/29/18 12:31	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	72.2	1	03/28/18 15:25	03/29/18 12:31	108-67-8	
Vinyl chloride	ND	ug/kg	28.9	1	03/28/18 15:25	03/29/18 12:31	75-01-4	
Xylene (Total)	ND	ug/kg	216	1	03/28/18 15:25	03/29/18 12:31	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	90	%.	75-125	1	03/28/18 15:25	03/29/18 12:31	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/28/18 15:25	03/29/18 12:31	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	03/28/18 15:25	03/29/18 12:31	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	14.2	5	04/02/18 15:00	04/04/18 13:19	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**46.8**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.62	1	04/05/18 10:35	04/05/18 14:34	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**3.3**	mg/kg	0.98	1	04/02/18 15:30	04/03/18 17:02	16984-48-8	

Sample: FD-SB-C2 (5-17 WM) **Lab ID: 10425111003** Collected: 03/27/18 13:30 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	8.93	1	04/04/18 10:58	04/06/18 14:45	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	309-00-2	
alpha-BHC	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	319-84-6	
beta-BHC	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	319-85-7	
delta-BHC	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	58-89-9	
Chlordane (Technical)	ND	ug/kg	1080	50	03/28/18 12:51	04/05/18 23:43	57-74-9	
alpha-Chlordane	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	5103-71-9	

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-C2 (5-17 WM) **Lab ID: 10425111003** Collected: 03/27/18 13:30 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
gamma-Chlordane	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	5103-74-2	
4,4'-DDD	ND	ug/kg	216	50	03/28/18 12:51	04/05/18 23:43	72-54-8	
4,4'-DDE	ND	ug/kg	216	50	03/28/18 12:51	04/05/18 23:43	72-55-9	
4,4'-DDT	ND	ug/kg	216	50	03/28/18 12:51	04/05/18 23:43	50-29-3	
Dieldrin	ND	ug/kg	216	50	03/28/18 12:51	04/05/18 23:43	60-57-1	
Endosulfan I	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	959-98-8	
Endosulfan II	ND	ug/kg	216	50	03/28/18 12:51	04/05/18 23:43	33213-65-9	
Endosulfan sulfate	ND	ug/kg	216	50	03/28/18 12:51	04/05/18 23:43	1031-07-8	
Endrin	ND	ug/kg	216	50	03/28/18 12:51	04/05/18 23:43	72-20-8	
Endrin aldehyde	ND	ug/kg	216	50	03/28/18 12:51	04/05/18 23:43	7421-93-4	
Endrin ketone	ND	ug/kg	216	50	03/28/18 12:51	04/05/18 23:43	53494-70-5	
Heptachlor	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	76-44-8	
Heptachlor epoxide	ND	ug/kg	108	50	03/28/18 12:51	04/05/18 23:43	1024-57-3	
Methoxychlor	ND	ug/kg	1080	50	03/28/18 12:51	04/05/18 23:43	72-43-5	
Toxaphene	ND	ug/kg	3240	50	03/28/18 12:51	04/05/18 23:43	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	50	03/28/18 12:51	04/05/18 23:43	877-09-8	3M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	50	03/28/18 12:51	04/05/18 23:43	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	12672-29-6	
PCB-1254 (Aroclor 1254)	**178**	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	11100-14-4	
PCB, Total	**178**	ug/kg	42.8	1	03/28/18 12:51	04/02/18 14:24	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	76	%.	48-125	1	03/28/18 12:51	04/02/18 14:24	877-09-8	
Decachlorobiphenyl (S)	91	%.	30-134	1	03/28/18 12:51	04/02/18 14:24	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**413**	mg/kg	223	20	03/28/18 18:58	03/29/18 13:32		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	03/28/18 18:58	03/29/18 13:32	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**75.7**	mg/kg	15.6	1	04/03/18 15:49	04/03/18 22:45		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/03/18 15:49	04/03/18 22:45	98-08-8	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-C2 (5-17 WM) **Lab ID: 10425111003** Collected: 03/27/18 13:30 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**4660**	mg/kg	13.0	1	03/30/18 05:23	04/02/18 11:49	7429-90-5	
Barium	**198**	mg/kg	0.65	1	03/30/18 05:23	04/02/18 11:49	7440-39-3	
Boron	**85.7**	mg/kg	9.7	1	03/30/18 05:23	04/02/18 11:49	7440-42-8	
Copper	**53.4**	mg/kg	0.65	1	03/30/18 05:23	04/02/18 11:49	7440-50-8	
Iron	**66500**	mg/kg	32.5	10	03/30/18 05:23	04/02/18 12:56	7439-89-6	
Manganese	**520**	mg/kg	0.32	1	03/30/18 05:23	04/02/18 11:49	7439-96-5	
Nickel	**23.8**	mg/kg	1.3	1	03/30/18 05:23	04/02/18 11:49	7440-02-0	
Silver	ND	mg/kg	0.65	1	03/30/18 05:23	04/02/18 11:49	7440-22-4	
Tin	**793**	mg/kg	4.9	1	03/30/18 05:23	04/02/18 11:49	7440-31-5	
Titanium	**248**	mg/kg	1.6	1	03/30/18 05:23	04/02/18 11:49	7440-32-6	
Zinc	**237**	mg/kg	1.3	1	03/30/18 05:23	04/02/18 11:49	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**51.1**	mg/kg	1.2	5	04/04/18 17:21	04/08/18 14:52	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.7**	mg/kg	0.64	20	03/30/18 05:24	03/30/18 10:50	7440-36-0	
Arsenic	**15.9**	mg/kg	0.64	20	03/30/18 05:24	03/30/18 10:50	7440-38-2	
Beryllium	**0.81**	mg/kg	0.26	20	03/30/18 05:24	03/30/18 10:50	7440-41-7	
Cadmium	**2.2**	mg/kg	0.10	20	03/30/18 05:24	03/30/18 10:50	7440-43-9	
Cobalt	**7.1**	mg/kg	0.64	20	03/30/18 05:24	03/30/18 10:50	7440-48-4	
Lead	**557**	mg/kg	0.13	20	03/30/18 05:24	03/30/18 10:50	7439-92-1	
Lithium	**7.7**	mg/kg	0.64	20	03/30/18 05:24	03/30/18 10:50	7439-93-2	
Selenium	**1.3**	mg/kg	0.64	20	03/30/18 05:24	03/30/18 10:50	7782-49-2	
Strontium	**59.1**	mg/kg	0.64	20	03/30/18 05:24	03/30/18 10:50	7440-24-6	
Vanadium	**54.5**	mg/kg	1.3	20	03/30/18 05:24	03/30/18 10:50	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.38**	mg/kg	0.026	1	03/30/18 05:24	04/04/18 17:47	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**23.0**	%	0.10	1		03/29/18 13:23		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	**466**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	83-32-9	
Acenaphthylene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	208-96-8	
Anthracene	**1440**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	120-12-7	
Benzo(a)anthracene	**3590**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	56-55-3	
Benzo(a)pyrene	**2710**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	50-32-8	
Benzo(b)fluoranthene	**3760**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	205-99-2	
Benzo(g,h,i)perylene	**1380**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	191-24-2	
Benzo(k)fluoranthene	**1270**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	101-55-3	
Butylbenzylphthalate	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	85-68-7	
Carbazole	**529**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	86-74-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-C2 (5-17 WM) **Lab ID: 10425111003** Collected: 03/27/18 13:30 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
4-Chloro-3-methylphenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	59-50-7	
4-Chloroaniline	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	108-60-1	
2-Chloronaphthalene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	91-58-7	
2-Chlorophenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	7005-72-3	
Chrysene	**3290**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	53-70-3	
Dibenzofuran	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	120-83-2	
Diethylphthalate	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	105-67-9	
Dimethylphthalate	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	131-11-3	
Di-n-butylphthalate	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2210	1	03/29/18 13:52	04/05/18 16:36	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	606-20-2	
Di-n-octylphthalate	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	122-66-7	
bis(2-Ethylhexyl)phthalate	**1220**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	117-81-7	
Fluoranthene	**7680**	ug/kg	857	2	03/29/18 13:52	04/08/18 18:37	206-44-0	
Fluorene	**723**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	87-68-3	
Hexachlorobenzene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	118-74-1	
Hexachloroethane	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	67-72-1	
Indeno(1,2,3-cd)pyrene	**1210**	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	193-39-5	
Isophorone	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	78-59-1	
1-Methylnaphthalene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	90-12-0	
2-Methylnaphthalene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	857	1	03/29/18 13:52	04/05/18 16:36		
Naphthalene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	91-20-3	
2-Nitroaniline	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	88-74-4	
3-Nitroaniline	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	99-09-2	
4-Nitroaniline	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	100-01-6	
Nitrobenzene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	98-95-3	
2-Nitrophenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	88-75-5	
4-Nitrophenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	62-75-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-C2 (5-17 WM) **Lab ID: 10425111003** Collected: 03/27/18 13:30 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
N-Nitroso-di-n-propylamine	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	86-30-6	
Pentachlorophenol	ND	ug/kg	870	1	03/29/18 13:52	04/05/18 16:36	87-86-5	
Phenanthrene	**6640**	ug/kg	857	2	03/29/18 13:52	04/08/18 18:37	85-01-8	
Phenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	108-95-2	
Pyrene	**6760**	ug/kg	857	2	03/29/18 13:52	04/08/18 18:37	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	428	1	03/29/18 13:52	04/05/18 16:36	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	50	%.	43-125	1	03/29/18 13:52	04/05/18 16:36	4165-60-0	
2-Fluorobiphenyl (S)	61	%.	30-132	1	03/29/18 13:52	04/05/18 16:36	321-60-8	
p-Terphenyl-d14 (S)	78	%.	62-125	1	03/29/18 13:52	04/05/18 16:36	1718-51-0	
Phenol-d6 (S)	60	%.	48-125	1	03/29/18 13:52	04/05/18 16:36	13127-88-3	
2-Fluorophenol (S)	57	%.	40-125	1	03/29/18 13:52	04/05/18 16:36	367-12-4	
2,4,6-Tribromophenol (S)	63	%.	60-125	1	03/29/18 13:52	04/05/18 16:36	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**2680**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	83-32-9	
Acenaphthylene	**635**	ug/kg	64.6	5	03/28/18 19:00	03/30/18 21:39	208-96-8	
Anthracene	**13100**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	120-12-7	
Benzo(a)anthracene	**20500**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	56-55-3	
Benzo(a)pyrene	**14400**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	50-32-8	
Benzo(b)fluoranthene	**18500**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	205-99-2	
Benzo(g,h,i)perylene	**5740**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	191-24-2	
Benzo(k)fluoranthene	**6380**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	207-08-9	
Chrysene	**17700**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	218-01-9	
Dibenz(a,h)anthracene	**2090**	ug/kg	64.6	5	03/28/18 19:00	03/30/18 21:39	53-70-3	
Fluoranthene	**46400**	ug/kg	3230	250	03/28/18 19:00	04/02/18 14:48	206-44-0	
Fluorene	**4030**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	86-73-7	
Indeno(1,2,3-cd)pyrene	**4930**	ug/kg	646	50	03/28/18 19:00	04/02/18 14:26	193-39-5	
Naphthalene	**882**	ug/kg	64.6	5	03/28/18 19:00	03/30/18 21:39	91-20-3	
Phenanthrene	**41800**	ug/kg	3230	250	03/28/18 19:00	04/02/18 14:48	85-01-8	
Pyrene	**37700**	ug/kg	3230	250	03/28/18 19:00	04/02/18 14:48	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	63	%.	42-125	5	03/28/18 19:00	03/30/18 21:39	321-60-8	D3
p-Terphenyl-d14 (S)	95	%.	57-125	5	03/28/18 19:00	03/30/18 21:39	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	25057-89-0	
2,4-D	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	94-75-7	
2,4-DB	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	94-82-6	
Dicamba	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	1918-00-9	
Dinoseb	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	88-85-7	
MCPA	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	94-74-6	
Pentachlorophenol	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	87-86-5	

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-C2 (5-17 WM) **Lab ID: 10425111003** Collected: 03/27/18 13:30 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Picloram	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	1918-02-1	
2,4,5-T	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	93-72-1	
Triclopyr	ND	mg/kg	0.43	5	03/29/18 07:30	04/04/18 19:28	55335-06-3	
Surrogates								
2,4-DCAA (S)	65	%.	46-125	5	03/29/18 07:30	04/04/18 19:28	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1490	1	03/28/18 15:25	03/29/18 12:48	67-64-1	
Allyl chloride	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	107-05-1	
Benzene	ND	ug/kg	29.9	1	03/28/18 15:25	03/29/18 12:48	71-43-2	
Bromobenzene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	108-86-1	
Bromochloromethane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	74-97-5	
Bromodichloromethane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	75-27-4	
Bromoform	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	75-25-2	
Bromomethane	ND	ug/kg	746	1	03/28/18 15:25	03/29/18 12:48	74-83-9	
2-Butanone (MEK)	ND	ug/kg	373	1	03/28/18 15:25	03/29/18 12:48	78-93-3	
n-Butylbenzene	**243**	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	104-51-8	
sec-Butylbenzene	**192**	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	135-98-8	
tert-Butylbenzene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	98-06-6	
Carbon tetrachloride	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	56-23-5	
Chlorobenzene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	108-90-7	
Chloroethane	ND	ug/kg	746	1	03/28/18 15:25	03/29/18 12:48	75-00-3	
Chloroform	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	67-66-3	
Chloromethane	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	74-87-3	
2-Chlorotoluene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	95-49-8	
4-Chlorotoluene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	746	1	03/28/18 15:25	03/29/18 12:48	96-12-8	
Dibromochloromethane	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	106-93-4	
Dibromomethane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	75-71-8	
1,1-Dichloroethane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	75-34-3	
1,2-Dichloroethane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	107-06-2	
1,1-Dichloroethene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	156-60-5	
Dichlorofluoromethane	ND	ug/kg	746	1	03/28/18 15:25	03/29/18 12:48	75-43-4	
1,2-Dichloropropane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	78-87-5	
1,3-Dichloropropane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	142-28-9	
2,2-Dichloropropane	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	594-20-7	
1,1-Dichloropropene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	10061-01-5	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-C2 (5-17 WM) **Lab ID: 10425111003** Collected: 03/27/18 13:30 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
trans-1,3-Dichloropropene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	60-29-7	
Ethylbenzene	**232**	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	373	1	03/28/18 15:25	03/29/18 12:48	87-68-3	
Isopropylbenzene (Cumene)	**252**	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	98-82-8	
p-Isopropyltoluene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	99-87-6	
Methylene Chloride	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	373	1	03/28/18 15:25	03/29/18 12:48	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	1634-04-4	
Naphthalene	**396**	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	91-20-3	
n-Propylbenzene	**313**	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	103-65-1	
Styrene	**324**	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	79-34-5	N2
Tetrachloroethene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	127-18-4	
Tetrahydrofuran	ND	ug/kg	2990	1	03/28/18 15:25	03/29/18 12:48	109-99-9	
Toluene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	79-00-5	
Trichloroethene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	299	1	03/28/18 15:25	03/29/18 12:48	76-13-1	
1,2,4-Trimethylbenzene	**95.0**	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	74.6	1	03/28/18 15:25	03/29/18 12:48	108-67-8	
Vinyl chloride	ND	ug/kg	29.9	1	03/28/18 15:25	03/29/18 12:48	75-01-4	
Xylene (Total)	**326**	ug/kg	224	1	03/28/18 15:25	03/29/18 12:48	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	90	%.	75-125	1	03/28/18 15:25	03/29/18 12:48	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1	03/28/18 15:25	03/29/18 12:48	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1	03/28/18 15:25	03/29/18 12:48	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	0.26	10	04/02/18 15:00	04/04/18 13:19	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**51.1**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.54**	mg/kg	0.44	1	04/05/18 10:35	04/05/18 14:34	57-12-5	B
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	04/02/18 15:30	04/03/18 17:22	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-D2 (3-12 WM) **Lab ID: 10425111004** Collected: 03/27/18 14:10 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	8.53	1	04/04/18 10:58	04/06/18 14:51	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	309-00-2	
alpha-BHC	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	319-84-6	
beta-BHC	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	319-85-7	
delta-BHC	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	58-89-9	
Chlordane (Technical)	ND	ug/kg	954	50	03/28/18 12:51	04/06/18 00:02	57-74-9	
alpha-Chlordane	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	5103-71-9	
gamma-Chlordane	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	5103-74-2	
4,4'-DDD	ND	ug/kg	190	50	03/28/18 12:51	04/06/18 00:02	72-54-8	
4,4'-DDE	ND	ug/kg	190	50	03/28/18 12:51	04/06/18 00:02	72-55-9	
4,4'-DDT	ND	ug/kg	190	50	03/28/18 12:51	04/06/18 00:02	50-29-3	
Dieldrin	ND	ug/kg	190	50	03/28/18 12:51	04/06/18 00:02	60-57-1	
Endosulfan I	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	959-98-8	
Endosulfan II	ND	ug/kg	190	50	03/28/18 12:51	04/06/18 00:02	33213-65-9	
Endosulfan sulfate	ND	ug/kg	190	50	03/28/18 12:51	04/06/18 00:02	1031-07-8	
Endrin	ND	ug/kg	190	50	03/28/18 12:51	04/06/18 00:02	72-20-8	
Endrin aldehyde	ND	ug/kg	190	50	03/28/18 12:51	04/06/18 00:02	7421-93-4	
Endrin ketone	ND	ug/kg	190	50	03/28/18 12:51	04/06/18 00:02	53494-70-5	
Heptachlor	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	76-44-8	
Heptachlor epoxide	ND	ug/kg	95.4	50	03/28/18 12:51	04/06/18 00:02	1024-57-3	
Methoxychlor	ND	ug/kg	954	50	03/28/18 12:51	04/06/18 00:02	72-43-5	
Toxaphene	ND	ug/kg	2860	50	03/28/18 12:51	04/06/18 00:02	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	50	03/28/18 12:51	04/06/18 00:02	877-09-8	3M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	50	03/28/18 12:51	04/06/18 00:02	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	12672-29-6	
PCB-1254 (Aroclor 1254)	**45.2**	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	11100-14-4	
PCB, Total	**45.2**	ug/kg	37.4	1	03/28/18 12:51	04/02/18 12:02	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	80	%.	48-125	1	03/28/18 12:51	04/02/18 12:02	877-09-8	
Decachlorobiphenyl (S)	81	%.	30-134	1	03/28/18 12:51	04/02/18 12:02	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-D2 (3-12 WM) **Lab ID: 10425111004** Collected: 03/27/18 14:10 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**3710**	mg/kg	526	50	03/28/18 18:58	03/29/18 16:57		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	50	03/28/18 18:58	03/29/18 16:57	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**16.9**	mg/kg	11.7	1	04/03/18 15:49	04/03/18 23:09		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/03/18 15:49	04/03/18 23:09	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**3640**	mg/kg	11.3	1	03/30/18 05:23	04/02/18 11:52	7429-90-5	
Barium	**57.0**	mg/kg	0.57	1	03/30/18 05:23	04/02/18 11:52	7440-39-3	
Boron	**13.1**	mg/kg	8.5	1	03/30/18 05:23	04/02/18 11:52	7440-42-8	
Copper	**18.5**	mg/kg	0.57	1	03/30/18 05:23	04/02/18 11:52	7440-50-8	
Iron	**10100**	mg/kg	2.8	1	03/30/18 05:23	04/02/18 11:52	7439-89-6	
Manganese	**277**	mg/kg	0.28	1	03/30/18 05:23	04/02/18 11:52	7439-96-5	
Nickel	**11.0**	mg/kg	1.1	1	03/30/18 05:23	04/02/18 11:52	7440-02-0	
Silver	ND	mg/kg	0.57	1	03/30/18 05:23	04/02/18 11:52	7440-22-4	
Tin	**8.8**	mg/kg	4.2	1	03/30/18 05:23	04/02/18 11:52	7440-31-5	
Titanium	**198**	mg/kg	1.4	1	03/30/18 05:23	04/02/18 11:52	7440-32-6	
Zinc	**171**	mg/kg	1.1	1	03/30/18 05:23	04/02/18 11:52	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**15.7**	mg/kg	1.1	5	04/04/18 17:21	04/08/18 15:24	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.56	20	03/30/18 05:24	03/30/18 10:53	7440-36-0	
Arsenic	**3.9**	mg/kg	0.56	20	03/30/18 05:24	03/30/18 10:53	7440-38-2	
Beryllium	**0.33**	mg/kg	0.22	20	03/30/18 05:24	03/30/18 10:53	7440-41-7	
Cadmium	**0.41**	mg/kg	0.090	20	03/30/18 05:24	03/30/18 10:53	7440-43-9	
Cobalt	**4.1**	mg/kg	0.56	20	03/30/18 05:24	03/30/18 10:53	7440-48-4	
Lead	**65.3**	mg/kg	0.11	20	03/30/18 05:24	03/30/18 10:53	7439-92-1	
Lithium	**4.8**	mg/kg	0.56	20	03/30/18 05:24	03/30/18 10:53	7439-93-2	
Selenium	ND	mg/kg	0.56	20	03/30/18 05:24	03/30/18 10:53	7782-49-2	
Strontium	**21.2**	mg/kg	0.56	20	03/30/18 05:24	03/30/18 10:53	7440-24-6	
Vanadium	**19.2**	mg/kg	1.1	20	03/30/18 05:24	03/30/18 10:53	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.063**	mg/kg	0.021	1	03/30/18 05:24	04/04/18 17:49	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**12.6**	%	0.10	1		03/29/18 13:23		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	83-32-9	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-D2 (3-12 WM) **Lab ID: 10425111004** Collected: 03/27/18 14:10 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	208-96-8	
Anthracene	**813**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	120-12-7	
Benzo(a)anthracene	**1640**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	56-55-3	
Benzo(a)pyrene	**1450**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	50-32-8	
Benzo(b)fluoranthene	**1840**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	205-99-2	
Benzo(g,h,i)perylene	**843**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	191-24-2	
Benzo(k)fluoranthene	**671**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	101-55-3	
Butylbenzylphthalate	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	85-68-7	
Carbazole	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	59-50-7	
4-Chloroaniline	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	108-60-1	
2-Chloronaphthalene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	91-58-7	
2-Chlorophenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	7005-72-3	
Chrysene	**1570**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	53-70-3	
Dibenzofuran	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	120-83-2	
Diethylphthalate	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	105-67-9	
Dimethylphthalate	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	131-11-3	
Di-n-butylphthalate	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	1940	1	03/29/18 13:52	04/05/18 17:06	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	606-20-2	
Di-n-octylphthalate	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	117-81-7	
Fluoranthene	**4150**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	206-44-0	
Fluorene	**650**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	87-68-3	
Hexachlorobenzene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	118-74-1	
Hexachloroethane	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	67-72-1	
Indeno(1,2,3-cd)pyrene	**719**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	193-39-5	
Isophorone	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	78-59-1	
1-Methylnaphthalene	**484**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	90-12-0	
2-Methylnaphthalene	**562**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-D2 (3-12 WM) **Lab ID: 10425111004** Collected: 03/27/18 14:10 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	754	1	03/29/18 13:52	04/05/18 17:06		
Naphthalene	**572**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	91-20-3	
2-Nitroaniline	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	88-74-4	
3-Nitroaniline	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	99-09-2	
4-Nitroaniline	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	100-01-6	
Nitrobenzene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	98-95-3	
2-Nitrophenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	88-75-5	
4-Nitrophenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	86-30-6	
Pentachlorophenol	ND	ug/kg	766	1	03/29/18 13:52	04/05/18 17:06	87-86-5	
Phenanthrene	**3680**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	85-01-8	
Phenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	108-95-2	
Pyrene	**4440**	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	377	1	03/29/18 13:52	04/05/18 17:06	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	57	%.	43-125	1	03/29/18 13:52	04/05/18 17:06	4165-60-0	
2-Fluorobiphenyl (S)	65	%.	30-132	1	03/29/18 13:52	04/05/18 17:06	321-60-8	
p-Terphenyl-d14 (S)	77	%.	62-125	1	03/29/18 13:52	04/05/18 17:06	1718-51-0	
Phenol-d6 (S)	65	%.	48-125	1	03/29/18 13:52	04/05/18 17:06	13127-88-3	
2-Fluorophenol (S)	65	%.	40-125	1	03/29/18 13:52	04/05/18 17:06	367-12-4	
2,4,6-Tribromophenol (S)	64	%.	60-125	1	03/29/18 13:52	04/05/18 17:06	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**334**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	83-32-9	
Acenaphthylene	**287**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	208-96-8	
Anthracene	**777**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	120-12-7	
Benzo(a)anthracene	**1070**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	56-55-3	
Benzo(a)pyrene	**1000**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	50-32-8	
Benzo(b)fluoranthene	**1100**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	205-99-2	
Benzo(g,h,i)perylene	**648**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	191-24-2	
Benzo(k)fluoranthene	**425**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	207-08-9	
Chrysene	**982**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	218-01-9	
Dibenz(a,h)anthracene	**168**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	53-70-3	
Fluoranthene	**2530**	ug/kg	114	10	03/28/18 19:00	04/02/18 15:10	206-44-0	
Fluorene	**553**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	86-73-7	
Indeno(1,2,3-cd)pyrene	**521**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	193-39-5	
Naphthalene	**486**	ug/kg	56.9	5	03/28/18 19:00	03/30/18 22:01	91-20-3	
Phenanthrene	**2390**	ug/kg	114	10	03/28/18 19:00	04/02/18 15:10	85-01-8	
Pyrene	**2390**	ug/kg	114	10	03/28/18 19:00	04/02/18 15:10	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	70	%.	42-125	5	03/28/18 19:00	03/30/18 22:01	321-60-8	D3

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-D2 (3-12 WM) **Lab ID: 10425111004** Collected: 03/27/18 14:10 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	80	%.	57-125	5	03/28/18 19:00	03/30/18 22:01	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	25057-89-0	
2,4-D	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	94-75-7	
2,4-DB	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	94-82-6	
Dicamba	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	1918-00-9	
Dinoseb	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	88-85-7	
MCPA	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	94-74-6	
Pentachlorophenol	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	87-86-5	
Picloram	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	1918-02-1	
2,4,5-T	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	93-72-1	
Triclopyr	ND	mg/kg	0.19	5	03/29/18 07:30	04/04/18 19:43	55335-06-3	
Surrogates								
2,4-DCAA (S)	71	%.	46-125	5	03/29/18 07:30	04/04/18 19:43	19719-28-9	D3
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1180	1	03/28/18 15:25	03/29/18 12:15	67-64-1	
Allyl chloride	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	107-05-1	
Benzene	ND	ug/kg	23.5	1	03/28/18 15:25	03/29/18 12:15	71-43-2	
Bromobenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	108-86-1	
Bromochloromethane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	74-97-5	
Bromodichloromethane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	75-27-4	
Bromoform	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	75-25-2	
Bromomethane	ND	ug/kg	588	1	03/28/18 15:25	03/29/18 12:15	74-83-9	
2-Butanone (MEK)	ND	ug/kg	294	1	03/28/18 15:25	03/29/18 12:15	78-93-3	
n-Butylbenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	104-51-8	
sec-Butylbenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	135-98-8	
tert-Butylbenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	98-06-6	
Carbon tetrachloride	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	56-23-5	
Chlorobenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	108-90-7	
Chloroethane	ND	ug/kg	588	1	03/28/18 15:25	03/29/18 12:15	75-00-3	
Chloroform	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	67-66-3	
Chloromethane	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	74-87-3	
2-Chlorotoluene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	95-49-8	
4-Chlorotoluene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	588	1	03/28/18 15:25	03/29/18 12:15	96-12-8	
Dibromochloromethane	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	106-93-4	
Dibromomethane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	75-71-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-D2 (3-12 WM) **Lab ID: 10425111004** Collected: 03/27/18 14:10 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,1-Dichloroethane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	75-34-3	
1,2-Dichloroethane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	107-06-2	
1,1-Dichloroethene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	156-60-5	
Dichlorofluoromethane	ND	ug/kg	588	1	03/28/18 15:25	03/29/18 12:15	75-43-4	
1,2-Dichloropropane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	78-87-5	
1,3-Dichloropropane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	142-28-9	
2,2-Dichloropropane	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	594-20-7	
1,1-Dichloropropene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	60-29-7	
Ethylbenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	294	1	03/28/18 15:25	03/29/18 12:15	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	98-82-8	
p-Isopropyltoluene	**68.5**	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	99-87-6	
Methylene Chloride	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	294	1	03/28/18 15:25	03/29/18 12:15	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	1634-04-4	
Naphthalene	**8480**	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	91-20-3	
n-Propylbenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	103-65-1	
Styrene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	79-34-5	N2
Tetrachloroethene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	127-18-4	
Tetrahydrofuran	ND	ug/kg	2350	1	03/28/18 15:25	03/29/18 12:15	109-99-9	
Toluene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	79-00-5	
Trichloroethene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	235	1	03/28/18 15:25	03/29/18 12:15	76-13-1	
1,2,4-Trimethylbenzene	**148**	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	58.8	1	03/28/18 15:25	03/29/18 12:15	108-67-8	
Vinyl chloride	ND	ug/kg	23.5	1	03/28/18 15:25	03/29/18 12:15	75-01-4	
Xylene (Total)	ND	ug/kg	176	1	03/28/18 15:25	03/29/18 12:15	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1	03/28/18 15:25	03/29/18 12:15	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/28/18 15:25	03/29/18 12:15	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125	1	03/28/18 15:25	03/29/18 12:15	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-D2 (3-12 WM) **Lab ID: 10425111004** Collected: 03/27/18 14:10 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	23.0	10	04/02/18 15:00	04/04/18 14:00	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**15.7**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.36	1	04/05/18 10:35	04/05/18 14:38	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	04/02/18 15:30	04/03/18 17:41	16984-48-8	

Sample: FD-SB-E2 (11-21 S) **Lab ID: 10425111005** Collected: 03/27/18 15:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.2	1	04/04/18 10:58	04/06/18 15:11	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	309-00-2	
alpha-BHC	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	319-84-6	
beta-BHC	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	319-85-7	
delta-BHC	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	58-89-9	
Chlordane (Technical)	ND	ug/kg	45.9	2	03/28/18 12:51	04/05/18 21:17	57-74-9	
alpha-Chlordane	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	5103-71-9	
gamma-Chlordane	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	5103-74-2	
4,4'-DDD	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 21:17	72-54-8	
4,4'-DDE	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 21:17	72-55-9	
4,4'-DDT	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 21:17	50-29-3	
Dieldrin	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 21:17	60-57-1	
Endosulfan I	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	959-98-8	
Endosulfan II	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 21:17	33213-65-9	
Endosulfan sulfate	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 21:17	1031-07-8	
Endrin	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 21:17	72-20-8	
Endrin aldehyde	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 21:17	7421-93-4	
Endrin ketone	ND	ug/kg	9.1	2	03/28/18 12:51	04/05/18 21:17	53494-70-5	
Heptachlor	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	76-44-8	
Heptachlor epoxide	ND	ug/kg	4.6	2	03/28/18 12:51	04/05/18 21:17	1024-57-3	
Methoxychlor	ND	ug/kg	45.9	2	03/28/18 12:51	04/05/18 21:17	72-43-5	
Toxaphene	ND	ug/kg	137	2	03/28/18 12:51	04/05/18 21:17	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	54	%.	30-150	2	03/28/18 12:51	04/05/18 21:17	877-09-8	6M,D3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-E2 (11-21 S) **Lab ID: 10425111005** Collected: 03/27/18 15:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Surrogates								
Decachlorobiphenyl (S)	79	%.	30-150	2	03/28/18 12:51	04/05/18 21:17	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	11100-14-4	
PCB, Total	ND	ug/kg	45.4	1	03/28/18 12:51	04/02/18 13:36	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	79	%.	48-125	1	03/28/18 12:51	04/02/18 13:36	877-09-8	
Decachlorobiphenyl (S)	85	%.	30-134	1	03/28/18 12:51	04/02/18 13:36	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	12.7	1	03/28/18 18:58	03/29/18 14:36		
Surrogates								
n-Triacontane (S)	86	%.	50-150	1	03/28/18 18:58	03/29/18 14:36	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	14.9	1	04/03/18 15:49	04/03/18 20:21		
Surrogates								
a,a,a-Trifluorotoluene (S)	100	%.	80-150	1	04/03/18 15:49	04/03/18 20:21	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**9940**	mg/kg	12.8	1	03/30/18 05:23	04/02/18 11:56	7429-90-5	
Barium	**144**	mg/kg	0.64	1	03/30/18 05:23	04/02/18 11:56	7440-39-3	
Boron	**439**	mg/kg	9.6	1	03/30/18 05:23	04/02/18 11:56	7440-42-8	
Copper	**20.1**	mg/kg	0.64	1	03/30/18 05:23	04/02/18 11:56	7440-50-8	
Iron	**31500**	mg/kg	15.9	5	03/30/18 05:23	04/02/18 13:00	7439-89-6	
Manganese	**173**	mg/kg	0.32	1	03/30/18 05:23	04/02/18 11:56	7439-96-5	
Nickel	**62.7**	mg/kg	1.3	1	03/30/18 05:23	04/02/18 11:56	7440-02-0	
Silver	ND	mg/kg	0.64	1	03/30/18 05:23	04/02/18 11:56	7440-22-4	
Tin	ND	mg/kg	4.8	1	03/30/18 05:23	04/02/18 11:56	7440-31-5	
Titanium	**558**	mg/kg	1.6	1	03/30/18 05:23	04/02/18 11:56	7440-32-6	
Zinc	**154**	mg/kg	1.3	1	03/30/18 05:23	04/02/18 11:56	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**47.5**	mg/kg	1.2	5	04/04/18 17:21	04/08/18 15:28	7440-47-3	N2

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-E2 (11-21 S) **Lab ID: 10425111005** Collected: 03/27/18 15:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**2.0**	mg/kg	0.69	20	03/30/18 05:24	03/30/18 10:55	7440-36-0	
Arsenic	**21.1**	mg/kg	0.69	20	03/30/18 05:24	03/30/18 10:55	7440-38-2	
Beryllium	**2.6**	mg/kg	0.28	20	03/30/18 05:24	03/30/18 10:55	7440-41-7	
Cadmium	**1.8**	mg/kg	0.11	20	03/30/18 05:24	03/30/18 10:55	7440-43-9	
Cobalt	**6.7**	mg/kg	0.69	20	03/30/18 05:24	03/30/18 10:55	7440-48-4	
Lead	**29.0**	mg/kg	0.14	20	03/30/18 05:24	03/30/18 10:55	7439-92-1	
Lithium	**10.7**	mg/kg	0.69	20	03/30/18 05:24	03/30/18 10:55	7439-93-2	
Selenium	**5.1**	mg/kg	0.69	20	03/30/18 05:24	03/30/18 10:55	7782-49-2	
Strontium	**60.9**	mg/kg	0.69	20	03/30/18 05:24	03/30/18 10:55	7440-24-6	
Vanadium	**301**	mg/kg	1.4	20	03/30/18 05:24	03/30/18 10:55	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.033**	mg/kg	0.028	1	03/30/18 05:24	04/04/18 17:56	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**27.4**	%	0.10	1		03/29/18 13:24		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	83-32-9	
Acenaphthylene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	208-96-8	
Anthracene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	120-12-7	
Benzo(a)anthracene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	56-55-3	
Benzo(a)pyrene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	101-55-3	
Butylbenzylphthalate	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	85-68-7	
Carbazole	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	59-50-7	
4-Chloroaniline	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	108-60-1	
2-Chloronaphthalene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	91-58-7	
2-Chlorophenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	7005-72-3	
Chrysene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	53-70-3	
Dibenzofuran	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	120-83-2	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-E2 (11-21 S) **Lab ID: 10425111005** Collected: 03/27/18 15:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Diethylphthalate	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	105-67-9	
Dimethylphthalate	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	131-11-3	
Di-n-butylphthalate	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2340	1	03/29/18 13:52	04/05/18 17:36	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	606-20-2	
Di-n-octylphthalate	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	117-81-7	
Fluoranthene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	206-44-0	
Fluorene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	87-68-3	
Hexachlorobenzene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	118-74-1	
Hexachloroethane	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	193-39-5	
Isophorone	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	78-59-1	
1-Methylnaphthalene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	90-12-0	
2-Methylnaphthalene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	908	1	03/29/18 13:52	04/05/18 17:36		
Naphthalene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	91-20-3	
2-Nitroaniline	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	88-74-4	
3-Nitroaniline	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	99-09-2	
4-Nitroaniline	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	100-01-6	
Nitrobenzene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	98-95-3	
2-Nitrophenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	88-75-5	
4-Nitrophenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	86-30-6	
Pentachlorophenol	ND	ug/kg	922	1	03/29/18 13:52	04/05/18 17:36	87-86-5	
Phenanthrene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	85-01-8	
Phenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	108-95-2	
Pyrene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	454	1	03/29/18 13:52	04/05/18 17:36	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	60	%.	43-125	1	03/29/18 13:52	04/05/18 17:36	4165-60-0	
2-Fluorobiphenyl (S)	59	%.	30-132	1	03/29/18 13:52	04/05/18 17:36	321-60-8	
p-Terphenyl-d14 (S)	84	%.	62-125	1	03/29/18 13:52	04/05/18 17:36	1718-51-0	
Phenol-d6 (S)	72	%.	48-125	1	03/29/18 13:52	04/05/18 17:36	13127-88-3	
2-Fluorophenol (S)	74	%.	40-125	1	03/29/18 13:52	04/05/18 17:36	367-12-4	
2,4,6-Tribromophenol (S)	73	%.	60-125	1	03/29/18 13:52	04/05/18 17:36	118-79-6	

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-E2 (11-21 S) **Lab ID: 10425111005** Collected: 03/27/18 15:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	83-32-9	
Acenaphthylene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	208-96-8	
Anthracene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	120-12-7	
Benzo(a)anthracene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	56-55-3	
Benzo(a)pyrene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	207-08-9	
Chrysene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	53-70-3	
Fluoranthene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	206-44-0	
Fluorene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	193-39-5	
Naphthalene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	91-20-3	
Phenanthrene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	85-01-8	
Pyrene	ND	ug/kg	13.8	1	04/03/18 17:20	04/04/18 12:46	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	63	%.	42-125	1	04/03/18 17:20	04/04/18 12:46	321-60-8	
p-Terphenyl-d14 (S)	88	%.	57-125	1	04/03/18 17:20	04/04/18 12:46	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	25057-89-0	
2,4-D	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	94-75-7	
2,4-DB	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	94-82-6	
Dicamba	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	1918-00-9	
Dinoseb	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	88-85-7	
MCPA	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	94-74-6	
Pentachlorophenol	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	87-86-5	
Picloram	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	1918-02-1	
2,4,5-T	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	93-72-1	
Triclopyr	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 17:45	55335-06-3	
Surrogates								
2,4-DCAA (S)	52	%.	46-125	1	03/29/18 07:30	04/04/18 17:45	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1460	1	03/28/18 15:25	03/29/18 11:58	67-64-1	
Allyl chloride	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	107-05-1	
Benzene	ND	ug/kg	29.3	1	03/28/18 15:25	03/29/18 11:58	71-43-2	
Bromobenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	108-86-1	
Bromochloromethane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	74-97-5	
Bromodichloromethane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	75-27-4	
Bromoform	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	75-25-2	
Bromomethane	ND	ug/kg	731	1	03/28/18 15:25	03/29/18 11:58	74-83-9	
2-Butanone (MEK)	ND	ug/kg	366	1	03/28/18 15:25	03/29/18 11:58	78-93-3	
n-Butylbenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	104-51-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-E2 (11-21 S) **Lab ID: 10425111005** Collected: 03/27/18 15:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
sec-Butylbenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	135-98-8	
tert-Butylbenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	98-06-6	
Carbon tetrachloride	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	56-23-5	
Chlorobenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	108-90-7	
Chloroethane	ND	ug/kg	731	1	03/28/18 15:25	03/29/18 11:58	75-00-3	
Chloroform	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	67-66-3	
Chloromethane	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	74-87-3	
2-Chlorotoluene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	95-49-8	
4-Chlorotoluene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	731	1	03/28/18 15:25	03/29/18 11:58	96-12-8	
Dibromochloromethane	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	106-93-4	
Dibromomethane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	75-71-8	
1,1-Dichloroethane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	75-34-3	
1,2-Dichloroethane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	107-06-2	
1,1-Dichloroethene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	156-60-5	
Dichlorofluoromethane	ND	ug/kg	731	1	03/28/18 15:25	03/29/18 11:58	75-43-4	
1,2-Dichloropropane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	78-87-5	
1,3-Dichloropropane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	142-28-9	
2,2-Dichloropropane	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	594-20-7	
1,1-Dichloropropene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	60-29-7	
Ethylbenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	366	1	03/28/18 15:25	03/29/18 11:58	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	98-82-8	
p-Isopropyltoluene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	99-87-6	
Methylene Chloride	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	366	1	03/28/18 15:25	03/29/18 11:58	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	1634-04-4	
Naphthalene	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	91-20-3	
n-Propylbenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	103-65-1	
Styrene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	79-34-5	N2
Tetrachloroethene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	127-18-4	
Tetrahydrofuran	ND	ug/kg	2930	1	03/28/18 15:25	03/29/18 11:58	109-99-9	
Toluene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	87-61-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-E2 (11-21 S) **Lab ID: 10425111005** Collected: 03/27/18 15:15 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
1,2,4-Trichlorobenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	79-00-5	
Trichloroethene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	293	1	03/28/18 15:25	03/29/18 11:58	76-13-1	
1,2,4-Trimethylbenzene	**120**	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	73.1	1	03/28/18 15:25	03/29/18 11:58	108-67-8	
Vinyl chloride	ND	ug/kg	29.3	1	03/28/18 15:25	03/29/18 11:58	75-01-4	
Xylene (Total)	ND	ug/kg	219	1	03/28/18 15:25	03/29/18 11:58	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1	03/28/18 15:25	03/29/18 11:58	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	03/28/18 15:25	03/29/18 11:58	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	03/28/18 15:25	03/29/18 11:58	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	13.6	5	04/02/18 15:00	04/04/18 14:01	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**47.5**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.60	1	04/05/18 10:35	04/05/18 14:38	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.9**	mg/kg	0.98	1	04/02/18 15:30	04/03/18 18:01	16984-48-8	

Sample: FD-SB-F2 (7-13 WM) **Lab ID: 10425111006** Collected: 03/27/18 16:20 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.0	1	04/04/18 10:58	04/06/18 15:18	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	309-00-2	
alpha-BHC	ND	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	319-84-6	
beta-BHC	ND	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	319-85-7	
delta-BHC	**15.5**	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	58-89-9	
Chlordane (Technical)	ND	ug/kg	113	5	03/28/18 12:51	04/05/18 22:12	57-74-9	
alpha-Chlordane	ND	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	5103-71-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-F2 (7-13 WM) **Lab ID: 10425111006** Collected: 03/27/18 16:20 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
gamma-Chlordane	ND	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	5103-74-2	
4,4'-DDD	ND	ug/kg	22.6	5	03/28/18 12:51	04/05/18 22:12	72-54-8	
4,4'-DDE	ND	ug/kg	22.6	5	03/28/18 12:51	04/05/18 22:12	72-55-9	
4,4'-DDT	ND	ug/kg	22.6	5	03/28/18 12:51	04/05/18 22:12	50-29-3	
Dieldrin	ND	ug/kg	22.6	5	03/28/18 12:51	04/05/18 22:12	60-57-1	
Endosulfan I	ND	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	959-98-8	
Endosulfan II	ND	ug/kg	22.6	5	03/28/18 12:51	04/05/18 22:12	33213-65-9	
Endosulfan sulfate	ND	ug/kg	22.6	5	03/28/18 12:51	04/05/18 22:12	1031-07-8	
Endrin	ND	ug/kg	22.6	5	03/28/18 12:51	04/05/18 22:12	72-20-8	
Endrin aldehyde	ND	ug/kg	22.6	5	03/28/18 12:51	04/05/18 22:12	7421-93-4	
Endrin ketone	**52.1**	ug/kg	22.6	5	03/28/18 12:51	04/05/18 22:12	53494-70-5	
Heptachlor	ND	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	76-44-8	
Heptachlor epoxide	ND	ug/kg	11.3	5	03/28/18 12:51	04/05/18 22:12	1024-57-3	
Methoxychlor	ND	ug/kg	113	5	03/28/18 12:51	04/05/18 22:12	72-43-5	
Toxaphene	ND	ug/kg	340	5	03/28/18 12:51	04/05/18 22:12	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	85	%.	30-150	5	03/28/18 12:51	04/05/18 22:12	877-09-8	5M,D4
Decachlorobiphenyl (S)	93	%.	30-150	5	03/28/18 12:51	04/05/18 22:12	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	11141-16-5	
PCB-1242 (Aroclor 1242)	**1740**	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	11100-14-4	
PCB, Total	**1740**	ug/kg	44.9	1	03/28/18 12:51	04/02/18 13:52	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	86	%.	48-125	1	03/28/18 12:51	04/02/18 13:52	877-09-8	
Decachlorobiphenyl (S)	86	%.	30-134	1	03/28/18 12:51	04/02/18 13:52	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**61.7**	mg/kg	23.8	2	03/28/18 18:58	03/29/18 17:04		T6
Surrogates								
n-Triacontane (S)	75	%.	50-150	2	03/28/18 18:58	03/29/18 17:04	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**14.6**	mg/kg	13.8	1	04/03/18 15:49	04/03/18 21:09		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/03/18 15:49	04/03/18 21:09	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**11500**	mg/kg	13.0	1	03/30/18 05:23	04/02/18 12:00	7429-90-5	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-F2 (7-13 WM) **Lab ID: 10425111006** Collected: 03/27/18 16:20 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Barium	**158**	mg/kg	0.65	1	03/30/18 05:23	04/02/18 12:00	7440-39-3	
Boron	**157**	mg/kg	9.7	1	03/30/18 05:23	04/02/18 12:00	7440-42-8	
Copper	**55.8**	mg/kg	0.65	1	03/30/18 05:23	04/02/18 12:00	7440-50-8	
Iron	**37700**	mg/kg	16.2	5	03/30/18 05:23	04/02/18 13:04	7439-89-6	
Manganese	**330**	mg/kg	0.32	1	03/30/18 05:23	04/02/18 12:00	7439-96-5	
Nickel	**27.1**	mg/kg	1.3	1	03/30/18 05:23	04/02/18 12:00	7440-02-0	
Silver	**2.3**	mg/kg	0.65	1	03/30/18 05:23	04/02/18 12:00	7440-22-4	
Tin	**11.8**	mg/kg	4.9	1	03/30/18 05:23	04/02/18 12:00	7440-31-5	
Titanium	**450**	mg/kg	1.6	1	03/30/18 05:23	04/02/18 12:00	7440-32-6	
Zinc	**176**	mg/kg	1.3	1	03/30/18 05:23	04/02/18 12:00	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**52.1**	mg/kg	1.3	5	04/04/18 17:21	04/08/18 15:33	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**17.1**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 10:58	7440-36-0	
Arsenic	**20.9**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 10:58	7440-38-2	
Beryllium	**2.4**	mg/kg	0.26	20	03/30/18 05:24	03/30/18 10:58	7440-41-7	
Cadmium	**2.9**	mg/kg	0.11	20	03/30/18 05:24	03/30/18 10:58	7440-43-9	
Cobalt	**8.1**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 10:58	7440-48-4	
Lead	**88.7**	mg/kg	0.13	20	03/30/18 05:24	03/30/18 10:58	7439-92-1	
Lithium	**11.5**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 10:58	7439-93-2	
Selenium	**4.9**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 10:58	7782-49-2	
Strontium	**73.7**	mg/kg	0.66	20	03/30/18 05:24	03/30/18 10:58	7440-24-6	
Vanadium	**121**	mg/kg	1.3	20	03/30/18 05:24	03/30/18 10:58	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.11**	mg/kg	0.024	1	03/30/18 05:24	04/04/18 17:58	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**26.6**	%	0.10	1		03/29/18 13:55		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	83-32-9	
Acenaphthylene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	208-96-8	
Anthracene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	120-12-7	
Benzo(a)anthracene	**1340**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	56-55-3	
Benzo(a)pyrene	**1200**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	50-32-8	
Benzo(b)fluoranthene	**2060**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	205-99-2	
Benzo(g,h,i)perylene	**707**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	191-24-2	
Benzo(k)fluoranthene	**575**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	101-55-3	
Butylbenzylphthalate	**3600**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	85-68-7	
Carbazole	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	59-50-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-F2 (7-13 WM) **Lab ID: 10425111006** Collected: 03/27/18 16:20 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
4-Chloroaniline	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	108-60-1	
2-Chloronaphthalene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	91-58-7	
2-Chlorophenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	7005-72-3	
Chrysene	**1580**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	53-70-3	
Dibenzofuran	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	120-83-2	
Diethylphthalate	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	105-67-9	
Dimethylphthalate	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	131-11-3	
Di-n-butylphthalate	**800**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2320	1	03/29/18 13:52	04/05/18 18:06	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	606-20-2	
Di-n-octylphthalate	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	122-66-7	
bis(2-Ethylhexyl)phthalate	**118000**	ug/kg	22500	50	03/29/18 13:52	04/08/18 19:06	117-81-7	
Fluoranthene	**4360**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	206-44-0	
Fluorene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	87-68-3	
Hexachlorobenzene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	118-74-1	
Hexachloroethane	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	67-72-1	
Indeno(1,2,3-cd)pyrene	**631**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	193-39-5	
Isophorone	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	78-59-1	
1-Methylnaphthalene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	90-12-0	
2-Methylnaphthalene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	899	1	03/29/18 13:52	04/05/18 18:06		
Naphthalene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	91-20-3	
2-Nitroaniline	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	88-74-4	
3-Nitroaniline	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	99-09-2	
4-Nitroaniline	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	100-01-6	
Nitrobenzene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	98-95-3	
2-Nitrophenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	88-75-5	
4-Nitrophenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	621-64-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-F2 (7-13 WM) **Lab ID: 10425111006** Collected: 03/27/18 16:20 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
N-Nitrosodiphenylamine	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	86-30-6	
Pentachlorophenol	ND	ug/kg	913	1	03/29/18 13:52	04/05/18 18:06	87-86-5	
Phenanthrene	**3120**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	85-01-8	
Phenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	108-95-2	
Pyrene	**2920**	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	450	1	03/29/18 13:52	04/05/18 18:06	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	63	%.	43-125	1	03/29/18 13:52	04/05/18 18:06	4165-60-0	
2-Fluorobiphenyl (S)	70	%.	30-132	1	03/29/18 13:52	04/05/18 18:06	321-60-8	
p-Terphenyl-d14 (S)	75	%.	62-125	1	03/29/18 13:52	04/05/18 18:06	1718-51-0	
Phenol-d6 (S)	68	%.	48-125	1	03/29/18 13:52	04/05/18 18:06	13127-88-3	
2-Fluorophenol (S)	68	%.	40-125	1	03/29/18 13:52	04/05/18 18:06	367-12-4	
2,4,6-Tribromophenol (S)	70	%.	60-125	1	03/29/18 13:52	04/05/18 18:06	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	83-32-9	
Acenaphthylene	ND	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	208-96-8	
Anthracene	ND	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	120-12-7	
Benzo(a)anthracene	**30.7**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	56-55-3	
Benzo(a)pyrene	**34.9**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	50-32-8	
Benzo(b)fluoranthene	**48.4**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	205-99-2	
Benzo(g,h,i)perylene	**22.1**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	191-24-2	
Benzo(k)fluoranthene	**17.2**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	207-08-9	
Chrysene	**37.9**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	53-70-3	
Fluoranthene	**60.0**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	206-44-0	
Fluorene	ND	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	86-73-7	
Indeno(1,2,3-cd)pyrene	**17.0**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	193-39-5	
Naphthalene	ND	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	91-20-3	
Phenanthrene	**33.4**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	85-01-8	
Pyrene	**59.2**	ug/kg	13.6	1	03/28/18 19:00	03/30/18 16:11	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	76	%.	42-125	1	03/28/18 19:00	03/30/18 16:11	321-60-8	
p-Terphenyl-d14 (S)	95	%.	57-125	1	03/28/18 19:00	03/30/18 16:11	1718-51-0	
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
Bentazon	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	25057-89-0	
2,4-D	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	94-75-7	
2,4-DB	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	94-82-6	
Dicamba	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	1918-00-9	M1,R1
Dinoseb	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	88-85-7	R1
MCPA	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	94-74-6	
Pentachlorophenol	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	87-86-5	
Picloram	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	1918-02-1	M1

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-F2 (7-13 WM) **Lab ID: 10425111006** Collected: 03/27/18 16:20 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV MDA LIST 2	Analytical Method: EPA 8270D Preparation Method: EPA 3546							
2,4,5-T	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	93-76-5	
2,4,5-TP (Silvex)	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	93-72-1	
Triclopyr	ND	mg/kg	0.045	1	03/29/18 07:30	04/04/18 18:00	55335-06-3	
Surrogates								
2,4-DCAA (S)	69	%.	46-125	1	03/29/18 07:30	04/04/18 18:00	19719-28-9	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1420	1	03/28/18 15:25	03/29/18 13:05	67-64-1	
Allyl chloride	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	107-05-1	
Benzene	ND	ug/kg	28.4	1	03/28/18 15:25	03/29/18 13:05	71-43-2	
Bromobenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	108-86-1	
Bromochloromethane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	74-97-5	
Bromodichloromethane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	75-27-4	
Bromoform	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	75-25-2	
Bromomethane	ND	ug/kg	710	1	03/28/18 15:25	03/29/18 13:05	74-83-9	
2-Butanone (MEK)	ND	ug/kg	355	1	03/28/18 15:25	03/29/18 13:05	78-93-3	
n-Butylbenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	104-51-8	
sec-Butylbenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	135-98-8	
tert-Butylbenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	98-06-6	
Carbon tetrachloride	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	56-23-5	
Chlorobenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	108-90-7	
Chloroethane	ND	ug/kg	710	1	03/28/18 15:25	03/29/18 13:05	75-00-3	
Chloroform	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	67-66-3	
Chloromethane	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	74-87-3	
2-Chlorotoluene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	95-49-8	
4-Chlorotoluene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	710	1	03/28/18 15:25	03/29/18 13:05	96-12-8	
Dibromochloromethane	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	106-93-4	
Dibromomethane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	75-71-8	
1,1-Dichloroethane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	75-34-3	
1,2-Dichloroethane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	107-06-2	
1,1-Dichloroethene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	156-60-5	
Dichlorofluoromethane	ND	ug/kg	710	1	03/28/18 15:25	03/29/18 13:05	75-43-4	
1,2-Dichloropropane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	78-87-5	
1,3-Dichloropropane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	142-28-9	
2,2-Dichloropropane	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	594-20-7	
1,1-Dichloropropene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	10061-02-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Sample: FD-SB-F2 (7-13 WM) **Lab ID: 10425111006** Collected: 03/27/18 16:20 Received: 03/27/18 16:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Diethyl ether (Ethyl ether)	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	60-29-7	
Ethylbenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	355	1	03/28/18 15:25	03/29/18 13:05	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	98-82-8	
p-Isopropyltoluene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	99-87-6	
Methylene Chloride	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	355	1	03/28/18 15:25	03/29/18 13:05	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	1634-04-4	
Naphthalene	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	91-20-3	
n-Propylbenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	103-65-1	
Styrene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	79-34-5	N2
Tetrachloroethene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	127-18-4	
Tetrahydrofuran	ND	ug/kg	2840	1	03/28/18 15:25	03/29/18 13:05	109-99-9	
Toluene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	79-00-5	
Trichloroethene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	79-01-6	N2
Trichlorofluoromethane	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	284	1	03/28/18 15:25	03/29/18 13:05	76-13-1	
1,2,4-Trimethylbenzene	**94.7**	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	71.0	1	03/28/18 15:25	03/29/18 13:05	108-67-8	
Vinyl chloride	ND	ug/kg	28.4	1	03/28/18 15:25	03/29/18 13:05	75-01-4	
Xylene (Total)	ND	ug/kg	213	1	03/28/18 15:25	03/29/18 13:05	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	03/28/18 15:25	03/29/18 13:05	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	03/28/18 15:25	03/29/18 13:05	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1	03/28/18 15:25	03/29/18 13:05	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	27.0	10	04/02/18 15:00	04/04/18 14:01	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**52.1**	mg/kg	1.0	1		04/10/18 07:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.45**	mg/kg	0.40	1	04/05/18 10:35	04/05/18 14:39	57-12-5	B
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.97	1	04/02/18 15:30	04/03/18 18:20	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 140178 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 555070 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.18	04/06/18 13:51	N3

METHOD BLANK: 555071 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.20	04/06/18 13:58	N3

METHOD BLANK: 555072 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.03	04/06/18 14:05	N3

LABORATORY CONTROL SAMPLE: 555073

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	105	90.2	86	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 555074 555075

Parameter	Units	10425111001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	446	407	290	293	65	72	65-135	1	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 530355 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2878567 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	04/03/18 18:43	
a,a,a-Trifluorotoluene (S)	%.	100	80-150	04/03/18 18:43	

LABORATORY CONTROL SAMPLE & LCSD: 2878568 2878569

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	44.7	44.7	89	89	80-120	0	20	
a,a,a-Trifluorotoluene (S)	%.				99	99	80-150			

MATRIX SPIKE SAMPLE: 2879442

Parameter	Units	10425111005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	74.7	75.8	98	80-120	
a,a,a-Trifluorotoluene (S)	%.				99	80-150	

SAMPLE DUPLICATE: 2879443

Parameter	Units	10425111006 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	14.6	11.2J		20	
a,a,a-Trifluorotoluene (S)	%.	98	99	8		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529756 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2875501 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	04/04/18 17:35	

LABORATORY CONTROL SAMPLE: 2875502

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.43	0.48	112	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875503 2875504

Parameter	Units	10425111001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.070	.66	.62	0.77	0.74	105	107	80-120	4	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529753 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2875489 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	9.8	04/02/18 11:01	
Barium	mg/kg	ND	0.49	04/02/18 11:01	
Boron	mg/kg	ND	7.4	04/02/18 11:01	
Copper	mg/kg	ND	0.49	04/02/18 11:01	
Iron	mg/kg	ND	2.5	04/02/18 11:01	
Manganese	mg/kg	ND	0.25	04/02/18 11:01	
Nickel	mg/kg	ND	0.98	04/02/18 11:01	
Silver	mg/kg	ND	0.49	04/02/18 11:01	
Tin	mg/kg	ND	3.7	04/02/18 11:01	
Titanium	mg/kg	ND	1.2	04/02/18 11:01	
Zinc	mg/kg	ND	0.98	04/02/18 11:01	

LABORATORY CONTROL SAMPLE: 2875490

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	962	995	104	80-120	
Barium	mg/kg	48.1	50.8	106	80-120	
Boron	mg/kg	48.1	46.1	96	80-120	
Copper	mg/kg	48.1	50.1	104	80-120	
Iron	mg/kg	962	1000	104	80-120	
Manganese	mg/kg	48.1	50.7	105	80-120	
Nickel	mg/kg	48.1	50.0	104	80-120	
Silver	mg/kg	24	24.0	100	80-120	
Tin	mg/kg	48.1	50.5	105	80-120	
Titanium	mg/kg	48.1	50.3	105	80-120	
Zinc	mg/kg	48.1	50.6	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875491 2875492

Parameter	Units	10425453001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	4040	1100	1110	5880	4800	167	68	75-125	20	20	P6
Barium	mg/kg	46.6	54.9	55.5	623	93.7	1050	85	75-125	148	20	M1,R1
Boron	mg/kg	ND	54.9	55.5	62.8	60.0	101	95	75-125	5	20	
Copper	mg/kg	8.5	54.9	55.5	69.6	61.1	111	95	75-125	13	20	
Iron	mg/kg	11200	1100	1110	13600	10000	223	-107	75-125	31	20	P6,R1
Manganese	mg/kg	442	54.9	55.5	9660	528	16800	157	75-125	179	20	P6
Nickel	mg/kg	9.3	54.9	55.5	182	58.9	313	89	75-125	102	20	M1,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875491 2875492

Parameter	Units	10425453001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	ND	27.5	27.7	26.2	26.6	95	96	75-125	1	20	
Tin	mg/kg	ND	54.9	55.5	53.5	50.4	95	88	75-125	6	20	
Titanium	mg/kg	158	54.9	55.5	256	219	179	111	75-125	16	20	M1
Zinc	mg/kg	59.3	54.9	55.5	130	90.5	129	56	75-125	36	20	M1,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 435596 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2011670 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.18	04/08/18 14:34	N2

LABORATORY CONTROL SAMPLE: 2011671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.8	102	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2011672 2011673

Parameter	Units	10425111003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	51.1	4.81	4.81	48.6	136	-52	1770	75-125	95	20	1M, E, M0, N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529754 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2875493 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.48	03/30/18 10:14	
Arsenic	mg/kg	ND	0.48	03/30/18 10:14	
Beryllium	mg/kg	ND	0.19	03/30/18 10:14	
Cadmium	mg/kg	ND	0.077	03/30/18 10:14	
Cobalt	mg/kg	ND	0.48	03/30/18 10:14	
Lead	mg/kg	ND	0.096	03/30/18 10:14	
Lithium	mg/kg	ND	0.48	03/30/18 10:14	
Selenium	mg/kg	ND	0.48	03/30/18 10:14	
Strontium	mg/kg	ND	0.48	03/30/18 10:14	
Vanadium	mg/kg	ND	0.96	03/30/18 10:14	

LABORATORY CONTROL SAMPLE: 2875494

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	48.5	46.2	95	80-120	
Arsenic	mg/kg	48.5	46.3	95	80-120	
Beryllium	mg/kg	48.5	47.1	97	80-120	
Cadmium	mg/kg	48.5	46.4	96	80-120	
Cobalt	mg/kg	48.5	47.7	98	80-120	
Lead	mg/kg	48.5	49.3	102	80-120	
Lithium	mg/kg	48.5	48.0	99	80-120	
Selenium	mg/kg	48.5	49.9	103	80-120	
Strontium	mg/kg	48.5	47.2	97	80-120	
Vanadium	mg/kg	48.5	47.5	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875495 2875496

Parameter	Units	10425111001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	2.0	66.2	66.7	46.1	46.6	67	67	75-125	1	20	M6
Arsenic	mg/kg	23.3	66.2	66.7	83.3	87.7	91	96	75-125	5	20	
Beryllium	mg/kg	3.1	66.2	66.7	63.4	63.2	91	90	75-125	0	20	
Cadmium	mg/kg	2.3	66.2	66.7	65.1	67.0	95	97	75-125	3	20	
Cobalt	mg/kg	8.3	66.2	66.7	71.9	72.9	96	97	75-125	1	20	
Lead	mg/kg	37.7	66.2	66.7	107	119	105	122	75-125	11	20	
Lithium	mg/kg	14.9	66.2	66.7	75.7	75.2	92	90	75-125	1	20	
Selenium	mg/kg	5.4	66.2	66.7	67.5	69.2	94	96	75-125	3	20	
Strontium	mg/kg	77.3	66.2	66.7	135	137	87	90	75-125	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2875495 2875496

Parameter	Units	10425111001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vanadium	mg/kg	124	66.2	66.7	199	207	113	124	75-125	4	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529626 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005

SAMPLE DUPLICATE: 2874677

Parameter	Units	10425327002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	28.4	28.5	1	30	

SAMPLE DUPLICATE: 2874678

Parameter	Units	10425111005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	27.4	30.5	10	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529638
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10425111006

SAMPLE DUPLICATE: 2874717

Parameter	Units	10425324012 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	12.7	11.8	8	30	

SAMPLE DUPLICATE: 2875004

Parameter	Units	12106379001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	52.5	53.3	1	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529503 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2873977 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	03/28/18 21:05	
1,1,1-Trichloroethane	ug/kg	ND	50.0	03/28/18 21:05	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	03/28/18 21:05	N2
1,1,2-Trichloroethane	ug/kg	ND	50.0	03/28/18 21:05	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	03/28/18 21:05	
1,1-Dichloroethane	ug/kg	ND	50.0	03/28/18 21:05	
1,1-Dichloroethene	ug/kg	ND	50.0	03/28/18 21:05	
1,1-Dichloropropene	ug/kg	ND	50.0	03/28/18 21:05	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	03/28/18 21:05	
1,2,3-Trichloropropane	ug/kg	ND	200	03/28/18 21:05	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	03/28/18 21:05	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	03/28/18 21:05	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	03/28/18 21:05	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	03/28/18 21:05	
1,2-Dichlorobenzene	ug/kg	ND	50.0	03/28/18 21:05	
1,2-Dichloroethane	ug/kg	ND	50.0	03/28/18 21:05	
1,2-Dichloropropane	ug/kg	ND	50.0	03/28/18 21:05	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	03/28/18 21:05	
1,3-Dichlorobenzene	ug/kg	ND	50.0	03/28/18 21:05	
1,3-Dichloropropane	ug/kg	ND	50.0	03/28/18 21:05	
1,4-Dichlorobenzene	ug/kg	ND	50.0	03/28/18 21:05	
2,2-Dichloropropane	ug/kg	ND	200	03/28/18 21:05	
2-Butanone (MEK)	ug/kg	ND	250	03/28/18 21:05	
2-Chlorotoluene	ug/kg	ND	50.0	03/28/18 21:05	
4-Chlorotoluene	ug/kg	ND	50.0	03/28/18 21:05	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	03/28/18 21:05	
Acetone	ug/kg	ND	1000	03/28/18 21:05	
Allyl chloride	ug/kg	ND	200	03/28/18 21:05	
Benzene	ug/kg	ND	20.0	03/28/18 21:05	
Bromobenzene	ug/kg	ND	50.0	03/28/18 21:05	
Bromochloromethane	ug/kg	ND	50.0	03/28/18 21:05	
Bromodichloromethane	ug/kg	ND	50.0	03/28/18 21:05	
Bromoform	ug/kg	ND	200	03/28/18 21:05	
Bromomethane	ug/kg	ND	500	03/28/18 21:05	
Carbon tetrachloride	ug/kg	ND	50.0	03/28/18 21:05	
Chlorobenzene	ug/kg	ND	50.0	03/28/18 21:05	
Chloroethane	ug/kg	ND	500	03/28/18 21:05	
Chloroform	ug/kg	ND	50.0	03/28/18 21:05	
Chloromethane	ug/kg	ND	200	03/28/18 21:05	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	03/28/18 21:05	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	03/28/18 21:05	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

METHOD BLANK: 2873977 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	03/28/18 21:05	
Dibromomethane	ug/kg	ND	50.0	03/28/18 21:05	
Dichlorodifluoromethane	ug/kg	ND	200	03/28/18 21:05	
Dichlorofluoromethane	ug/kg	ND	500	03/28/18 21:05	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	03/28/18 21:05	
Ethylbenzene	ug/kg	ND	50.0	03/28/18 21:05	
Hexachloro-1,3-butadiene	ug/kg	ND	250	03/28/18 21:05	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	03/28/18 21:05	
Methyl-tert-butyl ether	ug/kg	ND	50.0	03/28/18 21:05	
Methylene Chloride	ug/kg	ND	200	03/28/18 21:05	
n-Butylbenzene	ug/kg	ND	50.0	03/28/18 21:05	
n-Propylbenzene	ug/kg	ND	50.0	03/28/18 21:05	
Naphthalene	ug/kg	ND	200	03/28/18 21:05	
p-Isopropyltoluene	ug/kg	ND	50.0	03/28/18 21:05	
sec-Butylbenzene	ug/kg	ND	50.0	03/28/18 21:05	
Styrene	ug/kg	ND	50.0	03/28/18 21:05	
tert-Butylbenzene	ug/kg	ND	50.0	03/28/18 21:05	
Tetrachloroethene	ug/kg	ND	50.0	03/28/18 21:05	
Tetrahydrofuran	ug/kg	ND	2000	03/28/18 21:05	
Toluene	ug/kg	ND	50.0	03/28/18 21:05	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	03/28/18 21:05	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	03/28/18 21:05	
Trichloroethene	ug/kg	ND	50.0	03/28/18 21:05	N2
Trichlorofluoromethane	ug/kg	ND	200	03/28/18 21:05	
Vinyl chloride	ug/kg	ND	20.0	03/28/18 21:05	
Xylene (Total)	ug/kg	ND	150	03/28/18 21:05	
1,2-Dichloroethane-d4 (S)	%.	94	75-125	03/28/18 21:05	
4-Bromofluorobenzene (S)	%.	102	75-125	03/28/18 21:05	
Toluene-d8 (S)	%.	99	75-125	03/28/18 21:05	

LABORATORY CONTROL SAMPLE & LCSD: 2873978 2873979

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	899	871	90	87	59-125	3	20	
1,1,1-Trichloroethane	ug/kg	1000	906	866	91	87	59-125	5	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	933	916	93	92	58-125	2	20	N2
1,1,2-Trichloroethane	ug/kg	1000	905	857	91	86	64-125	5	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	844	836	84	84	65-125	1	20	
1,1-Dichloroethane	ug/kg	1000	873	834	87	83	63-125	5	20	
1,1-Dichloroethene	ug/kg	1000	908	896	91	90	59-125	1	20	
1,1-Dichloropropene	ug/kg	1000	974	944	97	94	64-125	3	20	
1,2,3-Trichlorobenzene	ug/kg	1000	845	863	84	86	55-126	2	20	
1,2,3-Trichloropropane	ug/kg	1000	905	833	91	83	62-125	8	20	
1,2,4-Trichlorobenzene	ug/kg	1000	864	883	86	88	62-125	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

LABORATORY CONTROL SAMPLE & LCSD: 2873978 2873979

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	914	869	91	87	59-125	5	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	1970	1850	79	74	54-125	7	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	907	836	91	84	64-125	8	20	
1,2-Dichlorobenzene	ug/kg	1000	905	849	91	85	63-125	6	20	
1,2-Dichloroethane	ug/kg	1000	809	768	81	77	57-125	5	20	
1,2-Dichloropropane	ug/kg	1000	881	846	88	85	67-125	4	20	
1,3,5-Trimethylbenzene	ug/kg	1000	903	884	90	88	59-125	2	20	
1,3-Dichlorobenzene	ug/kg	1000	848	839	85	84	64-125	1	20	
1,3-Dichloropropane	ug/kg	1000	901	849	90	85	64-125	6	20	
1,4-Dichlorobenzene	ug/kg	1000	866	823	87	82	63-125	5	20	
2,2-Dichloropropane	ug/kg	1000	915	865	91	87	37-126	6	20	
2-Butanone (MEK)	ug/kg	5000	4500	3950	90	79	48-125	13	20	
2-Chlorotoluene	ug/kg	1000	867	847	87	85	62-125	2	20	
4-Chlorotoluene	ug/kg	1000	916	881	92	88	63-125	4	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4400	4190	88	84	52-135	5	20	
Acetone	ug/kg	5000	5760	5420	115	108	65-125	6	20	
Allyl chloride	ug/kg	1000	850	823	85	82	52-125	3	20	
Benzene	ug/kg	1000	889	852	89	85	61-125	4	20	
Bromobenzene	ug/kg	1000	907	864	91	86	64-125	5	20	
Bromochloromethane	ug/kg	1000	903	854	90	85	65-125	6	20	
Bromodichloromethane	ug/kg	1000	884	863	88	86	57-125	2	20	
Bromoform	ug/kg	1000	761	768	76	77	57-125	1	20	
Bromomethane	ug/kg	1000	882	867	88	87	60-125	2	20	
Carbon tetrachloride	ug/kg	1000	895	859	89	86	58-125	4	20	
Chlorobenzene	ug/kg	1000	886	856	89	86	66-125	3	20	
Chloroethane	ug/kg	1000	890	865	89	86	62-125	3	20	
Chloroform	ug/kg	1000	801	771	80	77	59-125	4	20	
Chloromethane	ug/kg	1000	839	854	84	85	50-125	2	20	
cis-1,2-Dichloroethene	ug/kg	1000	872	819	87	82	61-125	6	20	
cis-1,3-Dichloropropene	ug/kg	1000	891	844	89	84	61-125	5	20	
Dibromochloromethane	ug/kg	1000	812	821	81	82	60-125	1	20	
Dibromomethane	ug/kg	1000	885	842	88	84	69-125	5	20	
Dichlorodifluoromethane	ug/kg	1000	758	771	76	77	38-125	2	20	
Dichlorofluoromethane	ug/kg	1000	812	852	81	85	67-125	5	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1610	1600	161	160	60-125	1	20	L3
Ethylbenzene	ug/kg	1000	897	854	90	85	62-125	5	20	
Hexachloro-1,3-butadiene	ug/kg	1000	841	890	84	89	56-125	6	20	
Isopropylbenzene (Cumene)	ug/kg	1000	942	911	94	91	65-125	3	20	
Methyl-tert-butyl ether	ug/kg	1000	863	817	86	82	59-125	5	20	
Methylene Chloride	ug/kg	1000	900	848	90	85	64-125	6	20	
n-Butylbenzene	ug/kg	1000	913	892	91	89	59-125	2	20	
n-Propylbenzene	ug/kg	1000	911	881	91	88	61-125	3	20	
Naphthalene	ug/kg	1000	1050	928	105	93	53-125	12	20	
p-Isopropyltoluene	ug/kg	1000	924	890	92	89	63-125	4	20	
sec-Butylbenzene	ug/kg	1000	923	906	92	91	62-125	2	20	
Styrene	ug/kg	1000	937	918	94	92	66-125	2	20	
tert-Butylbenzene	ug/kg	1000	913	877	91	88	64-125	4	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

LABORATORY CONTROL SAMPLE & LCSD: 2873978 2873979

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	906	889	91	89	67-125	2	20	
Tetrahydrofuran	ug/kg	10000	11500	11200	115	112	62-125	3	20	CH
Toluene	ug/kg	1000	900	864	90	86	61-125	4	20	
trans-1,2-Dichloroethene	ug/kg	1000	935	880	94	88	64-125	6	20	
trans-1,3-Dichloropropene	ug/kg	1000	907	859	91	86	56-125	5	20	
Trichloroethene	ug/kg	1000	854	818	85	82	67-125	4	20	N2
Trichlorofluoromethane	ug/kg	1000	815	837	82	84	65-125	3	20	
Vinyl chloride	ug/kg	1000	904	927	90	93	57-125	3	20	
Xylene (Total)	ug/kg	3000	2750	2640	92	88	62-125	4	20	
1,2-Dichloroethane-d4 (S)	%.				96	95	75-125			
4-Bromofluorobenzene (S)	%.				101	104	75-125			
Toluene-d8 (S)	%.				100	102	75-125			

MATRIX SPIKE SAMPLE: 2873980

Parameter	Units	10425099001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	1120	1090	98	64-146	
1,1,1-Trichloroethane	ug/kg	ND	1120	1180	106	56-148	
1,1,2,2-Tetrachloroethane	ug/kg	ND	1120	1100	99	36-150	N2
1,1,2-Trichloroethane	ug/kg	ND	1120	1130	101	67-148	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	1120	1020	92	60-142	
1,1-Dichloroethane	ug/kg	ND	1120	1020	92	57-140	
1,1-Dichloroethene	ug/kg	ND	1120	1100	98	59-139	
1,1-Dichloropropene	ug/kg	ND	1120	1170	105	61-142	
1,2,3-Trichlorobenzene	ug/kg	ND	1120	1050	94	69-150	
1,2,3-Trichloropropane	ug/kg	ND	1120	1020	92	64-150	
1,2,4-Trichlorobenzene	ug/kg	ND	1120	1080	97	71-149	
1,2,4-Trimethylbenzene	ug/kg	ND	1120	1120	97	67-149	
1,2-Dibromo-3-chloropropane	ug/kg	ND	2790	2450	88	61-150	
1,2-Dibromoethane (EDB)	ug/kg	ND	1120	1090	97	67-147	
1,2-Dichlorobenzene	ug/kg	ND	1120	1020	92	70-142	
1,2-Dichloroethane	ug/kg	ND	1120	968	87	58-132	
1,2-Dichloropropane	ug/kg	ND	1120	1080	97	64-144	
1,3,5-Trimethylbenzene	ug/kg	ND	1120	1060	94	71-146	
1,3-Dichlorobenzene	ug/kg	ND	1120	1020	91	71-142	
1,3-Dichloropropane	ug/kg	ND	1120	1070	96	68-140	
1,4-Dichlorobenzene	ug/kg	ND	1120	991	89	68-142	
2,2-Dichloropropane	ug/kg	ND	1120	1190	107	34-150	
2-Butanone (MEK)	ug/kg	ND	5570	5770	104	51-150	
2-Chlorotoluene	ug/kg	ND	1120	1030	92	66-144	
4-Chlorotoluene	ug/kg	ND	1120	1030	93	66-140	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	5570	5310	95	63-150	
Acetone	ug/kg	ND	5570	6740	121	54-150	
Allyl chloride	ug/kg	ND	1120	1070	96	53-135	
Benzene	ug/kg	1290	1120	2490	107	65-135	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

MATRIX SPIKE SAMPLE: 2873980

Parameter	Units	10425099001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/kg	ND	1120	1030	92	71-141	
Bromochloromethane	ug/kg	ND	1120	1050	94	62-145	
Bromodichloromethane	ug/kg	ND	1120	1140	103	59-148	
Bromoform	ug/kg	ND	1120	973	87	57-145	
Bromomethane	ug/kg	ND	1120	954	86	51-129	
Carbon tetrachloride	ug/kg	ND	1120	1160	104	55-144	
Chlorobenzene	ug/kg	ND	1120	1070	96	70-142	
Chloroethane	ug/kg	ND	1120	900	81	61-135	
Chloroform	ug/kg	ND	1120	949	85	58-135	
Chloromethane	ug/kg	ND	1120	910	82	37-125	
cis-1,2-Dichloroethene	ug/kg	ND	1120	1020	92	60-138	
cis-1,3-Dichloropropene	ug/kg	ND	1120	1150	103	62-142	
Dibromochloromethane	ug/kg	ND	1120	1030	93	65-141	
Dibromomethane	ug/kg	ND	1120	1080	97	72-150	
Dichlorodifluoromethane	ug/kg	ND	1120	713	64	30-125	
Dichlorofluoromethane	ug/kg	ND	1120	883	79	62-148	
Diethyl ether (Ethyl ether)	ug/kg	ND	1120	2070	185	62-135	M0
Ethylbenzene	ug/kg	277	1120	1340	95	72-138	
Hexachloro-1,3-butadiene	ug/kg	ND	1120	1220	109	38-150	
Isopropylbenzene (Cumene)	ug/kg	ND	1120	1120	100	75-148	
Methyl-tert-butyl ether	ug/kg	ND	1120	1000	90	63-139	
Methylene Chloride	ug/kg	ND	1120	973	87	58-135	
n-Butylbenzene	ug/kg	ND	1120	1140	102	63-150	
n-Propylbenzene	ug/kg	ND	1120	1090	97	70-146	
Naphthalene	ug/kg	ND	1120	1090	97	63-150	
p-Isopropyltoluene	ug/kg	165	1120	1280	100	72-150	
sec-Butylbenzene	ug/kg	ND	1120	1110	99	66-150	
Styrene	ug/kg	ND	1120	1110	100	72-146	
tert-Butylbenzene	ug/kg	ND	1120	1080	97	71-148	
Tetrachloroethene	ug/kg	ND	1120	1090	98	70-150	
Tetrahydrofuran	ug/kg	ND	11200	14100	127	62-150	
Toluene	ug/kg	985	1120	2400	127	65-142	
trans-1,2-Dichloroethene	ug/kg	ND	1120	1070	96	55-141	
trans-1,3-Dichloropropene	ug/kg	ND	1120	1090	98	57-147	
Trichloroethene	ug/kg	ND	1120	1090	98	62-150	N2
Trichlorofluoromethane	ug/kg	ND	1120	867	78	51-150	
Vinyl chloride	ug/kg	ND	1120	978	88	45-132	
Xylene (Total)	ug/kg	1060	3350	4460	101	75-140	
1,2-Dichloroethane-d4 (S)	%.				93	75-125	
4-Bromofluorobenzene (S)	%.				99	75-125	
Toluene-d8 (S)	%.				99	75-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

SAMPLE DUPLICATE: 2873981

Parameter	Units	10425099002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	N2
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	ND		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	ND		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

SAMPLE DUPLICATE: 2873981

Parameter	Units	10425099002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	ND		30	
n-Propylbenzene	ug/kg	ND	ND		30	
Naphthalene	ug/kg	ND	ND		30	
p-Isopropyltoluene	ug/kg	ND	ND		30	
sec-Butylbenzene	ug/kg	ND	ND		30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	N2
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	92	92	3		
4-Bromofluorobenzene (S)	%.	102	102	2		
Toluene-d8 (S)	%.	97	99	0		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529466 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2873686 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/05/18 18:14	
4,4'-DDE	ug/kg	ND	3.3	04/05/18 18:14	
4,4'-DDT	ug/kg	ND	3.3	04/05/18 18:14	
Aldrin	ug/kg	ND	1.7	04/05/18 18:14	
alpha-BHC	ug/kg	ND	1.7	04/05/18 18:14	
alpha-Chlordane	ug/kg	ND	1.7	04/05/18 18:14	
beta-BHC	ug/kg	ND	1.7	04/05/18 18:14	
Chlordane (Technical)	ug/kg	ND	16.7	04/05/18 18:14	
delta-BHC	ug/kg	ND	1.7	04/05/18 18:14	
Dieldrin	ug/kg	ND	3.3	04/05/18 18:14	
Endosulfan I	ug/kg	ND	1.7	04/05/18 18:14	
Endosulfan II	ug/kg	ND	3.3	04/05/18 18:14	
Endosulfan sulfate	ug/kg	ND	3.3	04/05/18 18:14	
Endrin	ug/kg	ND	3.3	04/05/18 18:14	
Endrin aldehyde	ug/kg	ND	3.3	04/05/18 18:14	
Endrin ketone	ug/kg	ND	3.3	04/05/18 18:14	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/05/18 18:14	
gamma-Chlordane	ug/kg	ND	1.7	04/05/18 18:14	
Heptachlor	ug/kg	ND	1.7	04/05/18 18:14	
Heptachlor epoxide	ug/kg	ND	1.7	04/05/18 18:14	
Methoxychlor	ug/kg	ND	16.7	04/05/18 18:14	
Toxaphene	ug/kg	ND	50.0	04/05/18 18:14	
Decachlorobiphenyl (S)	%.	95	30-150	04/05/18 18:14	
Tetrachloro-m-xylene (S)	%.	91	30-150	04/05/18 18:14	

LABORATORY CONTROL SAMPLE: 2873687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	33.1	99	62-127	
4,4'-DDE	ug/kg	33.3	32.4	97	66-125	
4,4'-DDT	ug/kg	33.3	33.2	99	67-128	CH
Aldrin	ug/kg	16.7	14.5	87	66-125	
alpha-BHC	ug/kg	16.7	14.8	89	64-125	
alpha-Chlordane	ug/kg	16.7	15.2	91	68-125	
beta-BHC	ug/kg	16.7	15.3	92	69-125	
delta-BHC	ug/kg	16.7	9.8	59	42-133	
Dieldrin	ug/kg	33.3	33.7	101	69-126	
Endosulfan I	ug/kg	16.7	14.1	85	63-125	
Endosulfan II	ug/kg	33.3	33.0	99	69-125	
Endosulfan sulfate	ug/kg	33.3	27.6	83	56-137	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

LABORATORY CONTROL SAMPLE: 2873687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	31.1	93	69-125	
Endrin aldehyde	ug/kg	33.3	31.3	94	65-125	
Endrin ketone	ug/kg	33.3	34.0	102	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	15.3	92	67-125	
gamma-Chlordane	ug/kg	16.7	13.8	83	63-125	
Heptachlor	ug/kg	16.7	15.3	92	69-125	
Heptachlor epoxide	ug/kg	16.7	15.3	92	68-125	
Methoxychlor	ug/kg	167	165	99	65-134	CH
Decachlorobiphenyl (S)	%.			90	30-150	
Tetrachloro-m-xylene (S)	%.			86	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873688 2873689

Parameter	Units	10424793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	166	166	147	154	89	93	56-125	5	20	
4,4'-DDE	ug/kg	ND	166	166	154	164	93	99	32-150	6	20	
4,4'-DDT	ug/kg	ND	166	166	154	158	93	95	60-132	2	20	CH
Aldrin	ug/kg	ND	82.5	83	61.8	64.2	75	78	56-125	4	20	
alpha-BHC	ug/kg	ND	82.5	83	74.1	80.9	90	98	54-136	9	20	
alpha-Chlordane	ug/kg	147	82.5	83	169	140	26	-9	54-133	19	20	M1
beta-BHC	ug/kg	64.3	82.5	83	79.8	87.9	19	28	30-150	10	20	M1
delta-BHC	ug/kg	ND	82.5	83	49.8	54.9	60	66	45-145	10	20	
Dieldrin	ug/kg	ND	166	166	142	143	86	86	47-150	0	20	
Endosulfan I	ug/kg	ND	82.5	83	66.2	70.2	80	85	35-145	6	20	
Endosulfan II	ug/kg	ND	166	166	139	142	84	86	50-147	2	20	
Endosulfan sulfate	ug/kg	ND	166	166	118	120	71	73	54-132	2	20	
Endrin	ug/kg	ND	166	166	126	128	76	78	62-125	2	20	
Endrin aldehyde	ug/kg	ND	166	166	132	132	80	80	33-150	1	20	
Endrin ketone	ug/kg	ND	166	166	144	146	87	88	56-144	1	20	
gamma-BHC (Lindane)	ug/kg	ND	82.5	83	66.3	68.3	80	82	63-125	3	20	
gamma-Chlordane	ug/kg	129	82.5	83	141	118	14	-14	45-132	18	20	M1
Heptachlor	ug/kg	ND	82.5	83	77.5	95.3	94	115	51-142	21	20	R1
Heptachlor epoxide	ug/kg	ND	82.5	83	65.2	69.5	79	84	50-142	6	20	
Methoxychlor	ug/kg	ND	825	830	810	820	98	99	58-139	1	20	CH
Decachlorobiphenyl (S)	%.						60	64	30-150			
Tetrachloro-m-xylene (S)	%.						57	64	30-150			6M, D4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529467 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2873690 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/02/18 10:11	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/02/18 10:11	
Decachlorobiphenyl (S)	%.	88	30-134	04/02/18 10:11	
Tetrachloro-m-xylene (S)	%.	88	48-125	04/02/18 10:11	

LABORATORY CONTROL SAMPLE: 2873691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	569	85	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	575	86	62-125	
Decachlorobiphenyl (S)	%.			90	30-134	
Tetrachloro-m-xylene (S)	%.			90	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873692 2873693

Parameter	Units	10424793002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	930	930	789	769	85	83	30-150	3	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	930	930	906	896	97	96	30-138	1	30	
Decachlorobiphenyl (S)	%.						77	74	30-134			
Tetrachloro-m-xylene (S)	%.						76	69	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529689 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2874965 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/05/18 11:11	
1,2-Dichlorobenzene	ug/kg	ND	330	04/05/18 11:11	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/05/18 11:11	
1,3-Dichlorobenzene	ug/kg	ND	330	04/05/18 11:11	
1,4-Dichlorobenzene	ug/kg	ND	330	04/05/18 11:11	
1-Methylnaphthalene	ug/kg	ND	330	04/05/18 11:11	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/05/18 11:11	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/05/18 11:11	
2,4-Dichlorophenol	ug/kg	ND	330	04/05/18 11:11	
2,4-Dimethylphenol	ug/kg	ND	330	04/05/18 11:11	
2,4-Dinitrophenol	ug/kg	ND	330	04/05/18 11:11	
2,4-Dinitrotoluene	ug/kg	ND	330	04/05/18 11:11	
2,6-Dinitrotoluene	ug/kg	ND	330	04/05/18 11:11	
2-Chloronaphthalene	ug/kg	ND	330	04/05/18 11:11	
2-Chlorophenol	ug/kg	ND	330	04/05/18 11:11	
2-Methylnaphthalene	ug/kg	ND	330	04/05/18 11:11	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/05/18 11:11	
2-Nitroaniline	ug/kg	ND	330	04/05/18 11:11	
2-Nitrophenol	ug/kg	ND	330	04/05/18 11:11	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/05/18 11:11	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/05/18 11:11	
3-Nitroaniline	ug/kg	ND	330	04/05/18 11:11	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/05/18 11:11	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/05/18 11:11	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/05/18 11:11	
4-Chloroaniline	ug/kg	ND	330	04/05/18 11:11	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/05/18 11:11	
4-Nitroaniline	ug/kg	ND	330	04/05/18 11:11	
4-Nitrophenol	ug/kg	ND	330	04/05/18 11:11	
Acenaphthene	ug/kg	ND	330	04/05/18 11:11	
Acenaphthylene	ug/kg	ND	330	04/05/18 11:11	
Anthracene	ug/kg	ND	330	04/05/18 11:11	
Benzo(a)anthracene	ug/kg	ND	330	04/05/18 11:11	
Benzo(a)pyrene	ug/kg	ND	330	04/05/18 11:11	
Benzo(b)fluoranthene	ug/kg	ND	330	04/05/18 11:11	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/05/18 11:11	
Benzo(k)fluoranthene	ug/kg	ND	330	04/05/18 11:11	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/05/18 11:11	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/05/18 11:11	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/05/18 11:11	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/05/18 11:11	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

METHOD BLANK: 2874965 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/05/18 11:11	
Carbazole	ug/kg	ND	330	04/05/18 11:11	
Chrysene	ug/kg	ND	330	04/05/18 11:11	
Di-n-butylphthalate	ug/kg	ND	330	04/05/18 11:11	
Di-n-octylphthalate	ug/kg	ND	330	04/05/18 11:11	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/05/18 11:11	
Dibenzofuran	ug/kg	ND	330	04/05/18 11:11	
Diethylphthalate	ug/kg	ND	330	04/05/18 11:11	
Dimethylphthalate	ug/kg	ND	330	04/05/18 11:11	
Fluoranthene	ug/kg	ND	330	04/05/18 11:11	
Fluorene	ug/kg	ND	330	04/05/18 11:11	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/05/18 11:11	
Hexachlorobenzene	ug/kg	ND	330	04/05/18 11:11	
Hexachloroethane	ug/kg	ND	330	04/05/18 11:11	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/05/18 11:11	
Isophorone	ug/kg	ND	330	04/05/18 11:11	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/05/18 11:11	
N-Nitrosodimethylamine	ug/kg	ND	330	04/05/18 11:11	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/05/18 11:11	
Naphthalene	ug/kg	ND	330	04/05/18 11:11	
Nitrobenzene	ug/kg	ND	330	04/05/18 11:11	
Pentachlorophenol	ug/kg	ND	670	04/05/18 11:11	
Phenanthrene	ug/kg	ND	330	04/05/18 11:11	
Phenol	ug/kg	ND	330	04/05/18 11:11	
Pyrene	ug/kg	ND	330	04/05/18 11:11	
2,4,6-Tribromophenol (S)	%.	81	60-125	04/05/18 11:11	
2-Fluorobiphenyl (S)	%.	99	30-132	04/05/18 11:11	
2-Fluorophenol (S)	%.	92	40-125	04/05/18 11:11	
Nitrobenzene-d5 (S)	%.	80	43-125	04/05/18 11:11	
p-Terphenyl-d14 (S)	%.	109	62-125	04/05/18 11:11	
Phenol-d6 (S)	%.	91	48-125	04/05/18 11:11	

LABORATORY CONTROL SAMPLE: 2874966

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1310	79	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1270	76	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1280	77	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1260	76	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1300	78	39-125	
1-Methylnaphthalene	ug/kg	1670	1340	80	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1430	86	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1430	86	61-125	
2,4-Dichlorophenol	ug/kg	1670	1320	79	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

LABORATORY CONTROL SAMPLE: 2874966

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1280	77	51-125	
2,4-Dinitrophenol	ug/kg	1670	936	56	30-132	7M
2,4-Dinitrotoluene	ug/kg	1670	1410	85	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1390	84	63-125	
2-Chloronaphthalene	ug/kg	1670	1390	83	61-125	
2-Chlorophenol	ug/kg	1670	1310	79	46-125	
2-Methylnaphthalene	ug/kg	1670	1360	82	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1250	75	50-125	
2-Nitroaniline	ug/kg	1670	1270	76	61-125	
2-Nitrophenol	ug/kg	1670	1350	81	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1270	76	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1350	81	47-125	
3-Nitroaniline	ug/kg	1670	1260	75	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1130J	68	30-141	7M
4-Bromophenylphenyl ether	ug/kg	1670	1390	84	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1340	80	64-125	
4-Chloroaniline	ug/kg	1670	1080	65	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1420	85	64-125	
4-Nitroaniline	ug/kg	1670	1330	80	59-125	
4-Nitrophenol	ug/kg	1670	1170	70	54-125	
Acenaphthene	ug/kg	1670	1370	82	62-125	
Acenaphthylene	ug/kg	1670	1430	86	61-125	
Anthracene	ug/kg	1670	1470	88	66-125	
Benzo(a)anthracene	ug/kg	1670	1540	92	69-125	
Benzo(a)pyrene	ug/kg	1670	1490	89	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1480	89	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1490	89	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1460	88	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1270	76	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1170	70	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1140	68	37-125	
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1480	89	69-131	
Butylbenzylphthalate	ug/kg	1670	1470	88	69-129	
Carbazole	ug/kg	1670	1450	87	66-125	
Chrysene	ug/kg	1670	1500	90	68-125	
Di-n-butylphthalate	ug/kg	1670	1410	85	69-125	
Di-n-octylphthalate	ug/kg	1670	1600	96	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1490	89	64-125	
Dibenzofuran	ug/kg	1670	1430	86	65-125	
Diethylphthalate	ug/kg	1670	1410	84	67-125	
Dimethylphthalate	ug/kg	1670	1410	85	67-125	
Fluoranthene	ug/kg	1670	1450	87	66-125	
Fluorene	ug/kg	1670	1400	84	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1270	76	40-125	
Hexachlorobenzene	ug/kg	1670	1390	83	62-125	
Hexachloroethane	ug/kg	1670	1200	72	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1510	91	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

LABORATORY CONTROL SAMPLE: 2874966

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1310	79	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1250	75	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1260	76	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1420	85	65-125	
Naphthalene	ug/kg	1670	1340	81	48-125	
Nitrobenzene	ug/kg	1670	1210	73	48-125	
Pentachlorophenol	ug/kg	1670	1220	73	41-125	
Phenanthrene	ug/kg	1670	1450	87	66-125	
Phenol	ug/kg	1670	1280	77	46-125	
Pyrene	ug/kg	1670	1510	90	69-125	
2,4,6-Tribromophenol (S)	%.			89	60-125	
2-Fluorobiphenyl (S)	%.			93	30-132	
2-Fluorophenol (S)	%.			85	40-125	
Nitrobenzene-d5 (S)	%.			78	43-125	
p-Terphenyl-d14 (S)	%.			100	62-125	
Phenol-d6 (S)	%.			85	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874967 2874968

Parameter	Units	10425121002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	<66.6	1730	1730	1210	1060	70	61	30-127	13	30	
1,2-Dichlorobenzene	ug/kg	<64.8	1730	1730	1210	1050	70	61	30-125	14	30	
1,2-Diphenylhydrazine	ug/kg	<62.0	1730	1730	1220	1090	71	63	30-150	11	30	
1,3-Dichlorobenzene	ug/kg	<64.0	1730	1730	1200	1060	69	61	30-125	12	30	
1,4-Dichlorobenzene	ug/kg	<62.5	1730	1730	1200	1060	70	62	30-125	12	30	
1-Methylnaphthalene	ug/kg	<53.9	1730	1730	1270	1130	73	66	42-125	11	30	
2,4,5-Trichlorophenol	ug/kg	<67.0	1730	1730	1380	1220	80	71	30-150	12	30	
2,4,6-Trichlorophenol	ug/kg	<48.7	1730	1730	1380	1210	80	70	30-150	14	30	
2,4-Dichlorophenol	ug/kg	<64.7	1730	1730	1290	1140	74	66	30-135	12	30	
2,4-Dimethylphenol	ug/kg	<129	1730	1730	1200	1080	69	63	30-148	10	30	
2,4-Dinitrophenol	ug/kg	<77.2	1730	1730	326J	351	19	20	30-125		30	7M,M1
2,4-Dinitrotoluene	ug/kg	<46.4	1730	1730	1340	1220	77	71	30-150	9	30	
2,6-Dinitrotoluene	ug/kg	<47.9	1730	1730	1340	1200	78	70	30-150	11	30	
2-Chloronaphthalene	ug/kg	<48.7	1730	1730	1330	1160	77	67	30-138	14	30	
2-Chlorophenol	ug/kg	<68.2	1730	1730	1220	1060	70	61	30-130	14	30	
2-Methylnaphthalene	ug/kg	<53.2	1730	1730	1280	1120	74	65	46-125	13	30	
2-Methylphenol(o-Cresol)	ug/kg	<86.4	1730	1730	1150	1000	67	58	30-133	14	30	
2-Nitroaniline	ug/kg	<75.8	1730	1730	1240	1120	72	65	30-150	10	30	
2-Nitrophenol	ug/kg	<64.6	1730	1730	1200	1080	70	62	30-134	11	30	
3&4-Methylphenol(m&p Cresol)	ug/kg	<77.4	1730	1730	1220	1060	70	62	30-138	14	30	
3,3'-Dichlorobenzidine	ug/kg	<82.1	1730	1730	1550	1420	90	82	30-149	9	30	
3-Nitroaniline	ug/kg	<84.0	1730	1730	1280	1190	74	69	30-150	7	30	
4,6-Dinitro-2-methylphenol	ug/kg	<138	1730	1730	441J	462J	26	27	30-133		30	7M,M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874967 2874968

Parameter	Units	10425121002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	<57.9	1730	1730	1310	1170	76	68	44-125	11	30	
4-Chloro-3-methylphenol	ug/kg	<47.6	1730	1730	1290	1180	75	69	30-150	9	30	
4-Chloroaniline	ug/kg	<96.1	1730	1730	1040	1050	60	61	30-125	1	30	
4-Chlorophenylphenyl ether	ug/kg	<47.0	1730	1730	1360	1210	79	70	44-125	12	30	
4-Nitroaniline	ug/kg	<61.2	1730	1730	1220	1130	71	65	30-150	8	30	
4-Nitrophenol	ug/kg	<99.1	1730	1730	1120	991	65	57	30-150	12	30	
Acenaphthene	ug/kg	<56.2	1730	1730	1270	1130	74	65	40-125	12	30	
Acenaphthylene	ug/kg	<47.1	1730	1730	1350	1190	78	69	30-150	13	30	
Anthracene	ug/kg	<49.4	1730	1730	1360	1210	79	70	30-150	12	30	
Benzo(a)anthracene	ug/kg	<39.9	1730	1730	1430	1260	83	73	30-150	13	30	
Benzo(a)pyrene	ug/kg	<38.9	1730	1730	1410	1260	81	73	30-150	11	30	
Benzo(b)fluoranthene	ug/kg	<41.6	1730	1730	1460	1330	85	77	30-150	10	30	
Benzo(g,h,i)perylene	ug/kg	<29.7	1730	1730	1300	1180	75	69	30-150	9	30	
Benzo(k)fluoranthene	ug/kg	<41.6	1730	1730	1390	1220	80	70	30-150	13	30	
bis(2-Chloroethoxy)methane	ug/kg	<66.6	1730	1730	1180	1060	69	62	30-134	11	30	
bis(2-Chloroethyl) ether	ug/kg	<75.2	1730	1730	1080	954	63	55	30-125	13	30	
bis(2-Chloroisopropyl) ether	ug/kg	<79.7	1730	1730	1040	909	60	53	30-125	13	30	
bis(2-Ethylhexyl)phthalate	ug/kg	<87.8	1730	1730	1380	1220	80	71	30-150	12	30	
Butylbenzylphthalate	ug/kg	<76.0	1730	1730	1350	1200	78	69	30-150	12	30	
Carbazole	ug/kg	<46.1	1730	1730	1340	1200	78	70	41-125	11	30	
Chrysene	ug/kg	<34.5	1730	1730	1400	1260	81	73	30-150	11	30	
Di-n-butylphthalate	ug/kg	<47.0	1730	1730	1330	1180	77	68	30-150	12	30	
Di-n-octylphthalate	ug/kg	<105	1730	1730	1490	1300	86	75	30-150	14	30	
Dibenz(a,h)anthracene	ug/kg	<35.4	1730	1730	1310	1190	76	69	30-150	10	30	
Dibenzofuran	ug/kg	<49.9	1730	1730	1360	1210	79	70	45-125	12	30	
Diethylphthalate	ug/kg	<40.7	1730	1730	1350	1200	78	70	30-150	12	30	
Dimethylphthalate	ug/kg	<52.9	1730	1730	1380	1220	80	71	30-150	12	30	
Fluoranthene	ug/kg	<36.7	1730	1730	1360	1220	79	70	30-150	11	30	
Fluorene	ug/kg	<47.9	1730	1730	1360	1180	79	68	30-150	14	30	
Hexachloro-1,3-butadiene	ug/kg	<79.2	1730	1730	1190	1050	69	61	30-128	13	30	
Hexachlorobenzene	ug/kg	<44.4	1730	1730	1270	1150	74	67	30-150	10	30	
Hexachloroethane	ug/kg	<70.2	1730	1730	1050	917	61	53	30-125	14	30	
Indeno(1,2,3-cd)pyrene	ug/kg	<40.0	1730	1730	1330	1190	77	69	30-150	11	30	
Isophorone	ug/kg	<78.7	1730	1730	1240	1100	72	64	30-140	12	30	
N-Nitroso-di-n-propylamine	ug/kg	<105	1730	1730	1190	1020	69	59	30-147	15	30	
N-Nitrosodimethylamine	ug/kg	<89.9	1730	1730	1210	1080	70	63	30-125	11	30	
N-Nitrosodiphenylamine	ug/kg	<42.2	1730	1730	1310	1160	76	67	30-150	13	30	
Naphthalene	ug/kg	<65.3	1730	1730	1250	1080	72	63	44-125	14	30	
Nitrobenzene	ug/kg	<69.0	1730	1730	1150	1000	67	58	30-136	14	30	
Pentachlorophenol	ug/kg	<101	1730	1730	1110	1010	64	59	30-150	9	30	
Phenanthrene	ug/kg	<47.1	1730	1730	1340	1190	77	69	30-150	12	30	
Phenol	ug/kg	<66.4	1730	1730	1220	1050	71	61	30-129	15	30	
Pyrene	ug/kg	<36.2	1730	1730	1370	1240	79	72	30-150	10	30	
2,4,6-Tribromophenol (S)	%.						82	72	60-125			
2-Fluorobiphenyl (S)	%.						84	73	30-132			
2-Fluorophenol (S)	%.						76	66	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874967 2874968

Parameter	Units	10425121002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						70	61	43-125			
p-Terphenyl-d14 (S)	%.						90	79	62-125			
Phenol-d6 (S)	%.						77	67	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529470 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111006

METHOD BLANK: 2873704 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	03/30/18 12:54	
Acenaphthylene	ug/kg	ND	10.0	03/30/18 12:54	
Anthracene	ug/kg	ND	10.0	03/30/18 12:54	
Benzo(a)anthracene	ug/kg	ND	10.0	03/30/18 12:54	
Benzo(a)pyrene	ug/kg	ND	10.0	03/30/18 12:54	
Benzo(b)fluoranthene	ug/kg	ND	10.0	03/30/18 12:54	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	03/30/18 12:54	
Benzo(k)fluoranthene	ug/kg	ND	10.0	03/30/18 12:54	
Chrysene	ug/kg	ND	10.0	03/30/18 12:54	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	03/30/18 12:54	
Fluoranthene	ug/kg	ND	10.0	03/30/18 12:54	
Fluorene	ug/kg	ND	10.0	03/30/18 12:54	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	03/30/18 12:54	
Naphthalene	ug/kg	ND	10.0	03/30/18 12:54	
Phenanthrene	ug/kg	ND	10.0	03/30/18 12:54	
Pyrene	ug/kg	ND	10.0	03/30/18 12:54	
2-Fluorobiphenyl (S)	%.	78	42-125	03/30/18 12:54	
p-Terphenyl-d14 (S)	%.	93	57-125	03/30/18 12:54	

LABORATORY CONTROL SAMPLE: 2873705

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	26.2	79	52-125	
Acenaphthylene	ug/kg	33.3	27.7	83	50-125	
Anthracene	ug/kg	33.3	31.2	94	65-125	
Benzo(a)anthracene	ug/kg	33.3	31.5	94	60-125	
Benzo(a)pyrene	ug/kg	33.3	30.9	93	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	31.4	94	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	25.1	75	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	28.9	87	67-125	
Chrysene	ug/kg	33.3	28.7	86	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	23.7	71	63-125	
Fluoranthene	ug/kg	33.3	31.2	94	75-125	
Fluorene	ug/kg	33.3	25.9	78	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	24.5	73	63-125	
Naphthalene	ug/kg	33.3	26.0	78	49-125	
Phenanthrene	ug/kg	33.3	25.0	75	65-125	
Pyrene	ug/kg	33.3	29.0	87	64-125	
2-Fluorobiphenyl (S)	%.			78	42-125	
p-Terphenyl-d14 (S)	%.			91	57-125	

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2873706 2873707

Parameter	Units	10425098001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	34.9	34.8	26.2	26.6	75	76	30-125	1	30	
Acenaphthylene	ug/kg	ND	34.9	34.8	30.8	30.2	88	86	30-133	2	30	
Anthracene	ug/kg	0.018 mg/kg	34.9	34.8	39.3	41.9	60	67	30-150	6	30	
Benzo(a)anthracene	ug/kg	0.13 mg/kg	34.9	34.8	111	112	-58	-58	30-150	0	30	M1
Benzo(a)pyrene	ug/kg	0.13 mg/kg	34.9	34.8	112	110	-50	-55	30-150	2	30	M1
Benzo(b)fluoranthene	ug/kg	0.13 mg/kg	34.9	34.8	115	114	-35	-35	30-150	0	30	M1
Benzo(g,h,i)perylene	ug/kg	0.059 mg/kg	34.9	34.8	63.1	61.2	11	6	30-150	3	30	M1
Benzo(k)fluoranthene	ug/kg	0.064 mg/kg	34.9	34.8	66.9	68.4	10	14	30-150	2	30	M1
Chrysene	ug/kg	0.11 mg/kg	34.9	34.8	93.5	92.7	-37	-39	30-150	1	30	M1
Dibenz(a,h)anthracene	ug/kg	0.012 mg/kg	34.9	34.8	32.7	30.1	58	51	30-131	8	30	
Fluoranthene	ug/kg	0.24 mg/kg	34.9	34.8	176	176	-183	-183	30-150	0	30	M1
Fluorene	ug/kg	ND	34.9	34.8	27.0	26.3	77	75	30-147	2	30	
Indeno(1,2,3-cd)pyrene	ug/kg	0.049 mg/kg	34.9	34.8	55.6	51.5	19	7	30-150	8	30	M1
Naphthalene	ug/kg	ND	34.9	34.8	25.3	26.4	72	76	30-131	5	30	
Phenanthrene	ug/kg	0.057 mg/kg	34.9	34.8	49.2	53.5	-24	-11	30-150	8	30	M1
Pyrene	ug/kg	0.26 mg/kg	34.9	34.8	189	189	-211	-213	30-150	0	30	M1
2-Fluorobiphenyl (S)	%.						73	71	42-125			
p-Terphenyl-d14 (S)	%.						89	87	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 530507
QC Batch Method: EPA 3550
Analysis Method: EPA 8270D by SIM
Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10425111005

METHOD BLANK: 2879475
Matrix: Solid
Associated Lab Samples: 10425111005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/04/18 10:44	
Acenaphthylene	ug/kg	ND	10.0	04/04/18 10:44	
Anthracene	ug/kg	ND	10.0	04/04/18 10:44	
Benzo(a)anthracene	ug/kg	ND	10.0	04/04/18 10:44	
Benzo(a)pyrene	ug/kg	ND	10.0	04/04/18 10:44	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/04/18 10:44	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/04/18 10:44	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/04/18 10:44	
Chrysene	ug/kg	ND	10.0	04/04/18 10:44	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/04/18 10:44	
Fluoranthene	ug/kg	ND	10.0	04/04/18 10:44	
Fluorene	ug/kg	ND	10.0	04/04/18 10:44	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/04/18 10:44	
Naphthalene	ug/kg	ND	10.0	04/04/18 10:44	
Phenanthrene	ug/kg	ND	10.0	04/04/18 10:44	
Pyrene	ug/kg	ND	10.0	04/04/18 10:44	
2-Fluorobiphenyl (S)	%.	81	42-125	04/04/18 10:44	
p-Terphenyl-d14 (S)	%.	90	57-125	04/04/18 10:44	

LABORATORY CONTROL SAMPLE: 2879476

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	20.8	62	52-125	
Acenaphthylene	ug/kg	33.3	20.0	60	50-125	
Anthracene	ug/kg	33.3	28.2	85	65-125	
Benzo(a)anthracene	ug/kg	33.3	29.0	87	60-125	
Benzo(a)pyrene	ug/kg	33.3	28.9	87	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	32.7	98	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	31.6	95	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	29.1	87	67-125	
Chrysene	ug/kg	33.3	30.8	92	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	34.3	103	63-125	
Fluoranthene	ug/kg	33.3	30.5	92	75-125	
Fluorene	ug/kg	33.3	23.1	69	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	33.3	100	63-125	
Naphthalene	ug/kg	33.3	18.7	56	49-125	
Phenanthrene	ug/kg	33.3	28.0	84	65-125	
Pyrene	ug/kg	33.3	29.8	90	64-125	
2-Fluorobiphenyl (S)	%.			60	42-125	
p-Terphenyl-d14 (S)	%.			89	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2879477 2879478

Parameter	Units	10425835002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	35.1	35.1	20.6	25.3	59	72	30-125	21	30	
Acenaphthylene	ug/kg	ND	35.1	35.1	21.0	24.7	60	71	30-133	16	30	
Anthracene	ug/kg	ND	35.1	35.1	27.5	26.8	78	77	30-150	2	30	
Benzo(a)anthracene	ug/kg	ND	35.1	35.1	30.2	29.2	86	83	30-150	3	30	
Benzo(a)pyrene	ug/kg	ND	35.1	35.1	29.8	28.8	85	82	30-150	3	30	
Benzo(b)fluoranthene	ug/kg	ND	35.1	35.1	31.2	30.0	89	85	30-150	4	30	
Benzo(g,h,i)perylene	ug/kg	ND	35.1	35.1	33.2	33.1	95	94	30-150	0	30	
Benzo(k)fluoranthene	ug/kg	ND	35.1	35.1	33.3	31.9	95	91	30-150	4	30	
Chrysene	ug/kg	ND	35.1	35.1	30.5	29.5	87	84	30-150	4	30	
Dibenz(a,h)anthracene	ug/kg	ND	35.1	35.1	35.9	34.9	102	100	30-131	3	30	
Fluoranthene	ug/kg	ND	35.1	35.1	31.5	29.7	90	85	30-150	6	30	
Fluorene	ug/kg	ND	35.1	35.1	22.5	26.0	64	74	30-147	14	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	35.1	35.1	34.7	33.6	99	96	30-150	3	30	
Naphthalene	ug/kg	ND	35.1	35.1	19.2	24.9	55	71	30-131	26	30	
Phenanthrene	ug/kg	ND	35.1	35.1	27.6	28.2	79	80	30-150	2	30	
Pyrene	ug/kg	ND	35.1	35.1	31.1	30.4	89	87	30-150	2	30	
2-Fluorobiphenyl (S)	%.						59	77	42-125			
p-Terphenyl-d14 (S)	%.						85	85	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529569 Analysis Method: EPA 8270D
QC Batch Method: EPA 3546 Analysis Description: MDA2 Solid MSSV
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2874519 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,5-T	mg/kg	ND	0.033	04/04/18 13:35	
2,4,5-TP (Silvex)	mg/kg	ND	0.033	04/04/18 13:35	
2,4-D	mg/kg	ND	0.033	04/04/18 13:35	
2,4-DB	mg/kg	ND	0.033	04/04/18 13:35	
Bentazon	mg/kg	ND	0.033	04/04/18 13:35	
Dicamba	mg/kg	ND	0.033	04/04/18 13:35	
Dinoseb	mg/kg	ND	0.033	04/04/18 13:35	
MCPA	mg/kg	ND	0.033	04/04/18 13:35	
Pentachlorophenol	mg/kg	ND	0.033	04/04/18 13:35	
Picloram	mg/kg	ND	0.033	04/04/18 13:35	
Triclopyr	mg/kg	ND	0.033	04/04/18 13:35	
2,4-DCAA (S)	%.	78	46-125	04/04/18 13:35	

LABORATORY CONTROL SAMPLE: 2874520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-T	mg/kg	.33	0.28	83	60-125	
2,4,5-TP (Silvex)	mg/kg	.33	0.26	79	61-125	
2,4-D	mg/kg	.33	0.29	86	63-125	
2,4-DB	mg/kg	.33	0.28	83	59-125	
Bentazon	mg/kg	.33	0.25	76	58-125	
Dicamba	mg/kg	.33	0.27	80	52-125	
Dinoseb	mg/kg	.33	0.18	53	35-126	
MCPA	mg/kg	.33	0.27	82	57-125	
Pentachlorophenol	mg/kg	.33	0.21	63	48-125	
Picloram	mg/kg	.33	0.24	72	47-125	
Triclopyr	mg/kg	.33	0.28	83	68-125	
2,4-DCAA (S)	%.			77	46-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874521 2874522

Parameter	Units	10425111006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2,4,5-T	mg/kg	ND	.45	.45	0.19	0.21	42	45	30-145	8	20	
2,4,5-TP (Silvex)	mg/kg	ND	.45	.45	0.28	0.26	63	58	30-130	7	20	
2,4-D	mg/kg	ND	.45	.45	0.18	0.20	40	44	30-150	9	20	
2,4-DB	mg/kg	ND	.45	.45	0.35	0.33	77	72	45-126	7	20	
Bentazon	mg/kg	ND	.45	.45	0.33	0.32	73	71	30-133	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2874521 2874522

Parameter	Units	10425111006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Dicamba	mg/kg	ND	.45	.45	0.13	0.17	29	38	30-140	28	20	M1,R1
Dinoseb	mg/kg	ND	.45	.45	0.39	0.31	86	69	30-136	23	20	R1
MCPA	mg/kg	ND	.45	.45	0.24	0.22	53	49	30-136	9	20	
Pentachlorophenol	mg/kg	ND	.45	.45	0.28	0.25	63	55	44-125	13	20	
Picloram	mg/kg	ND	.45	.45	.016J	0.098	3	22	30-125		20	M1
Triclopyr	mg/kg	ND	.45	.45	0.23	0.22	51	50	30-149	3	20	
2,4-DCAA (S)	%.						65	60	46-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529461 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10425111001

METHOD BLANK: 2873677 Matrix: Solid
Associated Lab Samples: 10425111001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	03/29/18 10:21	
n-Triacontane (S)	%.	80	50-150	03/29/18 10:21	

LABORATORY CONTROL SAMPLE & LCSD: 2873678 2873679

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	69.1	90.2	86	113	70-120	26	20	R1
n-Triacontane (S)	%.				82	75	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 529510 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2874000 Matrix: Solid
Associated Lab Samples: 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	03/29/18 13:11	
n-Triacontane (S)	%.	79	50-150	03/29/18 13:11	

LABORATORY CONTROL SAMPLE & LCSD: 2874001 2874002

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	89.9	95.8	112	120	70-120	6	20	
n-Triacontane (S)	%.				78	82	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 435086 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 2009757 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/04/18 12:49	

LABORATORY CONTROL SAMPLE: 2009758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	981	901	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2009842 2009843

Parameter	Units	10424937001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1420	1360	ND	ND	0	0	75-125		20	2M,M3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2009844 2009845

Parameter	Units	10424937001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	54.8	54.3	ND	ND	12	18	75-125		20	M3

SAMPLE DUPLICATE: 2009846

Parameter	Units	50193299003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 285232 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 1669245 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/05/18 14:27	

LABORATORY CONTROL SAMPLE: 1669246

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1669247 1669248

Parameter	Units	40166647001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.10J	2.5	2.5	2.3	2.5	88	96	80-120	7	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1669249 1669250

Parameter	Units	40166870001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.16J	2.37	2.49	2.4	2.3	94	89	80-120	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

QC Batch: 139758 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

METHOD BLANK: 553544 Matrix: Solid
Associated Lab Samples: 10425111001, 10425111002, 10425111003, 10425111004, 10425111005, 10425111006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	1.0	04/03/18 15:44	

LABORATORY CONTROL SAMPLE: 553543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	50.2	51.9	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 553545 553546

Parameter	Units	10425111001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.3	50	49.3	13.7	18.4	23	33	80-120	29	20	M1,R1

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QUALIFIERS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

1M	RPD value is outside control limits due to sample non-homogeneity.
2M	Redox (174 mv) and pH (8.13) values indicate a naturally reducing matrix. This accounts for poor recovery values on the sample per method Eh/pH phase diagram.
3M	Sample was black in color and slightly viscous. Sample was centrifuged and decanted.
4M	Sample was black in color and viscous. Sample was centrifuged and decanted.
5M	Sample was light brown in color.
6M	Sample was yellow in color.
7M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
B	Analyte was detected in the associated method blank.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

ANALYTE QUALIFIERS

L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10425111001	**FD-SB-A2 (10-20 S)**	EPA 1630 (1998)	140178	EPA 1630 (1998)	140181
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 1630 (1998)	140178	EPA 1630 (1998)	140181
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 1630 (1998)	140178	EPA 1630 (1998)	140181
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 1630 (1998)	140178	EPA 1630 (1998)	140181
10425111005	**FD-SB-E2 (11-21 S)**	EPA 1630 (1998)	140178	EPA 1630 (1998)	140181
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 1630 (1998)	140178	EPA 1630 (1998)	140181
10425111001	**FD-SB-A2 (10-20 S)**	EPA 3550	529466	EPA 8081B	530402
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 3550	529466	EPA 8081B	530402
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 3550	529466	EPA 8081B	530402
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 3550	529466	EPA 8081B	530402
10425111005	**FD-SB-E2 (11-21 S)**	EPA 3550	529466	EPA 8081B	530402
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 3550	529466	EPA 8081B	530402
10425111001	**FD-SB-A2 (10-20 S)**	EPA 3550	529467	EPA 8082A	530082
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 3550	529467	EPA 8082A	530082
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 3550	529467	EPA 8082A	530082
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 3550	529467	EPA 8082A	530082
10425111005	**FD-SB-E2 (11-21 S)**	EPA 3550	529467	EPA 8082A	530082
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 3550	529467	EPA 8082A	530082
10425111001	**FD-SB-A2 (10-20 S)**	WI MOD DRO	529461	WI MOD DRO	529593
10425111002	**FD-SB-B2 (12-21 WM)**	WI MOD DRO	529510	WI MOD DRO	529595
10425111003	**FD-SB-C2 (5-17 WM)**	WI MOD DRO	529510	WI MOD DRO	529595
10425111004	**FD-SB-D2 (3-12 WM)**	WI MOD DRO	529510	WI MOD DRO	529595
10425111005	**FD-SB-E2 (11-21 S)**	WI MOD DRO	529510	WI MOD DRO	529595
10425111006	**FD-SB-F2 (7-13 WM)**	WI MOD DRO	529510	WI MOD DRO	529595
10425111001	**FD-SB-A2 (10-20 S)**	EPA 5030 Medium Soil	530355	WI MOD GRO	530506
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 5030 Medium Soil	530355	WI MOD GRO	530506
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 5030 Medium Soil	530355	WI MOD GRO	530506
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 5030 Medium Soil	530355	WI MOD GRO	530506
10425111005	**FD-SB-E2 (11-21 S)**	EPA 5030 Medium Soil	530355	WI MOD GRO	530506
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 5030 Medium Soil	530355	WI MOD GRO	530506
10425111001	**FD-SB-A2 (10-20 S)**	EPA 3050	529753	EPA 6010C	529832
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 3050	529753	EPA 6010C	529832
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 3050	529753	EPA 6010C	529832
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 3050	529753	EPA 6010C	529832
10425111005	**FD-SB-E2 (11-21 S)**	EPA 3050	529753	EPA 6010C	529832
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 3050	529753	EPA 6010C	529832
10425111001	**FD-SB-A2 (10-20 S)**	EPA 3050B	435596	EPA 6020	435837
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 3050B	435596	EPA 6020	435837
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 3050B	435596	EPA 6020	435837
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 3050B	435596	EPA 6020	435837
10425111005	**FD-SB-E2 (11-21 S)**	EPA 3050B	435596	EPA 6020	435837
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 3050B	435596	EPA 6020	435837
10425111001	**FD-SB-A2 (10-20 S)**	EPA 3050	529754	EPA 6020A	529842
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 3050	529754	EPA 6020A	529842
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 3050	529754	EPA 6020A	529842

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 3050	529754	EPA 6020A	529842
10425111005	**FD-SB-E2 (11-21 S)**	EPA 3050	529754	EPA 6020A	529842
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 3050	529754	EPA 6020A	529842
10425111001	**FD-SB-A2 (10-20 S)**	EPA 7471	529756	EPA 7471	530150
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 7471	529756	EPA 7471	530150
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 7471	529756	EPA 7471	530150
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 7471	529756	EPA 7471	530150
10425111005	**FD-SB-E2 (11-21 S)**	EPA 7471	529756	EPA 7471	530150
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 7471	529756	EPA 7471	530150
10425111001	**FD-SB-A2 (10-20 S)**	ASTM D2974	529626		
10425111002	**FD-SB-B2 (12-21 WM)**	ASTM D2974	529626		
10425111003	**FD-SB-C2 (5-17 WM)**	ASTM D2974	529626		
10425111004	**FD-SB-D2 (3-12 WM)**	ASTM D2974	529626		
10425111005	**FD-SB-E2 (11-21 S)**	ASTM D2974	529626		
10425111006	**FD-SB-F2 (7-13 WM)**	ASTM D2974	529638		
10425111001	**FD-SB-A2 (10-20 S)**	EPA 3550	529689	EPA 8270D	530831
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 3550	529689	EPA 8270D	530831
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 3550	529689	EPA 8270D	530831
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 3550	529689	EPA 8270D	530831
10425111005	**FD-SB-E2 (11-21 S)**	EPA 3550	529689	EPA 8270D	530831
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 3550	529689	EPA 8270D	530831
10425111001	**FD-SB-A2 (10-20 S)**	EPA 3550	529470	EPA 8270D by SIM	529943
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 3550	529470	EPA 8270D by SIM	529943
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 3550	529470	EPA 8270D by SIM	529943
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 3550	529470	EPA 8270D by SIM	529943
10425111005	**FD-SB-E2 (11-21 S)**	EPA 3550	530507	EPA 8270D by SIM	530599
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 3550	529470	EPA 8270D by SIM	529943
10425111001	**FD-SB-A2 (10-20 S)**	EPA 3546	529569	EPA 8270D	530638
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 3546	529569	EPA 8270D	530638
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 3546	529569	EPA 8270D	530638
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 3546	529569	EPA 8270D	530638
10425111005	**FD-SB-E2 (11-21 S)**	EPA 3546	529569	EPA 8270D	530638
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 3546	529569	EPA 8270D	530638
10425111001	**FD-SB-A2 (10-20 S)**	EPA 5035/5030B	529503	EPA 8260B	529857
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 5035/5030B	529503	EPA 8260B	529857
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 5035/5030B	529503	EPA 8260B	529857
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 5035/5030B	529503	EPA 8260B	529857
10425111005	**FD-SB-E2 (11-21 S)**	EPA 5035/5030B	529503	EPA 8260B	529857
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 5035/5030B	529503	EPA 8260B	529857
10425111001	**FD-SB-A2 (10-20 S)**	EPA 3060A	435086	EPA 7196A	435521
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 3060A	435086	EPA 7196A	435521
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 3060A	435086	EPA 7196A	435521
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 3060A	435086	EPA 7196A	435521
10425111005	**FD-SB-E2 (11-21 S)**	EPA 3060A	435086	EPA 7196A	435521

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Solid-Revised Report
Pace Project No.: 10425111

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 3060A	435086	EPA 7196A	435521
10425111001	**FD-SB-A2 (10-20 S)**	Trivalent Chromium Calculation	436360		
10425111002	**FD-SB-B2 (12-21 WM)**	Trivalent Chromium Calculation	436360		
10425111003	**FD-SB-C2 (5-17 WM)**	Trivalent Chromium Calculation	436360		
10425111004	**FD-SB-D2 (3-12 WM)**	Trivalent Chromium Calculation	436360		
10425111005	**FD-SB-E2 (11-21 S)**	Trivalent Chromium Calculation	436360		
10425111006	**FD-SB-F2 (7-13 WM)**	Trivalent Chromium Calculation	436360		
10425111001	**FD-SB-A2 (10-20 S)**	EPA 9012A	285232	EPA 9012	285274
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 9012A	285232	EPA 9012	285274
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 9012A	285232	EPA 9012	285274
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 9012A	285232	EPA 9012	285274
10425111005	**FD-SB-E2 (11-21 S)**	EPA 9012A	285232	EPA 9012	285274
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 9012A	285232	EPA 9012	285274
10425111001	**FD-SB-A2 (10-20 S)**	EPA 300.0	139758	EPA 9056A	139833
10425111002	**FD-SB-B2 (12-21 WM)**	EPA 300.0	139758	EPA 9056A	139833
10425111003	**FD-SB-C2 (5-17 WM)**	EPA 300.0	139758	EPA 9056A	139833
10425111004	**FD-SB-D2 (3-12 WM)**	EPA 300.0	139758	EPA 9056A	139833
10425111005	**FD-SB-E2 (11-21 S)**	EPA 300.0	139758	EPA 9056A	139833
10425111006	**FD-SB-F2 (7-13 WM)**	EPA 300.0	139758	EPA 9056A	139833

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WO# : 10425111

10425111

Minnesota Pollution Control Agency

Chain-of-Custody Form

Type: Page: 1 of

OC ID:

FOR LAB USE ONLY

PROJECT/CLIENT INFO | **LABORATORY**

Facility Code:	Program Code (MDH Lab Only):	Lab Name:	
Project Name: MPCA-Flooding/LF Soils	Project Task Code:	Address: 18-00383	
Project Manager:		EPIC Profile # 38716	
Potential Hazard?	If yes, add information to Sampler Comments Section	Phone No:	Lab Work Order Sticker

SAMPLE DETAILS | **ANALYSIS REQUESTED**

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

PRESERV.

ANALYSIS: See Attached for Soils/Waste (C-Dioxins)

Location Identifier	Sample Type	Date	Time	Start Depth, in feet ~~meters~~	End Depth, in feet	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	+ Dioxins	Lab Sample No.	#
FD-SB-A2 (10-20 S)	S	3/27/18	1040	10	20	C	SD				13	X	001	1
FD-SB-B2 (2-21 WM)	S	3/27/18	1115	12	21	C	SD				13		002	2
FD-SB-C2 (5-17 WM)	S	3/27/18	1330	5	17	C	SD				13	X	003	3
FD-SB-D2 (3-12 WM)	S	3/27/18	1410	3	12	C	SD				13		004	4
FD-SB-E2 (11-21 S)	S	3/27/18	1515	11	21	C	SD				13	X	005	5
FD-SB-F2 (7-13 WM)	S	3/27/18	1620	7	13	C	SD				13		006	6
														7
														8
														9
														10

FD

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/27/18 1650	PACE	3-27-18 1650 2-7°C

March 22, 2018

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	**Methods**
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*) Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA FSD

Project #: WO#: 10425111

PM: BM2 Due Date: 04/10/18

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☑Client ☐Commercial ☐Pace ☐SpeeDee ☐Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☑No **Seals Intact?** ☐Yes ☑No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☑None ☐Other:_____ **Temp Blank?** ☐Yes ☑No

Thermometer Used: ☐151401163 ☑G87A9155100842 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Cooler Temp Read (°C): 2.7 **Cooler Temp Corrected (°C):** 2.9 **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** ME 3/27/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☑No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☑No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑Yes	☐No		1.
Chain of Custody Filled Out?	☑Yes	☐No		2.
Chain of Custody Relinquished?	☑Yes	☐No		3.
Sampler Name and/or Signature on COC?	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☑Yes	☐No		5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No		6.
Rush Turn Around Time Requested?	☐Yes	☑No		7.
Sufficient Volume?	☑Yes	☐No		8.
Correct Containers Used?	☑Yes	☐No		9.
-Pace Containers Used?	☑Yes	☐No		
Containers Intact?	☑Yes	☐No		10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☑Yes	☐No		12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☑N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☑N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐Yes	☐No	☑N/A	Initial when completed:_____ Lot # of added preservative:_____
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☑N/A	14.
Trip Blank Present?	☐Yes	☑No	☐N/A	15.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: BM **Date:** 3/28/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Chain of Custody

40166616

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10425111 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 3/27/2018 Results Requested By: 4/10/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

OK 3/28/18 JAW

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Cyanide by EPA 9012	LAB USE ONLY
1	FD-SB-A2 (10-20 S)	PS	3/27/2018 10:40	10425111001	Solid	1	X	
2	FD-SB-B2 (12-21 WM)	PS	3/27/2018 11:15	10425111002	Solid	1	X	
3	FD-SB-C2 (5-17 WM)	PS	3/27/2018 13:30	10425111003	Solid	1	X	
4	FD-SB-D2 (3-12 WM)	PS	3/27/2018 14:10	10425111004	Solid	1	X	
5	FD-SB-E2 (11-21 S)	PS	3/27/2018 15:15	10425111005	Solid	1	X	
6	FD-SB-F2 (7-13 WM)	PS	3/27/2018 16:20	10425111006	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[illegible] PACE	3/28/18 1700			
2	[illegible]	3/29/18 0840	[illegible]	3/29/18 0840	
3					

Cooler Temperature on Receipt 4.2.5 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace, MN

Project #: WO#: 40166616

40166616

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other:

Tracking #: 1677921

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 4 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 4.3 /Corr: 4.2.5

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 3-29-18
Initials:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☑N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume: ☑Yes ☐No ☐N/A MS/MSD	☐Yes ☐No ☑N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☐No ☑N/A	
-Pace IR Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix:	PS	
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution: Original client label - No times. 3-29-18 SCV

Project Manager Review: Date: 3/29/18

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10425111 **Workorder Name:** 18-00383 MPCA Freeway LF Solid **Owner Received Date:** 3/27/2018 **Results Requested By:** 4/10/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

5019323

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Chromium III	Chromium VI	Total Cr by 6020	LAB USE ONLY
1	FD-SB-A2 (10-20 S)	PS	3/27/2018 10:40	10425111001	Solid	1	X	X	X	001
2	FD-SB-B2 (12-21 WM)	PS	3/27/2018 11:15	10425111002	Solid	1	X	X	X	002
3	FD-SB-C2 (5-17 WM)	PS	3/27/2018 13:30	10425111003	Solid	1	X	X	X	003
4	FD-SB-D2 (3-12 WM)	PS	3/27/2018 14:10	10425111004	Solid	1	X	X	X	004
5	FD-SB-E2 (11-21 S)	PS	3/27/2018 15:15	10425111005	Solid	1	X	X	X	005
6	FD-SB-F2 (7-13 WM)	PS	3/27/2018 16:20	10425111006	Solid	1	X	X	X	006

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible] PACE	3/28/18 1615	FEDEX	
2	FEDEX		[illegible]	3/28/18 0825
3				

Cooler Temperature on Receipt 1.1 °C **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50193231

Date/Time and Initials of person examining contents: [illegible] 3/26/18 1540

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9831 7905

Custody Seal on Cooler/Box Present: ☑ Yes ☐ No **Seals Intact:** ☑ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer: 1 2 3 4 5 6 A B C D E F Ice Type: ☑ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☑ N/A

Cooler Temperature: 1.4/1.4 Ice Visible in Sample Containers?: ☐ Yes ☑ No ☐ N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☑ N/A

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		✓	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			✓
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		✓				
Chain of Custody Present:	✓		Dissolved Metals field filtered?:			✓
Chain of Custody Filled Out:	✓					
Short Hold Time Analysis (<72hr)?: Analysis:		✓	Headspace Wisconsin Sulfide			✓
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			✓
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			✓
Rush TAT Requested:		✓	Headspace in VOA Vials (>6mm):			✓
Containers Intact?:	✓		Trip Blank Present?:		✓	
Sample Labels Match COC?: Except TCs, which only require sample ID	✓		Trip Blank Custody Seals?:		✓	

Comments:

Sample Container Count

WO# : 50193231

50193231

CLIENT: Pace MN

COC PAGE 1 of 1

COC ID# _____

Project # 50193231

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	Bu Kit R				Matrix S (Soil/We Aqueous	pH <2	pH >9	pH>12
1							1														SL			
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
GFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic	BP3U	250mL unpreserved plastic
BP1N	1 liter HNO3 plastic	BP3Z	250mL NaOH, Zn Ac plastic
BP1S	1 liter H2SO4 plastic		
BP1U	1 liter unpreserved plastic	AF	Air Filter
BP1Z	1 liter NaOH, Zn, Ac	C	Air Cassettes
BP2A	500mL NaOH, Asc Acid plastic	R	Terra core kit
BP2N	500mL HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
BP2O	500mL NaOH plastic	U	Summa Can
BP2S	500mL H2SO4 plastic	ZPLC	Ziploc Bag
BP2U	500mL unpreserved plastic		
BP2Z	500mL NaOH, Zn Ac		
BP3B	250mL NaOH plastic		
BP3N	250mL HNO3 plastic		
BP3S	250mL H2SO4 plastic		

Chain of Custody

WO#: 12106456

12106456

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin:

Workorder: 10425111 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 3/27/2018 Results Requested By: 4/10/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						Requested Analysis: Fluoride by method 9056												LAB USE ONLY
1	FD-SB-A2 (10-20 S)	PS	3/27/2018 10:40	10425111001	Solid	1						X												
2	FD-SB-B2 (12-21 WM)	PS	3/27/2018 11:15	10425111002	Solid	1						X												
3	FD-SB-C2 (5-17 WM)	PS	3/27/2018 13:30	10425111003	Solid	1						X												
4	FD-SB-D2 (3-12 WM)	PS	3/27/2018 14:10	10425111004	Solid	1						X												
5	FD-SB-E2 (11-21 S)	PS	3/27/2018 15:15	10425111005	Solid	1						X												
6	FD-SB-F2 (7-13 WM)	PS	3/27/2018 16:20	10425111006	Solid	1						X												

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	3/28/18 1805	[illegible]	3-28-18 1900
2	[illegible]	3-28-18 2345	RTMathews	3/29/18 0645
3				

Comments

Cooler Temperature on Receipt 3.8 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA FSD PASI-MNFLD

Project #: **WO#: 12106456**

PM: HRZ Due Date: 04/10/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☐ No Seals Intact? ☐ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☐ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.5 Cooler Temp Corrected °C: 3.8 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 3-28-18 AS

Comments: BM 3/29/18

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Angela Loisel Date: 3/29/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

WO#: 12106456

PM: HRZ Due Date: 04/10/18

CLIENT: PACE MPLS

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10425111 Workorder Name: 18-00383 MPCA Freeway LF Solid

Owner Received Date: 3/27/2018 Results Requested By: 4/10/2018

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6452	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury by 1630	LAB USE ONLY
1	FD-SB-A2 (10-20 S)	PS	3/27/2018 10:40	10425111001	Solid	1	X	
2	FD-SB-B2 (12-21 WM)	PS	3/27/2018 11:15	10425111002	Solid	1	X	
3	FD-SB-C2 (5-17 WM)	PS	3/27/2018 13:30	10425111003	Solid	1	X	
4	FD-SB-D2 (3-12 WM)	PS	3/27/2018 14:10	10425111004	Solid	1	X	
5	FD-SB-E2 (11-21 S)	PS	3/27/2018 15:15	10425111005	Solid	1	X	
6	FD-SB-F2 (7-13 WM)	PS	3/27/2018 16:20	10425111006	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	PACE	3/28/18 1725	RW Chapp	3-28-18 1900
2	RW Chapp	3-28-18 2145	FEDEX	3/29/18 0800
3				

Comments

Cooler Temperature on Receipt 0.7 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace Mplr

Project #: WO#: 12106456

PM: HRZ Due Date: 04/10/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 01339252/1710 ☐ IR-1 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 0.7 Cooler Temp Corrected °C: 0.7 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: 0.0 Date and Initials of Person Examining Contents: KNH 3/29/18

If temperature is ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☒ NA

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☒ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☐ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Angela Loisel Date: 3/29/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10425112
Sample Receipt Date: 03/27/2018
Client Project #: 18-00383
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

April 10, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
April 10, 2018

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on three samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 53-80%. Except for one low value, which was flagged "R" on the results table, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained. In cases where the estimated detection limits (EDLs) were above the standard reporting limits, the EDLs were reported and flagged "A".

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 109%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Report No.....10425112

Appendix A

Sample Management

WO# : 10425112

10425112

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Numbe

Turnaround Time

Page: 1 of

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO

Facility Code:

Program Code (MDH Lab Only):

Project Name: MPCA - Freeway/F Soils

Project Task Code:

Project Manager:

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name:

Address: 18-00383

EPIC Profile # 38716

Phone No:

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

PRESERV.

ANALYSIS: See Attached (Air/Soils/Waste (C-Dioxins))

+ Dioxins

Location Identifier	Sample Type	Date	Time	Start Depth, in feet (meters)	End Depth, in feet (meters)	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS	+ Dioxins					Lab Sample No.	#
FP-SB-A2 10-20 S	S	3/27/18	1040	10	20	C	SD				13	X	X					001	1
FP-SB-B2 12-21 WM	S	3/27/18	1115	12	21	C	SD				13	X							2
FP-SB-C2 5-17 WM	S	3/27/18	1330	5	17	C	SD				13	X	X					002	3
FP-SB-D2 3-12 WM	S	3/27/18	1410	3	12	C	SD				13	X							4
FP-SB-E2 11-21 S	S	3/27/18	1515	11	21	C	SD				13	X	X					003	5
FP-SB-F2 7-13 WM	S	3/27/18	1600	7	13	C	SD				13	X							6
																			7
																			8
																			9
																			10

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/27/18 1650	PAC	3-27-18 1650 2-7°C

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA FSD

Project #: WO#: 10425112

PM: SCU Due Date: 04/10/18

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 2.7 **Cooler Temp Corrected (°C):** 2.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** mve 3/27/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑ Yes	☐ No		1.
Chain of Custody Filled Out?	☑ Yes	☐ No		2.
Chain of Custody Relinquished?	☑ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		6.
Rush Turn Around Time Requested?	☐ Yes	☑ No		7.
Sufficient Volume?	☑ Yes	☐ No		8.
Correct Containers Used?	☑ Yes	☐ No		9.
-Pace Containers Used?	☑ Yes	☐ No		
Containers Intact?	☑ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☑ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Nathan Boberg Date: 3/28/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-A2 (10-20 S)		
Lab Sample ID	10425112001		
Filename	U180406A_11		
Injected By	ZMS		
Total Amount Extracted	13.1 g	Matrix	Solid
% Moisture	23.0	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	03/27/2018 10:40
ICAL ID	U180405	Received	03/27/2018 16:50
CCal Filename(s)	U180406A_01 & U180406A_15	Extracted	04/02/2018 14:55
Method Blank ID	BLANK-61474	Analyzed	04/06/2018 18:37

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	80
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	90

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-C2 (5-17 WM)		
Lab Sample ID	10425112002		
Filename	U180406A_12		
Injected By	ZMS		
Total Amount Extracted	14.4 g	Matrix	Solid
% Moisture	30.6	Dilution	NA
Dry Weight Extracted	9.99 g	Collected	03/27/2018 13:30
ICAL ID	U180405	Received	03/27/2018 16:50
CCal Filename(s)	U180406A_01 & U180406A_15	Extracted	04/02/2018 14:55
Method Blank ID	BLANK-61474	Analyzed	04/06/2018 19:25

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg		**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	5.0	-----	1.5	A	2,3,7,8-TCDD-13C	2.00	44
					Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
					Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	103

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
A = Reporting Limit based on signal to noise
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-E2 (11-21 S)		
Lab Sample ID	10425112003		
Filename	U180406A_13		
Injected By	ZMS		
Total Amount Extracted	15.6 g	Matrix	Solid
% Moisture	35.3	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	03/27/2018 15:15
ICAL ID	U180405	Received	03/27/2018 16:50
CCal Filename(s)	U180406A_01 & U180406A_15	Extracted	04/02/2018 14:55
Method Blank ID	BLANK-61474	Analyzed	04/06/2018 20:14

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	53
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	68

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61474	Matrix	Solid
Filename	U180406A_10	Dilution	NA
Total Amount Extracted	75.3 g	Extracted	04/02/2018 14:55
ICAL ID	U180405	Analyzed	04/06/2018 17:48
CCal Filename(s)	U180406A_01 & U180406A_15	Injected By	ZMS

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	58
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	67

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61475		
Filename	U180406A_05	Matrix	Solid
Total Amount Extracted	75.1 g	Dilution	NA
ICAL ID	U180405	Extracted	04/02/2018 14:55
CCal Filename(s)	U180406A_01 & U180406A_15	Analyzed	04/06/2018 13:42
Method Blank ID	BLANK-61474	Injected By	

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.22	109	2,3,7,8-TCDD-13C	2.0	30 R
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	37

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10427011
Sample Receipt Date: 04/11/2018
Client Project #: 18-00383
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

April 27, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
April 27, 2018

Report of Laboratory Analysis

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The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on four samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. The samples were received above the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 57-62%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 104%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

WO# : 10427011

10427011

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number: COC T

Turnaround Time: COC ID:

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MPCA-Freeway LF solids	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA-Freeway LF solids	Project Task Code:	Address: 18-00383
Project Manager:			EPIC Profile #38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

Location Identifier	Sample Type	Date	Time	Start Depth, ~~in feet~~ ~~meters~~	End Depth, ~~in feet~~ ~~meters~~	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS REQUESTED: see attached for soils/waste (-Dioxins)	ANALYSIS REQUESTED: +Dioxins	Lab Sample No.	#
~~FD-SB-~~ ( )	S	4/11/18				C	SD									1
FD-TT-01 (10-12 wm)	S	4/11/18	1020			C	SD				13		X	X		2
FD-TT-B3 (7-9 wm)	S	4/11/18	1220			C	SD				13		X			3
FD-SB-A1 (3-6.5)	S	4/11/18	1300			C	SD				13		X	X		4
~~FD-SB-A2~~ ( )	S	4/11/18				C	SD				13		X			5
FD-SB-B1 (11-13 wm)	S	4/11/18	1350			C	SD				13		X			6
FD-SB-C1 (5-8 wm)	S	4/11/18	1430			C	SD				13		X	X		7
FD-TT-03 (2-5 wm)	S	4/11/18	1450			C	SD				13		X			8
FD-SB-D1 (11-16 wm)	S	4/11/18	1535			C	SD				13		X	X		9
FD-SB-E1 (10-15 wm)	S	4/11/18	1610			C	SD				13		X			10

DFA 4/11/18

DFA 4/11/18

001

002

003

004

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/11/18/1650	Nate Nitrava / Pace	4/11/18 16:50
Nate Nitrava / Pace	4/11/18 17:13	Pace	4/11/18 1713

T=6.2

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MN POLLUTION CONTROL

Project #: **WO#: 10427011**

PM: SCU **Due Date: 04/19/18**

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☐ 151401163 ☒ 87A9155100842 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 6.0 Cooler Temp Corrected (°C): 6.2 Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C Correction Factor: +0.2 Date and Initials of Person Examining Contents: KT 4/11/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): MD 4/11/18				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 04/12/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

pdf "red" revision comments: BGJ-Pace 3/23/18

March 22, 2018

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*)	
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

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Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-TT-01 (10-12 WM)		
Lab Sample ID	10427011001		
Filename	U180422B_04		
Injected By	BAL		
Total Amount Extracted	13.7 g	Matrix	Solid
% Moisture	34.3	Dilution	NA
Dry Weight Extracted	9.00 g	Collected	04/11/2018 10:20
ICAL ID	U180405	Received	04/11/2018 17:13
CCal Filename(s)	U180422A_16 & U180422B_15	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/22/2018 16:41

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	59
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	57

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-A1 (3-6 S)		
Lab Sample ID	10427011002		
Filename	U180422B_05		
Injected By	BAL		
Total Amount Extracted	15.4 g	Matrix	Solid
% Moisture	31.3	Dilution	NA
Dry Weight Extracted	10.6 g	Collected	04/11/2018 13:00
ICAL ID	U180405	Received	04/11/2018 17:13
CCal Filename(s)	U180422A_16 & U180422B_15	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/22/2018 17:29

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	57
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	57

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-C1 (5-8 WM)		
Lab Sample ID	10427011003		
Filename	U180422B_06		
Injected By	BAL		
Total Amount Extracted	12.5 g	Matrix	Solid
% Moisture	21.5	Dilution	NA
Dry Weight Extracted	9.81 g	Collected	04/11/2018 14:30
ICAL ID	U180405	Received	04/11/2018 17:13
CCal Filename(s)	U180422A_16 & U180422B_15	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/22/2018 18:18

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	1.1	-----	1.0	2,3,7,8-TCDD-13C	2.00	60
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	60

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-D1 (11-16 WM)		
Lab Sample ID	10427011004		
Filename	U180426A_13		
Injected By	SMT		
Total Amount Extracted	12.6 g	Matrix	Solid
% Moisture	17.3	Dilution	NA
Dry Weight Extracted	10.4 g	Collected	04/11/2018 15:35
ICAL ID	U180405	Received	04/11/2018 17:13
CCal Filename(s)	U180426A_07 & U180426B_15	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/26/2018 13:09

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	62
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	59

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61774	Matrix	Solid
Filename	Y180422A_04	Dilution	NA
Total Amount Extracted	79.7 g	Extracted	04/17/2018 15:45
ICAL ID	Y180204	Analyzed	04/22/2018 16:10
CCal Filename(s)	Y180421B_16 & Y180422A_12	Injected By	BAL

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	63

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61775		
Filename	Y180422A_01	Matrix	Solid
Total Amount Extracted	75.1 g	Dilution	NA
ICAL ID	Y180204	Extracted	04/17/2018 15:45
CCal Filename(s)	Y180421B_16 & Y180422A_12	Analyzed	04/22/2018 13:59
Method Blank ID	BLANK-61774	Injected By	BAL

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.21	104	2,3,7,8-TCDD-13C	2.0	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	62

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
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Minneapolis, MN 55414
(612)607-1700

May 01, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 11, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6451
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
California Certification #2973
California Certification #2973
Alaska Certification UST-107
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Montana DHHS Certification #: CERT0102
Minnesota Dept of Health Certification #: 1382680
Nevada DCNR Certification #: MN000372018-1
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10427018001	**FD-TT-01 (10-12 WM)**	Solid	04/11/18 10:20	04/11/18 17:13
10427018002	**FD-TT-02 (7-9 WM)**	Solid	04/11/18 12:20	04/11/18 17:13
10427018003	**FD-SB-A1 (3-6 S)**	Solid	04/11/18 13:00	04/11/18 17:13
10427018004	**FD-SB-B1 (11-13 WM)**	Solid	04/11/18 13:50	04/11/18 17:13
10427018005	**FD-SB-C1 (5-8 WM)**	Solid	04/11/18 14:30	04/11/18 17:13
10427018006	**FD-TT-03 (2-5 WM)**	Solid	04/11/18 14:50	04/11/18 17:13
10427018007	**FD-SB-D1 (11-16 WM)**	Solid	04/11/18 15:35	04/11/18 17:13
10427018008	**FD-SB-E1 (10-15 WM)**	Solid	04/11/18 16:10	04/11/18 17:13

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(612)607-1700

SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10427018001	**FD-TT-01 (10-12 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427018002	**FD-TT-02 (7-9 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427018003	**FD-SB-A1 (3-6 S)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M

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(612)607-1700

SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427018006	**FD-TT-03 (2-5 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-01 (10-12 WM) **Lab ID: 10427018001** Collected: 04/11/18 10:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	12.9	1	04/25/18 10:56	04/27/18 14:40	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	309-00-2	
alpha-BHC	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	319-84-6	
beta-BHC	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	319-85-7	
delta-BHC	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	58-89-9	
Chlordane (Technical)	ND	ug/kg	254	10	04/16/18 09:32	04/16/18 21:53	57-74-9	
alpha-Chlordane	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	5103-71-9	
gamma-Chlordane	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	5103-74-2	
4,4'-DDD	ND	ug/kg	50.6	10	04/16/18 09:32	04/16/18 21:53	72-54-8	
4,4'-DDE	ND	ug/kg	50.6	10	04/16/18 09:32	04/16/18 21:53	72-55-9	
4,4'-DDT	ND	ug/kg	50.6	10	04/16/18 09:32	04/16/18 21:53	50-29-3	
Dieldrin	ND	ug/kg	50.6	10	04/16/18 09:32	04/16/18 21:53	60-57-1	
Endosulfan I	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	959-98-8	
Endosulfan II	ND	ug/kg	50.6	10	04/16/18 09:32	04/16/18 21:53	33213-65-9	
Endosulfan sulfate	ND	ug/kg	50.6	10	04/16/18 09:32	04/16/18 21:53	1031-07-8	
Endrin	ND	ug/kg	50.6	10	04/16/18 09:32	04/16/18 21:53	72-20-8	
Endrin aldehyde	ND	ug/kg	50.6	10	04/16/18 09:32	04/16/18 21:53	7421-93-4	
Endrin ketone	ND	ug/kg	50.6	10	04/16/18 09:32	04/16/18 21:53	53494-70-5	
Heptachlor	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	76-44-8	
Heptachlor epoxide	ND	ug/kg	25.4	10	04/16/18 09:32	04/16/18 21:53	1024-57-3	
Methoxychlor	ND	ug/kg	254	10	04/16/18 09:32	04/16/18 21:53	72-43-5	
Toxaphene	ND	ug/kg	760	10	04/16/18 09:32	04/16/18 21:53	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	10	04/16/18 09:32	04/16/18 21:53	877-09-8	4M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	10	04/16/18 09:32	04/16/18 21:53	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	11141-16-5	
PCB-1242 (Aroclor 1242)	**746**	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	12672-29-6	
PCB-1254 (Aroclor 1254)	**118**	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	11100-14-4	
PCB, Total	**864**	ug/kg	77.0	1	04/13/18 19:35	04/16/18 16:02	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	89	%.	48-125	1	04/13/18 19:35	04/16/18 16:02	877-09-8	
Decachlorobiphenyl (S)	81	%.	30-134	1	04/13/18 19:35	04/16/18 16:02	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-01 (10-12 WM) **Lab ID: 10427018001** Collected: 04/11/18 10:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**1420**	mg/kg	119	10	04/12/18 14:19	04/13/18 12:36		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/12/18 14:19	04/13/18 12:36	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**22.8**	mg/kg	16.2	1	04/23/18 09:23	04/23/18 17:21		C0,M1
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/23/18 09:23	04/23/18 17:21	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**9190**	mg/kg	14.4	1	04/13/18 05:02	04/13/18 15:28	7429-90-5	
Barium	**344**	mg/kg	0.72	1	04/13/18 05:02	04/13/18 15:28	7440-39-3	
Boron	**134**	mg/kg	10.8	1	04/13/18 05:02	04/13/18 15:28	7440-42-8	
Copper	**36.7**	mg/kg	0.72	1	04/13/18 05:02	04/13/18 15:28	7440-50-8	
Iron	**36800**	mg/kg	18.0	5	04/13/18 05:02	04/13/18 15:50	7439-89-6	
Manganese	**291**	mg/kg	0.36	1	04/13/18 05:02	04/13/18 15:28	7439-96-5	
Nickel	**43.1**	mg/kg	1.4	1	04/13/18 05:02	04/13/18 15:28	7440-02-0	
Silver	ND	mg/kg	0.72	1	04/13/18 05:02	04/13/18 15:28	7440-22-4	
Tin	**20.1**	mg/kg	5.4	1	04/13/18 05:02	04/13/18 15:28	7440-31-5	
Titanium	**415**	mg/kg	1.8	1	04/13/18 05:02	04/13/18 15:28	7440-32-6	
Zinc	**1460**	mg/kg	1.4	1	04/13/18 05:02	04/13/18 15:28	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**33.3**	mg/kg	1.4	5	04/18/18 10:36	04/19/18 06:58	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.3**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:24	7440-36-0	
Arsenic	**11.6**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:24	7440-38-2	
Beryllium	**1.5**	mg/kg	0.29	20	04/13/18 05:01	04/13/18 09:24	7440-41-7	
Cadmium	**2.3**	mg/kg	0.12	20	04/13/18 05:01	04/13/18 09:24	7440-43-9	
Cobalt	**5.6**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:24	7440-48-4	
Lead	**150**	mg/kg	0.14	20	04/13/18 05:01	04/13/18 09:24	7439-92-1	
Lithium	**6.5**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:24	7439-93-2	
Selenium	**2.9**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:24	7782-49-2	
Strontium	**56.3**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:24	7440-24-6	
Vanadium	**132**	mg/kg	1.4	20	04/13/18 05:01	04/13/18 09:24	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.14**	mg/kg	0.026	1	04/13/18 05:02	04/15/18 18:03	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**34.3**	%	0.10	1		04/18/18 12:40		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	**5010**	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-01 (10-12 WM) **Lab ID: 10427018001** Collected: 04/11/18 10:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	208-96-8	
Anthracene	**15400**	ug/kg	5020	10	04/13/18 17:55	04/19/18 20:15	120-12-7	
Benzo(a)anthracene	**41400**	ug/kg	5020	10	04/13/18 17:55	04/19/18 20:15	56-55-3	
Benzo(a)pyrene	**36300**	ug/kg	5020	10	04/13/18 17:55	04/19/18 20:15	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	205-99-2	
Benzo(g,h,i)perylene	**24800**	ug/kg	5020	10	04/13/18 17:55	04/19/18 20:15	191-24-2	
Benzo(k)fluoranthene	**18300**	ug/kg	5020	10	04/13/18 17:55	04/19/18 20:15	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	101-55-3	
Butylbenzylphthalate	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	85-68-7	
Carbazole	**3270**	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	59-50-7	
4-Chloroaniline	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	108-60-1	
2-Chloronaphthalene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	91-58-7	
2-Chlorophenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	7005-72-3	
Chrysene	**46400**	ug/kg	5020	10	04/13/18 17:55	04/19/18 20:15	218-01-9	
Dibenz(a,h)anthracene	**1920**	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	53-70-3	
Dibenzofuran	**2930**	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	120-83-2	
Diethylphthalate	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	105-67-9	
Dimethylphthalate	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	131-11-3	
Di-n-butylphthalate	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2580	1	04/13/18 17:55	04/19/18 19:42	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	606-20-2	
Di-n-octylphthalate	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	122-66-7	
bis(2-Ethylhexyl)phthalate	**2000**	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	117-81-7	
Fluoranthene	**107000**	ug/kg	10000	20	04/13/18 17:55	04/20/18 16:00	206-44-0	
Fluorene	**5970**	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	87-68-3	
Hexachlorobenzene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	118-74-1	
Hexachloroethane	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	67-72-1	
Indeno(1,2,3-cd)pyrene	**21800**	ug/kg	5020	10	04/13/18 17:55	04/19/18 20:15	193-39-5	
Isophorone	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	78-59-1	
1-Methylnaphthalene	**642**	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	90-12-0	
2-Methylnaphthalene	**746**	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-01 (10-12 WM) **Lab ID: 10427018001** Collected: 04/11/18 10:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1000	1	04/13/18 17:55	04/19/18 19:42		
Naphthalene	**614**	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	91-20-3	
2-Nitroaniline	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	88-74-4	
3-Nitroaniline	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	99-09-2	
4-Nitroaniline	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	100-01-6	
Nitrobenzene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	98-95-3	
2-Nitrophenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	88-75-5	
4-Nitrophenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	86-30-6	
Pentachlorophenol	ND	ug/kg	1020	1	04/13/18 17:55	04/19/18 19:42	87-86-5	
Phenanthrene	**76800**	ug/kg	5020	10	04/13/18 17:55	04/19/18 20:15	85-01-8	
Phenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	108-95-2	
Pyrene	**96700**	ug/kg	10000	20	04/13/18 17:55	04/20/18 16:00	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	502	1	04/13/18 17:55	04/19/18 19:42	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	63	%.	43-125	1	04/13/18 17:55	04/19/18 19:42	4165-60-0	
2-Fluorobiphenyl (S)	64	%.	30-132	1	04/13/18 17:55	04/19/18 19:42	321-60-8	
p-Terphenyl-d14 (S)	118	%.	62-125	1	04/13/18 17:55	04/19/18 19:42	1718-51-0	
Phenol-d6 (S)	73	%.	48-125	1	04/13/18 17:55	04/19/18 19:42	13127-88-3	
2-Fluorophenol (S)	69	%.	40-125	1	04/13/18 17:55	04/19/18 19:42	367-12-4	
2,4,6-Tribromophenol (S)	80	%.	60-125	1	04/13/18 17:55	04/19/18 19:42	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**185**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	83-32-9	
Acenaphthylene	ND	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	208-96-8	
Anthracene	**351**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	120-12-7	
Benzo(a)anthracene	**750**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	56-55-3	
Benzo(a)pyrene	**769**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	50-32-8	
Benzo(b)fluoranthene	**1100**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	205-99-2	
Benzo(g,h,i)perylene	**399**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	191-24-2	
Benzo(k)fluoranthene	**354**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	207-08-9	
Chrysene	**757**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	218-01-9	
Dibenz(a,h)anthracene	**130**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	53-70-3	
Fluoranthene	**1770**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	206-44-0	
Fluorene	**192**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	86-73-7	
Indeno(1,2,3-cd)pyrene	**411**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	193-39-5	
Naphthalene	**96.9**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	91-20-3	
Phenanthrene	**1350**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	85-01-8	
Pyrene	**1450**	ug/kg	76.0	5	04/12/18 11:52	04/16/18 21:30	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	88	%.	42-125	5	04/12/18 11:52	04/16/18 21:30	321-60-8	D3

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-01 (10-12 WM) **Lab ID: 10427018001** Collected: 04/11/18 10:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	100	%.	57-125	5	04/12/18 11:52	04/16/18 21:30	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1690	1	04/20/18 10:36	04/21/18 06:07	67-64-1	
Allyl chloride	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	107-05-1	
Benzene	ND	ug/kg	33.8	1	04/20/18 10:36	04/21/18 06:07	71-43-2	
Bromobenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	108-86-1	
Bromochloromethane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	74-97-5	
Bromodichloromethane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	75-27-4	
Bromoform	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	75-25-2	
Bromomethane	ND	ug/kg	845	1	04/20/18 10:36	04/21/18 06:07	74-83-9	
2-Butanone (MEK)	ND	ug/kg	422	1	04/20/18 10:36	04/21/18 06:07	78-93-3	
n-Butylbenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	104-51-8	
sec-Butylbenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	135-98-8	
tert-Butylbenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	98-06-6	
Carbon tetrachloride	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	56-23-5	
Chlorobenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	108-90-7	
Chloroethane	ND	ug/kg	845	1	04/20/18 10:36	04/21/18 06:07	75-00-3	
Chloroform	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	67-66-3	
Chloromethane	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	74-87-3	
2-Chlorotoluene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	95-49-8	
4-Chlorotoluene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	845	1	04/20/18 10:36	04/21/18 06:07	96-12-8	
Dibromochloromethane	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	106-93-4	
Dibromomethane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	75-71-8	
1,1-Dichloroethane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	75-34-3	
1,2-Dichloroethane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	107-06-2	
1,1-Dichloroethene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	156-60-5	
Dichlorofluoromethane	ND	ug/kg	845	1	04/20/18 10:36	04/21/18 06:07	75-43-4	
1,2-Dichloropropane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	78-87-5	
1,3-Dichloropropane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	142-28-9	
2,2-Dichloropropane	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	594-20-7	
1,1-Dichloropropene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	60-29-7	
Ethylbenzene	**147**	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	422	1	04/20/18 10:36	04/21/18 06:07	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-01 (10-12 WM) **Lab ID: 10427018001** Collected: 04/11/18 10:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	98-82-8	
p-Isopropyltoluene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	99-87-6	
Methylene Chloride	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	422	1	04/20/18 10:36	04/21/18 06:07	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	1634-04-4	
Naphthalene	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	91-20-3	
n-Propylbenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	103-65-1	
Styrene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	79-34-5	
Tetrachloroethene	**98.0**	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	127-18-4	
Tetrahydrofuran	ND	ug/kg	3380	1	04/20/18 10:36	04/21/18 06:07	109-99-9	
Toluene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	79-00-5	
Trichloroethene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	79-01-6	
Trichlorofluoromethane	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	338	1	04/20/18 10:36	04/21/18 06:07	76-13-1	
1,2,4-Trimethylbenzene	**415**	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	84.5	1	04/20/18 10:36	04/21/18 06:07	108-67-8	
Vinyl chloride	ND	ug/kg	33.8	1	04/20/18 10:36	04/21/18 06:07	75-01-4	
Xylene (Total)	ND	ug/kg	253	1	04/20/18 10:36	04/21/18 06:07	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/20/18 10:36	04/21/18 06:07	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	04/20/18 10:36	04/21/18 06:07	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1	04/20/18 10:36	04/21/18 06:07	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	61.4	20	04/18/18 10:45	04/19/18 13:48	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**33.3**	mg/kg	1.0	1		04/26/18 09:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.48	1	04/20/18 10:25	04/20/18 13:36	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.7**	mg/kg	0.98	1	04/17/18 12:00	04/17/18 21:25	16984-48-8	M1

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-02 (7-9 WM) **Lab ID: 10427018002** Collected: 04/11/18 12:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	15.2	1	04/25/18 10:56	04/27/18 14:47	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	309-00-2	
alpha-BHC	ND	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	319-84-6	
beta-BHC	ND	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	319-85-7	
delta-BHC	ND	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	58-89-9	
Chlordane (Technical)	ND	ug/kg	56.3	2	04/16/18 09:32	04/16/18 23:42	57-74-9	
alpha-Chlordane	ND	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	5103-71-9	
gamma-Chlordane	**5.6**	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	5103-74-2	
4,4'-DDD	**28.3**	ug/kg	11.2	2	04/16/18 09:32	04/16/18 23:42	72-54-8	
4,4'-DDE	**17.0**	ug/kg	11.2	2	04/16/18 09:32	04/16/18 23:42	72-55-9	
4,4'-DDT	ND	ug/kg	11.2	2	04/16/18 09:32	04/16/18 23:42	50-29-3	
Dieldrin	**24.0**	ug/kg	11.2	2	04/16/18 09:32	04/16/18 23:42	60-57-1	
Endosulfan I	ND	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	959-98-8	
Endosulfan II	ND	ug/kg	11.2	2	04/16/18 09:32	04/16/18 23:42	33213-65-9	
Endosulfan sulfate	ND	ug/kg	11.2	2	04/16/18 09:32	04/16/18 23:42	1031-07-8	
Endrin	ND	ug/kg	11.2	2	04/16/18 09:32	04/16/18 23:42	72-20-8	
Endrin aldehyde	ND	ug/kg	11.2	2	04/16/18 09:32	04/16/18 23:42	7421-93-4	
Endrin ketone	ND	ug/kg	11.2	2	04/16/18 09:32	04/16/18 23:42	53494-70-5	
Heptachlor	ND	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	76-44-8	
Heptachlor epoxide	**29.8**	ug/kg	5.6	2	04/16/18 09:32	04/16/18 23:42	1024-57-3	
Methoxychlor	ND	ug/kg	56.3	2	04/16/18 09:32	04/16/18 23:42	72-43-5	
Toxaphene	ND	ug/kg	169	2	04/16/18 09:32	04/16/18 23:42	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	88	%.	30-150	2	04/16/18 09:32	04/16/18 23:42	877-09-8	5M,D4
Decachlorobiphenyl (S)	87	%.	30-150	2	04/16/18 09:32	04/16/18 23:42	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	55.5	1	04/13/18 19:35	04/16/18 16:18	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	55.5	1	04/13/18 19:35	04/16/18 16:18	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	55.5	1	04/13/18 19:35	04/16/18 16:18	11141-16-5	
PCB-1242 (Aroclor 1242)	**7850**	ug/kg	277	5	04/13/18 19:35	04/17/18 09:01	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	55.5	1	04/13/18 19:35	04/16/18 16:18	12672-29-6	
PCB-1254 (Aroclor 1254)	**1190**	ug/kg	55.5	1	04/13/18 19:35	04/16/18 16:18	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	55.5	1	04/13/18 19:35	04/16/18 16:18	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	55.5	1	04/13/18 19:35	04/16/18 16:18	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	55.5	1	04/13/18 19:35	04/16/18 16:18	11100-14-4	
PCB, Total	**9040**	ug/kg	277	5	04/13/18 19:35	04/17/18 09:01	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	82	%.	48-125	1	04/13/18 19:35	04/16/18 16:18	877-09-8	
Decachlorobiphenyl (S)	79	%.	30-134	1	04/13/18 19:35	04/16/18 16:18	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**155**	mg/kg	79.0	5	04/12/18 14:19	04/13/18 15:11		T6

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-02 (7-9 WM) **Lab ID: 10427018002** Collected: 04/11/18 12:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	86	%.	50-150	5	04/12/18 14:19	04/13/18 15:11	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	20.4	1	04/23/18 09:23	04/23/18 23:23		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/23/18 09:23	04/23/18 23:23	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**9140**	mg/kg	16.5	1	04/13/18 05:02	04/13/18 15:31	7429-90-5	
Barium	**200**	mg/kg	0.83	1	04/13/18 05:02	04/13/18 15:31	7440-39-3	
Boron	**114**	mg/kg	12.4	1	04/13/18 05:02	04/13/18 15:31	7440-42-8	
Copper	**166**	mg/kg	0.83	1	04/13/18 05:02	04/13/18 15:31	7440-50-8	
Iron	**116000**	mg/kg	41.3	10	04/13/18 05:02	04/13/18 16:17	7439-89-6	
Manganese	**868**	mg/kg	2.1	5	04/13/18 05:02	04/13/18 16:00	7439-96-5	
Nickel	**57.6**	mg/kg	1.7	1	04/13/18 05:02	04/13/18 15:31	7440-02-0	
Silver	**0.94**	mg/kg	0.83	1	04/13/18 05:02	04/13/18 15:31	7440-22-4	
Tin	**190**	mg/kg	6.2	1	04/13/18 05:02	04/13/18 15:31	7440-31-5	
Titanium	**311**	mg/kg	2.1	1	04/13/18 05:02	04/13/18 15:31	7440-32-6	
Zinc	**1010**	mg/kg	1.7	1	04/13/18 05:02	04/13/18 15:31	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**133**	mg/kg	1.6	5	04/18/18 10:36	04/19/18 07:02	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**13.3**	mg/kg	0.80	20	04/13/18 05:01	04/13/18 09:27	7440-36-0	
Arsenic	**22.8**	mg/kg	0.80	20	04/13/18 05:01	04/13/18 09:27	7440-38-2	
Beryllium	**0.69**	mg/kg	0.32	20	04/13/18 05:01	04/13/18 09:27	7440-41-7	
Cadmium	**2.5**	mg/kg	0.13	20	04/13/18 05:01	04/13/18 09:27	7440-43-9	
Cobalt	**10.1**	mg/kg	0.80	20	04/13/18 05:01	04/13/18 09:27	7440-48-4	
Lead	**578**	mg/kg	0.16	20	04/13/18 05:01	04/13/18 09:27	7439-92-1	
Lithium	**4.0**	mg/kg	0.80	20	04/13/18 05:01	04/13/18 09:27	7439-93-2	
Selenium	**1.2**	mg/kg	0.80	20	04/13/18 05:01	04/13/18 09:27	7782-49-2	
Strontium	**48.6**	mg/kg	0.80	20	04/13/18 05:01	04/13/18 09:27	7440-24-6	
Vanadium	**44.9**	mg/kg	1.6	20	04/13/18 05:01	04/13/18 09:27	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**1.1**	mg/kg	0.032	1	04/13/18 05:02	04/15/18 18:09	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**40.7**	%	0.10	1		04/18/18 12:41		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	83-32-9	
Acenaphthylene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	208-96-8	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-02 (7-9 WM) **Lab ID: 10427018002** Collected: 04/11/18 12:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	120-12-7	
Benzo(a)anthracene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	56-55-3	
Benzo(a)pyrene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	101-55-3	
Butylbenzylphthalate	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	85-68-7	
Carbazole	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	59-50-7	
4-Chloroaniline	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	108-60-1	
2-Chloronaphthalene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	91-58-7	
2-Chlorophenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	7005-72-3	
Chrysene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	53-70-3	
Dibenzofuran	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	120-83-2	
Diethylphthalate	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	105-67-9	
Dimethylphthalate	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	131-11-3	
Di-n-butylphthalate	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2860	1	04/13/18 17:55	04/19/18 19:46	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	606-20-2	
Di-n-octylphthalate	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	122-66-7	
bis(2-Ethylhexyl)phthalate	**1020**	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	117-81-7	
Fluoranthene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	206-44-0	
Fluorene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	87-68-3	
Hexachlorobenzene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	118-74-1	
Hexachloroethane	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	193-39-5	
Isophorone	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	78-59-1	
1-Methylnaphthalene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	90-12-0	
2-Methylnaphthalene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	95-48-7	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-02 (7-9 WM) **Lab ID: 10427018002** Collected: 04/11/18 12:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1110	1	04/13/18 17:55	04/19/18 19:46		
Naphthalene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	91-20-3	
2-Nitroaniline	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	88-74-4	
3-Nitroaniline	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	99-09-2	
4-Nitroaniline	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	100-01-6	
Nitrobenzene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	98-95-3	
2-Nitrophenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	88-75-5	
4-Nitrophenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	86-30-6	
Pentachlorophenol	ND	ug/kg	1130	1	04/13/18 17:55	04/19/18 19:46	87-86-5	
Phenanthrene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	85-01-8	
Phenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	108-95-2	
Pyrene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	556	1	04/13/18 17:55	04/19/18 19:46	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	58	%.	43-125	1	04/13/18 17:55	04/19/18 19:46	4165-60-0	
2-Fluorobiphenyl (S)	47	%.	30-132	1	04/13/18 17:55	04/19/18 19:46	321-60-8	
p-Terphenyl-d14 (S)	80	%.	62-125	1	04/13/18 17:55	04/19/18 19:46	1718-51-0	
Phenol-d6 (S)	66	%.	48-125	1	04/13/18 17:55	04/19/18 19:46	13127-88-3	
2-Fluorophenol (S)	62	%.	40-125	1	04/13/18 17:55	04/19/18 19:46	367-12-4	
2,4,6-Tribromophenol (S)	58	%.	60-125	1	04/13/18 17:55	04/19/18 19:46	118-79-6	S5
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	83-32-9	
Acenaphthylene	ND	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	208-96-8	
Anthracene	ND	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	120-12-7	
Benzo(a)anthracene	**67.3**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	56-55-3	
Benzo(a)pyrene	**75.2**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	50-32-8	
Benzo(b)fluoranthene	**452**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	205-99-2	
Benzo(g,h,i)perylene	**196**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	191-24-2	
Benzo(k)fluoranthene	**133**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	207-08-9	
Chrysene	**178**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	218-01-9	
Dibenz(a,h)anthracene	**81.8**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	53-70-3	
Fluoranthene	**38.8**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	206-44-0	
Fluorene	ND	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	86-73-7	
Indeno(1,2,3-cd)pyrene	**183**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	193-39-5	
Naphthalene	ND	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	91-20-3	
Phenanthrene	ND	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	85-01-8	
Pyrene	**43.2**	ug/kg	33.7	2	04/12/18 11:52	04/17/18 12:15	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	88	%.	42-125	2	04/12/18 11:52	04/17/18 12:15	321-60-8	D3
p-Terphenyl-d14 (S)	98	%.	57-125	2	04/12/18 11:52	04/17/18 12:15	1718-51-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-02 (7-9 WM) **Lab ID: 10427018002** Collected: 04/11/18 12:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1880	1	04/21/18 11:05	04/21/18 21:21	67-64-1	
Allyl chloride	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	107-05-1	
Benzene	ND	ug/kg	37.6	1	04/21/18 11:05	04/21/18 21:21	71-43-2	
Bromobenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	108-86-1	
Bromochloromethane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	74-97-5	
Bromodichloromethane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	75-27-4	
Bromoform	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	75-25-2	
Bromomethane	ND	ug/kg	940	1	04/21/18 11:05	04/21/18 21:21	74-83-9	
2-Butanone (MEK)	ND	ug/kg	470	1	04/21/18 11:05	04/21/18 21:21	78-93-3	
n-Butylbenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	104-51-8	
sec-Butylbenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	135-98-8	
tert-Butylbenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	98-06-6	
Carbon tetrachloride	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	56-23-5	
Chlorobenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	108-90-7	
Chloroethane	ND	ug/kg	940	1	04/21/18 11:05	04/21/18 21:21	75-00-3	
Chloroform	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	67-66-3	
Chloromethane	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	74-87-3	
2-Chlorotoluene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	95-49-8	
4-Chlorotoluene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	940	1	04/21/18 11:05	04/21/18 21:21	96-12-8	
Dibromochloromethane	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	106-93-4	
Dibromomethane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	75-71-8	
1,1-Dichloroethane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	75-34-3	
1,2-Dichloroethane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	107-06-2	
1,1-Dichloroethene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	156-60-5	
Dichlorofluoromethane	ND	ug/kg	940	1	04/21/18 11:05	04/21/18 21:21	75-43-4	
1,2-Dichloropropane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	78-87-5	
1,3-Dichloropropane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	142-28-9	
2,2-Dichloropropane	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	594-20-7	
1,1-Dichloropropene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	60-29-7	
Ethylbenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	470	1	04/21/18 11:05	04/21/18 21:21	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	98-82-8	
p-Isopropyltoluene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	99-87-6	
Methylene Chloride	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	470	1	04/21/18 11:05	04/21/18 21:21	108-10-1	

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-02 (7-9 WM) **Lab ID: 10427018002** Collected: 04/11/18 12:20 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	1634-04-4	
Naphthalene	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	91-20-3	
n-Propylbenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	103-65-1	
Styrene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	79-34-5	
Tetrachloroethene	**122**	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	127-18-4	
Tetrahydrofuran	ND	ug/kg	3760	1	04/21/18 11:05	04/21/18 21:21	109-99-9	
Toluene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	79-00-5	
Trichloroethene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	79-01-6	
Trichlorofluoromethane	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	376	1	04/21/18 11:05	04/21/18 21:21	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	94.0	1	04/21/18 11:05	04/21/18 21:21	108-67-8	
Vinyl chloride	ND	ug/kg	37.6	1	04/21/18 11:05	04/21/18 21:21	75-01-4	
Xylene (Total)	ND	ug/kg	282	1	04/21/18 11:05	04/21/18 21:21	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/21/18 11:05	04/21/18 21:21	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/21/18 11:05	04/21/18 21:21	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	04/21/18 11:05	04/21/18 21:21	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	67.5	20	04/18/18 10:45	04/19/18 13:48	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**133**	mg/kg	1.0	1		04/26/18 09:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**1.2**	mg/kg	0.44	1	04/20/18 10:25	04/20/18 13:37	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.8**	mg/kg	0.98	1	04/17/18 12:00	04/18/18 02:38	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-A1 (3-6 S) **Lab ID: 10427018003** Collected: 04/11/18 13:00 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	13.6	1	04/25/18 10:56	04/27/18 14:54	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	309-00-2	
alpha-BHC	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	319-84-6	
beta-BHC	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	319-85-7	
delta-BHC	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	58-89-9	
Chlordane (Technical)	ND	ug/kg	24.2	1	04/16/18 09:32	04/17/18 00:19	57-74-9	
alpha-Chlordane	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	5103-71-9	
gamma-Chlordane	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	5103-74-2	
4,4'-DDD	ND	ug/kg	4.8	1	04/16/18 09:32	04/17/18 00:19	72-54-8	
4,4'-DDE	ND	ug/kg	4.8	1	04/16/18 09:32	04/17/18 00:19	72-55-9	
4,4'-DDT	ND	ug/kg	4.8	1	04/16/18 09:32	04/17/18 00:19	50-29-3	
Dieldrin	ND	ug/kg	4.8	1	04/16/18 09:32	04/17/18 00:19	60-57-1	
Endosulfan I	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	959-98-8	
Endosulfan II	ND	ug/kg	4.8	1	04/16/18 09:32	04/17/18 00:19	33213-65-9	
Endosulfan sulfate	ND	ug/kg	4.8	1	04/16/18 09:32	04/17/18 00:19	1031-07-8	
Endrin	ND	ug/kg	4.8	1	04/16/18 09:32	04/17/18 00:19	72-20-8	
Endrin aldehyde	ND	ug/kg	4.8	1	04/16/18 09:32	04/17/18 00:19	7421-93-4	
Endrin ketone	ND	ug/kg	4.8	1	04/16/18 09:32	04/17/18 00:19	53494-70-5	
Heptachlor	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	76-44-8	
Heptachlor epoxide	ND	ug/kg	2.4	1	04/16/18 09:32	04/17/18 00:19	1024-57-3	
Methoxychlor	ND	ug/kg	24.2	1	04/16/18 09:32	04/17/18 00:19	72-43-5	
Toxaphene	ND	ug/kg	72.6	1	04/16/18 09:32	04/17/18 00:19	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	82	%.	30-150	1	04/16/18 09:32	04/17/18 00:19	877-09-8	
Decachlorobiphenyl (S)	80	%.	30-150	1	04/16/18 09:32	04/17/18 00:19	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	11100-14-4	
PCB, Total	ND	ug/kg	47.9	1	04/13/18 19:35	04/16/18 16:33	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	82	%.	48-125	1	04/13/18 19:35	04/16/18 16:33	877-09-8	
Decachlorobiphenyl (S)	89	%.	30-134	1	04/13/18 19:35	04/16/18 16:33	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	12.3	1	04/12/18 14:19	04/13/18 13:32		

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-A1 (3-6 S) **Lab ID: 10427018003** Collected: 04/11/18 13:00 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	74	%.	50-150	1	04/12/18 14:19	04/13/18 13:32	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	15.1	1	04/23/18 09:23	04/23/18 15:18		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/23/18 09:23	04/23/18 15:18	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**8780**	mg/kg	14.4	1	04/13/18 05:02	04/13/18 15:34	7429-90-5	
Barium	**100**	mg/kg	0.72	1	04/13/18 05:02	04/13/18 15:34	7440-39-3	
Boron	**265**	mg/kg	10.8	1	04/13/18 05:02	04/13/18 15:34	7440-42-8	
Copper	**18.0**	mg/kg	0.72	1	04/13/18 05:02	04/13/18 15:34	7440-50-8	
Iron	**23000**	mg/kg	18.0	5	04/13/18 05:02	04/13/18 16:03	7439-89-6	
Manganese	**159**	mg/kg	0.36	1	04/13/18 05:02	04/13/18 15:34	7439-96-5	
Nickel	**41.6**	mg/kg	1.4	1	04/13/18 05:02	04/13/18 15:34	7440-02-0	
Silver	ND	mg/kg	0.72	1	04/13/18 05:02	04/13/18 15:34	7440-22-4	
Tin	ND	mg/kg	5.4	1	04/13/18 05:02	04/13/18 15:34	7440-31-5	
Titanium	**472**	mg/kg	1.8	1	04/13/18 05:02	04/13/18 15:34	7440-32-6	
Zinc	**127**	mg/kg	1.4	1	04/13/18 05:02	04/13/18 15:34	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**43.5**	mg/kg	1.4	5	04/18/18 10:36	04/19/18 07:07	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.1**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:30	7440-36-0	
Arsenic	**21.7**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:30	7440-38-2	
Beryllium	**3.1**	mg/kg	0.29	20	04/13/18 05:01	04/13/18 09:30	7440-41-7	
Cadmium	**1.9**	mg/kg	0.12	20	04/13/18 05:01	04/13/18 09:30	7440-43-9	
Cobalt	**6.9**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:30	7440-48-4	
Lead	**31.3**	mg/kg	0.14	20	04/13/18 05:01	04/13/18 09:30	7439-92-1	
Lithium	**10.2**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:30	7439-93-2	
Selenium	**2.2**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:30	7782-49-2	
Strontium	**57.0**	mg/kg	0.72	20	04/13/18 05:01	04/13/18 09:30	7440-24-6	
Vanadium	**224**	mg/kg	1.4	20	04/13/18 05:01	04/13/18 09:30	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.028	1	04/13/18 05:02	04/15/18 18:11	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**31.3**	%	0.10	1		04/18/18 12:41		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	83-32-9	
Acenaphthylene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-A1 (3-6 S) **Lab ID: 10427018003** Collected: 04/11/18 13:00 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	120-12-7	
Benzo(a)anthracene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	56-55-3	
Benzo(a)pyrene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	101-55-3	
Butylbenzylphthalate	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	85-68-7	
Carbazole	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	59-50-7	
4-Chloroaniline	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	108-60-1	
2-Chloronaphthalene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	91-58-7	
2-Chlorophenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	7005-72-3	
Chrysene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	53-70-3	
Dibenzofuran	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	120-83-2	
Diethylphthalate	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	105-67-9	
Dimethylphthalate	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	131-11-3	
Di-n-butylphthalate	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2470	1	04/20/18 12:55	04/24/18 15:00	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	606-20-2	
Di-n-octylphthalate	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	117-81-7	
Fluoranthene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	206-44-0	
Fluorene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	87-68-3	
Hexachlorobenzene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	118-74-1	
Hexachloroethane	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	193-39-5	
Isophorone	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	78-59-1	
1-Methylnaphthalene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	90-12-0	
2-Methylnaphthalene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-A1 (3-6 S) **Lab ID: 10427018003** Collected: 04/11/18 13:00 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	959	1	04/20/18 12:55	04/24/18 15:00		
Naphthalene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	91-20-3	
2-Nitroaniline	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	88-74-4	
3-Nitroaniline	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	99-09-2	
4-Nitroaniline	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	100-01-6	
Nitrobenzene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	98-95-3	
2-Nitrophenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	88-75-5	
4-Nitrophenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	86-30-6	
Pentachlorophenol	ND	ug/kg	974	1	04/20/18 12:55	04/24/18 15:00	87-86-5	
Phenanthrene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	85-01-8	
Phenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	108-95-2	
Pyrene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	480	1	04/20/18 12:55	04/24/18 15:00	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	55	%.	43-125	1	04/20/18 12:55	04/24/18 15:00	4165-60-0	
2-Fluorobiphenyl (S)	54	%.	30-132	1	04/20/18 12:55	04/24/18 15:00	321-60-8	
p-Terphenyl-d14 (S)	86	%.	62-125	1	04/20/18 12:55	04/24/18 15:00	1718-51-0	
Phenol-d6 (S)	57	%.	48-125	1	04/20/18 12:55	04/24/18 15:00	13127-88-3	
2-Fluorophenol (S)	56	%.	40-125	1	04/20/18 12:55	04/24/18 15:00	367-12-4	
2,4,6-Tribromophenol (S)	68	%.	60-125	1	04/20/18 12:55	04/24/18 15:00	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	83-32-9	
Acenaphthylene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	208-96-8	
Anthracene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	120-12-7	
Benzo(a)anthracene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	56-55-3	
Benzo(a)pyrene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	50-32-8	
Benzo(b)fluoranthene	**15.9**	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	207-08-9	
Chrysene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	53-70-3	
Fluoranthene	**39.4**	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	206-44-0	
Fluorene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	193-39-5	
Naphthalene	ND	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	91-20-3	
Phenanthrene	**22.0**	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	85-01-8	
Pyrene	**29.6**	ug/kg	14.5	1	04/12/18 11:52	04/16/18 19:07	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	58	%.	42-125	1	04/12/18 11:52	04/16/18 19:07	321-60-8	
p-Terphenyl-d14 (S)	90	%.	57-125	1	04/12/18 11:52	04/16/18 19:07	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-A1 (3-6 S) **Lab ID: 10427018003** Collected: 04/11/18 13:00 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1450	1	04/21/18 11:05	04/21/18 21:37	67-64-1	
Allyl chloride	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	107-05-1	
Benzene	ND	ug/kg	29.0	1	04/21/18 11:05	04/21/18 21:37	71-43-2	
Bromobenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	108-86-1	
Bromochloromethane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	74-97-5	
Bromodichloromethane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	75-27-4	
Bromoform	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	75-25-2	
Bromomethane	ND	ug/kg	725	1	04/21/18 11:05	04/21/18 21:37	74-83-9	
2-Butanone (MEK)	ND	ug/kg	362	1	04/21/18 11:05	04/21/18 21:37	78-93-3	
n-Butylbenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	104-51-8	
sec-Butylbenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	135-98-8	
tert-Butylbenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	98-06-6	
Carbon tetrachloride	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	56-23-5	
Chlorobenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	108-90-7	
Chloroethane	ND	ug/kg	725	1	04/21/18 11:05	04/21/18 21:37	75-00-3	
Chloroform	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	67-66-3	
Chloromethane	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	74-87-3	
2-Chlorotoluene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	95-49-8	
4-Chlorotoluene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	725	1	04/21/18 11:05	04/21/18 21:37	96-12-8	
Dibromochloromethane	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	106-93-4	
Dibromomethane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	75-71-8	
1,1-Dichloroethane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	75-34-3	
1,2-Dichloroethane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	107-06-2	
1,1-Dichloroethene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	156-60-5	
Dichlorofluoromethane	ND	ug/kg	725	1	04/21/18 11:05	04/21/18 21:37	75-43-4	
1,2-Dichloropropane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	78-87-5	
1,3-Dichloropropane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	142-28-9	
2,2-Dichloropropane	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	594-20-7	
1,1-Dichloropropene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	60-29-7	
Ethylbenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	362	1	04/21/18 11:05	04/21/18 21:37	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	98-82-8	
p-Isopropyltoluene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	99-87-6	
Methylene Chloride	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	362	1	04/21/18 11:05	04/21/18 21:37	108-10-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-A1 (3-6 S) **Lab ID: 10427018003** Collected: 04/11/18 13:00 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	1634-04-4	
Naphthalene	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	91-20-3	
n-Propylbenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	103-65-1	
Styrene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	79-34-5	
Tetrachloroethene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	127-18-4	
Tetrahydrofuran	ND	ug/kg	2900	1	04/21/18 11:05	04/21/18 21:37	109-99-9	
Toluene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	79-00-5	
Trichloroethene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	79-01-6	
Trichlorofluoromethane	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	290	1	04/21/18 11:05	04/21/18 21:37	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	72.5	1	04/21/18 11:05	04/21/18 21:37	108-67-8	
Vinyl chloride	ND	ug/kg	29.0	1	04/21/18 11:05	04/21/18 21:37	75-01-4	
Xylene (Total)	ND	ug/kg	217	1	04/21/18 11:05	04/21/18 21:37	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1	04/21/18 11:05	04/21/18 21:37	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	04/21/18 11:05	04/21/18 21:37	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	04/21/18 11:05	04/21/18 21:37	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	14.4	5	04/18/18 10:45	04/19/18 13:49	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**43.5**	mg/kg	1.0	1		04/26/18 09:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.49	1	04/20/18 10:25	04/20/18 13:37	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**4.6**	mg/kg	1.0	1	04/18/18 14:45	04/20/18 03:00	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-B1 (11-13 WM) **Lab ID: 10427018004** Collected: 04/11/18 13:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.8	1	04/25/18 10:56	04/27/18 15:00	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	309-00-2	
alpha-BHC	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	319-84-6	
beta-BHC	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	319-85-7	
delta-BHC	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	58-89-9	
Chlordane (Technical)	ND	ug/kg	97.6	5	04/16/18 09:32	04/16/18 23:24	57-74-9	
alpha-Chlordane	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	5103-71-9	
gamma-Chlordane	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	5103-74-2	
4,4'-DDD	ND	ug/kg	19.5	5	04/16/18 09:32	04/16/18 23:24	72-54-8	
4,4'-DDE	ND	ug/kg	19.5	5	04/16/18 09:32	04/16/18 23:24	72-55-9	
4,4'-DDT	ND	ug/kg	19.5	5	04/16/18 09:32	04/16/18 23:24	50-29-3	
Dieldrin	ND	ug/kg	19.5	5	04/16/18 09:32	04/16/18 23:24	60-57-1	
Endosulfan I	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	959-98-8	
Endosulfan II	ND	ug/kg	19.5	5	04/16/18 09:32	04/16/18 23:24	33213-65-9	
Endosulfan sulfate	ND	ug/kg	19.5	5	04/16/18 09:32	04/16/18 23:24	1031-07-8	
Endrin	ND	ug/kg	19.5	5	04/16/18 09:32	04/16/18 23:24	72-20-8	
Endrin aldehyde	ND	ug/kg	19.5	5	04/16/18 09:32	04/16/18 23:24	7421-93-4	
Endrin ketone	ND	ug/kg	19.5	5	04/16/18 09:32	04/16/18 23:24	53494-70-5	
Heptachlor	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	76-44-8	
Heptachlor epoxide	ND	ug/kg	9.8	5	04/16/18 09:32	04/16/18 23:24	1024-57-3	
Methoxychlor	ND	ug/kg	97.6	5	04/16/18 09:32	04/16/18 23:24	72-43-5	
Toxaphene	ND	ug/kg	292	5	04/16/18 09:32	04/16/18 23:24	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	91	%.	30-150	5	04/16/18 09:32	04/16/18 23:24	877-09-8	3M,D3
Decachlorobiphenyl (S)	100	%.	30-150	5	04/16/18 09:32	04/16/18 23:24	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	11100-14-4	
PCB, Total	ND	ug/kg	38.7	1	04/13/18 19:35	04/16/18 16:49	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	78	%.	48-125	1	04/13/18 19:35	04/16/18 16:49	877-09-8	
Decachlorobiphenyl (S)	80	%.	30-134	1	04/13/18 19:35	04/16/18 16:49	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**186**	mg/kg	100	10	04/12/18 14:19	04/13/18 15:04		T6

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-B1 (11-13 WM) **Lab ID: 10427018004** Collected: 04/11/18 13:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/12/18 14:19	04/13/18 15:04	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**17.7**	mg/kg	15.7	1	04/23/18 09:23	04/23/18 23:47		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/23/18 09:23	04/23/18 23:47	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**4620**	mg/kg	11.3	1	04/13/18 05:02	04/13/18 15:36	7429-90-5	
Barium	**72.7**	mg/kg	0.56	1	04/13/18 05:02	04/13/18 15:36	7440-39-3	
Boron	**12.6**	mg/kg	8.5	1	04/13/18 05:02	04/13/18 15:36	7440-42-8	
Copper	**12.5**	mg/kg	0.56	1	04/13/18 05:02	04/13/18 15:36	7440-50-8	
Iron	**9730**	mg/kg	2.8	1	04/13/18 05:02	04/13/18 15:36	7439-89-6	
Manganese	**238**	mg/kg	0.28	1	04/13/18 05:02	04/13/18 15:36	7439-96-5	
Nickel	**10.5**	mg/kg	1.1	1	04/13/18 05:02	04/13/18 15:36	7440-02-0	
Silver	ND	mg/kg	0.56	1	04/13/18 05:02	04/13/18 15:36	7440-22-4	
Tin	ND	mg/kg	4.2	1	04/13/18 05:02	04/13/18 15:36	7440-31-5	
Titanium	**185**	mg/kg	1.4	1	04/13/18 05:02	04/13/18 15:36	7440-32-6	
Zinc	**89.9**	mg/kg	1.1	1	04/13/18 05:02	04/13/18 15:36	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**14.2**	mg/kg	1.1	5	04/18/18 10:36	04/19/18 07:21	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.58	20	04/13/18 05:01	04/13/18 09:32	7440-36-0	
Arsenic	**5.2**	mg/kg	0.58	20	04/13/18 05:01	04/13/18 09:32	7440-38-2	
Beryllium	**0.51**	mg/kg	0.23	20	04/13/18 05:01	04/13/18 09:32	7440-41-7	
Cadmium	**0.52**	mg/kg	0.092	20	04/13/18 05:01	04/13/18 09:32	7440-43-9	
Cobalt	**4.2**	mg/kg	0.58	20	04/13/18 05:01	04/13/18 09:32	7440-48-4	
Lead	**54.2**	mg/kg	0.12	20	04/13/18 05:01	04/13/18 09:32	7439-92-1	
Lithium	**5.0**	mg/kg	0.58	20	04/13/18 05:01	04/13/18 09:32	7439-93-2	
Selenium	**0.59**	mg/kg	0.58	20	04/13/18 05:01	04/13/18 09:32	7782-49-2	
Strontium	**38.6**	mg/kg	0.58	20	04/13/18 05:01	04/13/18 09:32	7440-24-6	
Vanadium	**29.8**	mg/kg	1.2	20	04/13/18 05:01	04/13/18 09:32	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.037**	mg/kg	0.022	1	04/13/18 05:02	04/15/18 18:13	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**14.8**	%	0.10	1		04/18/18 12:41		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	83-32-9	
Acenaphthylene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	208-96-8	

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-B1 (11-13 WM) **Lab ID: 10427018004** Collected: 04/11/18 13:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	120-12-7	
Benzo(a)anthracene	**708**	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	56-55-3	
Benzo(a)pyrene	**578**	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	50-32-8	
Benzo(b)fluoranthene	**772**	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	101-55-3	
Butylbenzylphthalate	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	85-68-7	
Carbazole	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	59-50-7	
4-Chloroaniline	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	108-60-1	
2-Chloronaphthalene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	91-58-7	
2-Chlorophenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	7005-72-3	
Chrysene	**669**	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	53-70-3	
Dibenzofuran	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	120-83-2	
Diethylphthalate	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	105-67-9	
Dimethylphthalate	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	131-11-3	
Di-n-butylphthalate	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	1990	1	04/13/18 17:55	04/19/18 20:39	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	606-20-2	
Di-n-octylphthalate	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	117-81-7	
Fluoranthene	**1300**	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	206-44-0	
Fluorene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	87-68-3	
Hexachlorobenzene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	118-74-1	
Hexachloroethane	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	193-39-5	
Isophorone	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	78-59-1	
1-Methylnaphthalene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	90-12-0	
2-Methylnaphthalene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-B1 (11-13 WM) **Lab ID: 10427018004** Collected: 04/11/18 13:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	773	1	04/13/18 17:55	04/19/18 20:39		
Naphthalene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	91-20-3	
2-Nitroaniline	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	88-74-4	
3-Nitroaniline	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	99-09-2	
4-Nitroaniline	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	100-01-6	
Nitrobenzene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	98-95-3	
2-Nitrophenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	88-75-5	
4-Nitrophenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	86-30-6	
Pentachlorophenol	ND	ug/kg	785	1	04/13/18 17:55	04/19/18 20:39	87-86-5	
Phenanthrene	**887**	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	85-01-8	
Phenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	108-95-2	
Pyrene	**1180**	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	387	1	04/13/18 17:55	04/19/18 20:39	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	63	%.	43-125	1	04/13/18 17:55	04/19/18 20:39	4165-60-0	
2-Fluorobiphenyl (S)	70	%.	30-132	1	04/13/18 17:55	04/19/18 20:39	321-60-8	
p-Terphenyl-d14 (S)	88	%.	62-125	1	04/13/18 17:55	04/19/18 20:39	1718-51-0	
Phenol-d6 (S)	68	%.	48-125	1	04/13/18 17:55	04/19/18 20:39	13127-88-3	
2-Fluorophenol (S)	65	%.	40-125	1	04/13/18 17:55	04/19/18 20:39	367-12-4	
2,4,6-Tribromophenol (S)	81	%.	60-125	1	04/13/18 17:55	04/19/18 20:39	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**89.1**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	83-32-9	
Acenaphthylene	**70.0**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	208-96-8	
Anthracene	**348**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	120-12-7	
Benzo(a)anthracene	**662**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	56-55-3	
Benzo(a)pyrene	**515**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	50-32-8	
Benzo(b)fluoranthene	**670**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	205-99-2	
Benzo(g,h,i)perylene	**274**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	191-24-2	
Benzo(k)fluoranthene	**285**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	207-08-9	
Chrysene	**593**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	218-01-9	
Dibenz(a,h)anthracene	**110**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	53-70-3	
Fluoranthene	**1310**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	206-44-0	
Fluorene	**130**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	86-73-7	
Indeno(1,2,3-cd)pyrene	**278**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	193-39-5	
Naphthalene	ND	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	91-20-3	
Phenanthrene	**1000**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	85-01-8	
Pyrene	**1060**	ug/kg	58.6	5	04/12/18 11:52	04/17/18 13:57	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	78	%.	42-125	5	04/12/18 11:52	04/17/18 13:57	321-60-8	D3
p-Terphenyl-d14 (S)	85	%.	57-125	5	04/12/18 11:52	04/17/18 13:57	1718-51-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-B1 (11-13 WM) **Lab ID: 10427018004** Collected: 04/11/18 13:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1400	1	04/21/18 11:05	04/21/18 21:54	67-64-1	
Allyl chloride	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	107-05-1	
Benzene	ND	ug/kg	28.0	1	04/21/18 11:05	04/21/18 21:54	71-43-2	
Bromobenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	108-86-1	
Bromochloromethane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	74-97-5	
Bromodichloromethane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	75-27-4	
Bromoform	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	75-25-2	
Bromomethane	ND	ug/kg	699	1	04/21/18 11:05	04/21/18 21:54	74-83-9	
2-Butanone (MEK)	ND	ug/kg	350	1	04/21/18 11:05	04/21/18 21:54	78-93-3	
n-Butylbenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	104-51-8	
sec-Butylbenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	135-98-8	
tert-Butylbenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	98-06-6	
Carbon tetrachloride	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	56-23-5	
Chlorobenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	108-90-7	
Chloroethane	ND	ug/kg	699	1	04/21/18 11:05	04/21/18 21:54	75-00-3	
Chloroform	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	67-66-3	
Chloromethane	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	74-87-3	
2-Chlorotoluene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	95-49-8	
4-Chlorotoluene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	699	1	04/21/18 11:05	04/21/18 21:54	96-12-8	
Dibromochloromethane	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	106-93-4	
Dibromomethane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	75-71-8	
1,1-Dichloroethane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	75-34-3	
1,2-Dichloroethane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	107-06-2	
1,1-Dichloroethene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	156-60-5	
Dichlorofluoromethane	ND	ug/kg	699	1	04/21/18 11:05	04/21/18 21:54	75-43-4	
1,2-Dichloropropane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	78-87-5	
1,3-Dichloropropane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	142-28-9	
2,2-Dichloropropane	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	594-20-7	
1,1-Dichloropropene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	60-29-7	
Ethylbenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	350	1	04/21/18 11:05	04/21/18 21:54	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	98-82-8	
p-Isopropyltoluene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	99-87-6	
Methylene Chloride	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	350	1	04/21/18 11:05	04/21/18 21:54	108-10-1	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-B1 (11-13 WM) **Lab ID: 10427018004** Collected: 04/11/18 13:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	1634-04-4	
Naphthalene	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	91-20-3	
n-Propylbenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	103-65-1	
Styrene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	79-34-5	
Tetrachloroethene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	127-18-4	
Tetrahydrofuran	ND	ug/kg	2800	1	04/21/18 11:05	04/21/18 21:54	109-99-9	
Toluene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	79-00-5	
Trichloroethene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	79-01-6	
Trichlorofluoromethane	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	280	1	04/21/18 11:05	04/21/18 21:54	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	69.9	1	04/21/18 11:05	04/21/18 21:54	108-67-8	
Vinyl chloride	ND	ug/kg	28.0	1	04/21/18 11:05	04/21/18 21:54	75-01-4	
Xylene (Total)	ND	ug/kg	210	1	04/21/18 11:05	04/21/18 21:54	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/21/18 11:05	04/21/18 21:54	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1	04/21/18 11:05	04/21/18 21:54	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1	04/21/18 11:05	04/21/18 21:54	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	235	100	04/18/18 10:45	04/19/18 14:08	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**14.2**	mg/kg	1.0	1		04/26/18 09:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.30	1	04/20/18 10:25	04/20/18 13:40	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**2.1**	mg/kg	0.99	1	04/18/18 14:45	04/20/18 01:41	16984-48-8	M1

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-C1 (5-8 WM) **Lab ID: 10427018005** Collected: 04/11/18 14:30 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.3	1	04/25/18 10:56	04/27/18 15:34	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	309-00-2	
alpha-BHC	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	319-84-6	
beta-BHC	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	319-85-7	
delta-BHC	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	58-89-9	
Chlordane (Technical)	ND	ug/kg	425	20	04/16/18 09:32	04/17/18 02:09	57-74-9	
alpha-Chlordane	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	5103-71-9	
gamma-Chlordane	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	5103-74-2	
4,4'-DDD	ND	ug/kg	84.8	20	04/16/18 09:32	04/17/18 02:09	72-54-8	
4,4'-DDE	ND	ug/kg	84.8	20	04/16/18 09:32	04/17/18 02:09	72-55-9	
4,4'-DDT	ND	ug/kg	84.8	20	04/16/18 09:32	04/17/18 02:09	50-29-3	
Dieldrin	ND	ug/kg	84.8	20	04/16/18 09:32	04/17/18 02:09	60-57-1	
Endosulfan I	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	959-98-8	
Endosulfan II	ND	ug/kg	84.8	20	04/16/18 09:32	04/17/18 02:09	33213-65-9	
Endosulfan sulfate	ND	ug/kg	84.8	20	04/16/18 09:32	04/17/18 02:09	1031-07-8	
Endrin	ND	ug/kg	84.8	20	04/16/18 09:32	04/17/18 02:09	72-20-8	
Endrin aldehyde	ND	ug/kg	84.8	20	04/16/18 09:32	04/17/18 02:09	7421-93-4	
Endrin ketone	ND	ug/kg	84.8	20	04/16/18 09:32	04/17/18 02:09	53494-70-5	
Heptachlor	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	76-44-8	
Heptachlor epoxide	ND	ug/kg	42.5	20	04/16/18 09:32	04/17/18 02:09	1024-57-3	
Methoxychlor	ND	ug/kg	425	20	04/16/18 09:32	04/17/18 02:09	72-43-5	
Toxaphene	ND	ug/kg	1270	20	04/16/18 09:32	04/17/18 02:09	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	04/16/18 09:32	04/17/18 02:09	877-09-8	2M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	04/16/18 09:32	04/17/18 02:09	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	11141-16-5	
PCB-1242 (Aroclor 1242)	**1240**	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	12672-29-6	
PCB-1254 (Aroclor 1254)	**170**	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	11100-14-4	
PCB, Total	**1410**	ug/kg	42.0	1	04/13/18 19:35	04/16/18 17:36	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	82	%.	48-125	1	04/13/18 19:35	04/16/18 17:36	877-09-8	
Decachlorobiphenyl (S)	80	%.	30-134	1	04/13/18 19:35	04/16/18 17:36	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-C1 (5-8 WM) **Lab ID: 10427018005** Collected: 04/11/18 14:30 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**200**	mg/kg	106	10	04/12/18 14:19	04/13/18 14:57		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/12/18 14:19	04/13/18 14:57	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	13.1	1	04/23/18 09:23	04/24/18 00:11		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/23/18 09:23	04/24/18 00:11	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**6440**	mg/kg	12.5	1	04/13/18 05:02	04/13/18 15:39	7429-90-5	
Barium	**114**	mg/kg	0.62	1	04/13/18 05:02	04/13/18 15:39	7440-39-3	
Boron	**17.0**	mg/kg	9.4	1	04/13/18 05:02	04/13/18 15:39	7440-42-8	
Copper	**61.2**	mg/kg	0.62	1	04/13/18 05:02	04/13/18 15:39	7440-50-8	
Iron	**16800**	mg/kg	15.6	5	04/13/18 05:02	04/13/18 16:06	7439-89-6	
Manganese	**264**	mg/kg	0.31	1	04/13/18 05:02	04/13/18 15:39	7439-96-5	
Nickel	**16.8**	mg/kg	1.2	1	04/13/18 05:02	04/13/18 15:39	7440-02-0	
Silver	ND	mg/kg	0.62	1	04/13/18 05:02	04/13/18 15:39	7440-22-4	
Tin	**7.2**	mg/kg	4.7	1	04/13/18 05:02	04/13/18 15:39	7440-31-5	
Titanium	**317**	mg/kg	1.6	1	04/13/18 05:02	04/13/18 15:39	7440-32-6	
Zinc	**223**	mg/kg	1.2	1	04/13/18 05:02	04/13/18 15:39	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**20.6**	mg/kg	1.2	5	04/18/18 10:36	04/19/18 07:53	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.1**	mg/kg	0.63	20	04/13/18 05:01	04/13/18 09:35	7440-36-0	
Arsenic	**6.0**	mg/kg	0.63	20	04/13/18 05:01	04/13/18 09:35	7440-38-2	
Beryllium	**0.48**	mg/kg	0.25	20	04/13/18 05:01	04/13/18 09:35	7440-41-7	
Cadmium	**1.4**	mg/kg	0.10	20	04/13/18 05:01	04/13/18 09:35	7440-43-9	
Cobalt	**8.6**	mg/kg	0.63	20	04/13/18 05:01	04/13/18 09:35	7440-48-4	
Lead	**78.9**	mg/kg	0.13	20	04/13/18 05:01	04/13/18 09:35	7439-92-1	
Lithium	**5.4**	mg/kg	0.63	20	04/13/18 05:01	04/13/18 09:35	7439-93-2	
Selenium	ND	mg/kg	0.63	20	04/13/18 05:01	04/13/18 09:35	7782-49-2	
Strontium	**38.1**	mg/kg	0.63	20	04/13/18 05:01	04/13/18 09:35	7440-24-6	
Vanadium	**28.8**	mg/kg	1.3	20	04/13/18 05:01	04/13/18 09:35	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**1.1**	mg/kg	0.025	1	04/13/18 05:02	04/15/18 18:20	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**21.5**	%	0.10	1		04/18/18 12:41		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-C1 (5-8 WM) **Lab ID: 10427018005** Collected: 04/11/18 14:30 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	208-96-8	
Anthracene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	120-12-7	
Benzo(a)anthracene	**529**	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	56-55-3	
Benzo(a)pyrene	**463**	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	50-32-8	
Benzo(b)fluoranthene	**617**	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	101-55-3	
Butylbenzylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	85-68-7	
Carbazole	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	59-50-7	
4-Chloroaniline	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	108-60-1	
2-Chloronaphthalene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	91-58-7	
2-Chlorophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	7005-72-3	
Chrysene	**535**	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	53-70-3	
Dibenzofuran	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	120-83-2	
Diethylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	105-67-9	
Dimethylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	131-11-3	
Di-n-butylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2160	1	04/13/18 17:55	04/19/18 21:07	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	606-20-2	
Di-n-octylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	117-81-7	
Fluoranthene	**1050**	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	206-44-0	
Fluorene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	87-68-3	
Hexachlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	118-74-1	
Hexachloroethane	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	193-39-5	
Isophorone	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	78-59-1	
1-Methylnaphthalene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	90-12-0	
2-Methylnaphthalene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-C1 (5-8 WM) **Lab ID: 10427018005** Collected: 04/11/18 14:30 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	840	1	04/13/18 17:55	04/19/18 21:07		
Naphthalene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	91-20-3	
2-Nitroaniline	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	88-74-4	
3-Nitroaniline	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	99-09-2	
4-Nitroaniline	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	100-01-6	
Nitrobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	98-95-3	
2-Nitrophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	88-75-5	
4-Nitrophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	86-30-6	
Pentachlorophenol	ND	ug/kg	853	1	04/13/18 17:55	04/19/18 21:07	87-86-5	
Phenanthrene	**777**	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	85-01-8	
Phenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	108-95-2	
Pyrene	**1120**	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 21:07	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	61	%.	43-125	1	04/13/18 17:55	04/19/18 21:07	4165-60-0	
2-Fluorobiphenyl (S)	61	%.	30-132	1	04/13/18 17:55	04/19/18 21:07	321-60-8	
p-Terphenyl-d14 (S)	78	%.	62-125	1	04/13/18 17:55	04/19/18 21:07	1718-51-0	
Phenol-d6 (S)	62	%.	48-125	1	04/13/18 17:55	04/19/18 21:07	13127-88-3	
2-Fluorophenol (S)	62	%.	40-125	1	04/13/18 17:55	04/19/18 21:07	367-12-4	
2,4,6-Tribromophenol (S)	74	%.	60-125	1	04/13/18 17:55	04/19/18 21:07	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**128**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	83-32-9	
Acenaphthylene	ND	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	208-96-8	
Anthracene	**267**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	120-12-7	
Benzo(a)anthracene	**601**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	56-55-3	
Benzo(a)pyrene	**535**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	50-32-8	
Benzo(b)fluoranthene	**699**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	205-99-2	
Benzo(g,h,i)perylene	**287**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	191-24-2	
Benzo(k)fluoranthene	**244**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	207-08-9	
Chrysene	**540**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	218-01-9	
Dibenz(a,h)anthracene	**105**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	53-70-3	
Fluoranthene	**1150**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	206-44-0	
Fluorene	**122**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	86-73-7	
Indeno(1,2,3-cd)pyrene	**296**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	193-39-5	
Naphthalene	ND	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	91-20-3	
Phenanthrene	**805**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	85-01-8	
Pyrene	**994**	ug/kg	63.7	5	04/12/18 11:52	04/17/18 14:18	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	79	%.	42-125	5	04/12/18 11:52	04/17/18 14:18	321-60-8	D3

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-C1 (5-8 WM) **Lab ID: 10427018005** Collected: 04/11/18 14:30 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	87	%.	57-125	5	04/12/18 11:52	04/17/18 14:18	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1300	1	04/21/18 11:05	04/22/18 00:25	67-64-1	
Allyl chloride	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	107-05-1	
Benzene	ND	ug/kg	26.1	1	04/21/18 11:05	04/22/18 00:25	71-43-2	
Bromobenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	108-86-1	
Bromochloromethane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	74-97-5	
Bromodichloromethane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	75-27-4	
Bromoform	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	75-25-2	
Bromomethane	ND	ug/kg	652	1	04/21/18 11:05	04/22/18 00:25	74-83-9	
2-Butanone (MEK)	ND	ug/kg	326	1	04/21/18 11:05	04/22/18 00:25	78-93-3	
n-Butylbenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	104-51-8	
sec-Butylbenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	135-98-8	
tert-Butylbenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	98-06-6	
Carbon tetrachloride	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	56-23-5	
Chlorobenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	108-90-7	
Chloroethane	ND	ug/kg	652	1	04/21/18 11:05	04/22/18 00:25	75-00-3	
Chloroform	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	67-66-3	
Chloromethane	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	74-87-3	
2-Chlorotoluene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	95-49-8	
4-Chlorotoluene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	652	1	04/21/18 11:05	04/22/18 00:25	96-12-8	
Dibromochloromethane	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	106-93-4	
Dibromomethane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	75-71-8	
1,1-Dichloroethane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	75-34-3	
1,2-Dichloroethane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	107-06-2	
1,1-Dichloroethene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	156-60-5	
Dichlorofluoromethane	ND	ug/kg	652	1	04/21/18 11:05	04/22/18 00:25	75-43-4	
1,2-Dichloropropane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	78-87-5	
1,3-Dichloropropane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	142-28-9	
2,2-Dichloropropane	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	594-20-7	
1,1-Dichloropropene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	60-29-7	
Ethylbenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	326	1	04/21/18 11:05	04/22/18 00:25	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-C1 (5-8 WM) **Lab ID: 10427018005** Collected: 04/11/18 14:30 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	98-82-8	
p-Isopropyltoluene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	99-87-6	
Methylene Chloride	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	326	1	04/21/18 11:05	04/22/18 00:25	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	1634-04-4	
Naphthalene	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	91-20-3	
n-Propylbenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	103-65-1	
Styrene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	79-34-5	
Tetrachloroethene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	127-18-4	
Tetrahydrofuran	ND	ug/kg	2610	1	04/21/18 11:05	04/22/18 00:25	109-99-9	
Toluene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	79-00-5	
Trichloroethene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	79-01-6	
Trichlorofluoromethane	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	261	1	04/21/18 11:05	04/22/18 00:25	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	65.2	1	04/21/18 11:05	04/22/18 00:25	108-67-8	
Vinyl chloride	ND	ug/kg	26.1	1	04/21/18 11:05	04/22/18 00:25	75-01-4	
Xylene (Total)	ND	ug/kg	196	1	04/21/18 11:05	04/22/18 00:25	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1	04/21/18 11:05	04/22/18 00:25	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/21/18 11:05	04/22/18 00:25	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	04/21/18 11:05	04/22/18 00:25	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	50.6	20	04/18/18 10:45	04/19/18 14:09	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**20.6**	mg/kg	1.0	1		04/26/18 09:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.32	1	04/20/18 10:25	04/20/18 13:40	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**2.2**	mg/kg	0.97	1	04/18/18 14:45	04/20/18 03:19	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-03 (2-5 WM) **Lab ID: 10427018006** Collected: 04/11/18 14:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	14.4	1	04/25/18 10:56	04/27/18 15:40	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	309-00-2	
alpha-BHC	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	319-84-6	
beta-BHC	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	319-85-7	
delta-BHC	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	58-89-9	
Chlordane (Technical)	ND	ug/kg	25.2	1	04/16/18 09:32	04/17/18 00:37	57-74-9	
alpha-Chlordane	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	5103-71-9	
gamma-Chlordane	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	5103-74-2	
4,4'-DDD	ND	ug/kg	5.0	1	04/16/18 09:32	04/17/18 00:37	72-54-8	
4,4'-DDE	ND	ug/kg	5.0	1	04/16/18 09:32	04/17/18 00:37	72-55-9	
4,4'-DDT	ND	ug/kg	5.0	1	04/16/18 09:32	04/17/18 00:37	50-29-3	
Dieldrin	ND	ug/kg	5.0	1	04/16/18 09:32	04/17/18 00:37	60-57-1	
Endosulfan I	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	959-98-8	
Endosulfan II	ND	ug/kg	5.0	1	04/16/18 09:32	04/17/18 00:37	33213-65-9	
Endosulfan sulfate	ND	ug/kg	5.0	1	04/16/18 09:32	04/17/18 00:37	1031-07-8	
Endrin	ND	ug/kg	5.0	1	04/16/18 09:32	04/17/18 00:37	72-20-8	
Endrin aldehyde	ND	ug/kg	5.0	1	04/16/18 09:32	04/17/18 00:37	7421-93-4	
Endrin ketone	ND	ug/kg	5.0	1	04/16/18 09:32	04/17/18 00:37	53494-70-5	
Heptachlor	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	76-44-8	
Heptachlor epoxide	ND	ug/kg	2.5	1	04/16/18 09:32	04/17/18 00:37	1024-57-3	
Methoxychlor	ND	ug/kg	25.2	1	04/16/18 09:32	04/17/18 00:37	72-43-5	
Toxaphene	ND	ug/kg	75.4	1	04/16/18 09:32	04/17/18 00:37	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	93	%.	30-150	1	04/16/18 09:32	04/17/18 00:37	877-09-8	
Decachlorobiphenyl (S)	87	%.	30-150	1	04/16/18 09:32	04/17/18 00:37	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	11100-14-4	
PCB, Total	ND	ug/kg	49.8	1	04/13/18 19:35	04/16/18 17:52	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	85	%.	48-125	1	04/13/18 19:35	04/16/18 17:52	877-09-8	
Decachlorobiphenyl (S)	83	%.	30-134	1	04/13/18 19:35	04/16/18 17:52	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	14.4	1	04/12/18 14:19	04/13/18 13:11		

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-03 (2-5 WM) **Lab ID: 10427018006** Collected: 04/11/18 14:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	78	%.	50-150	1	04/12/18 14:19	04/13/18 13:11	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	16.9	1	04/23/18 09:23	04/24/18 00:36		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/23/18 09:23	04/24/18 00:36	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**13000**	mg/kg	15.1	1	04/13/18 05:02	04/13/18 15:42	7429-90-5	
Barium	**171**	mg/kg	0.76	1	04/13/18 05:02	04/13/18 15:42	7440-39-3	
Boron	**145**	mg/kg	11.3	1	04/13/18 05:02	04/13/18 15:42	7440-42-8	
Copper	**25.1**	mg/kg	0.76	1	04/13/18 05:02	04/13/18 15:42	7440-50-8	
Iron	**35900**	mg/kg	18.9	5	04/13/18 05:02	04/13/18 16:08	7439-89-6	
Manganese	**194**	mg/kg	0.38	1	04/13/18 05:02	04/13/18 15:42	7439-96-5	
Nickel	**25.5**	mg/kg	1.5	1	04/13/18 05:02	04/13/18 15:42	7440-02-0	
Silver	ND	mg/kg	0.76	1	04/13/18 05:02	04/13/18 15:42	7440-22-4	
Tin	ND	mg/kg	5.7	1	04/13/18 05:02	04/13/18 15:42	7440-31-5	
Titanium	**653**	mg/kg	1.9	1	04/13/18 05:02	04/13/18 15:42	7440-32-6	
Zinc	**171**	mg/kg	1.5	1	04/13/18 05:02	04/13/18 15:42	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**44.0**	mg/kg	1.4	5	04/18/18 10:36	04/19/18 07:57	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.7**	mg/kg	0.73	20	04/13/18 05:01	04/13/18 09:38	7440-36-0	
Arsenic	**24.9**	mg/kg	0.73	20	04/13/18 05:01	04/13/18 09:38	7440-38-2	
Beryllium	**3.6**	mg/kg	0.29	20	04/13/18 05:01	04/13/18 09:38	7440-41-7	
Cadmium	**2.2**	mg/kg	0.12	20	04/13/18 05:01	04/13/18 09:38	7440-43-9	
Cobalt	**8.2**	mg/kg	0.73	20	04/13/18 05:01	04/13/18 09:38	7440-48-4	
Lead	**30.9**	mg/kg	0.15	20	04/13/18 05:01	04/13/18 09:38	7439-92-1	
Lithium	**12.0**	mg/kg	0.73	20	04/13/18 05:01	04/13/18 09:38	7439-93-2	
Selenium	**1.6**	mg/kg	0.73	20	04/13/18 05:01	04/13/18 09:38	7782-49-2	
Strontium	**66.7**	mg/kg	0.73	20	04/13/18 05:01	04/13/18 09:38	7440-24-6	
Vanadium	**121**	mg/kg	1.5	20	04/13/18 05:01	04/13/18 09:38	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.060**	mg/kg	0.030	1	04/13/18 05:02	04/15/18 18:22	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**33.8**	%	0.10	1		04/18/18 12:41		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	83-32-9	
Acenaphthylene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	208-96-8	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-03 (2-5 WM) **Lab ID: 10427018006** Collected: 04/11/18 14:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	120-12-7	
Benzo(a)anthracene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	56-55-3	
Benzo(a)pyrene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	101-55-3	
Butylbenzylphthalate	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	85-68-7	
Carbazole	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	59-50-7	
4-Chloroaniline	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	108-60-1	
2-Chloronaphthalene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	91-58-7	
2-Chlorophenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	7005-72-3	
Chrysene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	53-70-3	
Dibenzofuran	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	120-83-2	
Diethylphthalate	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	105-67-9	
Dimethylphthalate	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	131-11-3	
Di-n-butylphthalate	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2560	1	04/13/18 17:55	04/19/18 16:52	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	606-20-2	
Di-n-octylphthalate	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	117-81-7	
Fluoranthene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	206-44-0	
Fluorene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	87-68-3	
Hexachlorobenzene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	118-74-1	
Hexachloroethane	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	193-39-5	
Isophorone	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	78-59-1	
1-Methylnaphthalene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	90-12-0	
2-Methylnaphthalene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-03 (2-5 WM) **Lab ID: 10427018006** Collected: 04/11/18 14:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	993	1	04/13/18 17:55	04/19/18 16:52		
Naphthalene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	91-20-3	
2-Nitroaniline	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	88-74-4	
3-Nitroaniline	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	99-09-2	
4-Nitroaniline	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	100-01-6	
Nitrobenzene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	98-95-3	
2-Nitrophenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	88-75-5	
4-Nitrophenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	86-30-6	
Pentachlorophenol	ND	ug/kg	1010	1	04/13/18 17:55	04/19/18 16:52	87-86-5	
Phenanthrene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	85-01-8	
Phenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	108-95-2	
Pyrene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	497	1	04/13/18 17:55	04/19/18 16:52	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	58	%.	43-125	1	04/13/18 17:55	04/19/18 16:52	4165-60-0	
2-Fluorobiphenyl (S)	53	%.	30-132	1	04/13/18 17:55	04/19/18 16:52	321-60-8	
p-Terphenyl-d14 (S)	78	%.	62-125	1	04/13/18 17:55	04/19/18 16:52	1718-51-0	
Phenol-d6 (S)	56	%.	48-125	1	04/13/18 17:55	04/19/18 16:52	13127-88-3	
2-Fluorophenol (S)	51	%.	40-125	1	04/13/18 17:55	04/19/18 16:52	367-12-4	
2,4,6-Tribromophenol (S)	54	%.	60-125	1	04/13/18 17:55	04/19/18 16:52	118-79-6	S0
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	83-32-9	
Acenaphthylene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	208-96-8	
Anthracene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	120-12-7	
Benzo(a)anthracene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	56-55-3	
Benzo(a)pyrene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	207-08-9	
Chrysene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	53-70-3	
Fluoranthene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	206-44-0	
Fluorene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	193-39-5	
Naphthalene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	91-20-3	
Phenanthrene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	85-01-8	
Pyrene	ND	ug/kg	15.1	1	04/12/18 11:52	04/16/18 19:27	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	63	%.	42-125	1	04/12/18 11:52	04/16/18 19:27	321-60-8	
p-Terphenyl-d14 (S)	97	%.	57-125	1	04/12/18 11:52	04/16/18 19:27	1718-51-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-03 (2-5 WM) **Lab ID: 10427018006** Collected: 04/11/18 14:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1570	1	04/21/18 11:05	04/22/18 00:42	67-64-1	
Allyl chloride	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	107-05-1	
Benzene	ND	ug/kg	31.5	1	04/21/18 11:05	04/22/18 00:42	71-43-2	
Bromobenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	108-86-1	
Bromochloromethane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	74-97-5	
Bromodichloromethane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	75-27-4	
Bromoform	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	75-25-2	
Bromomethane	ND	ug/kg	787	1	04/21/18 11:05	04/22/18 00:42	74-83-9	
2-Butanone (MEK)	ND	ug/kg	394	1	04/21/18 11:05	04/22/18 00:42	78-93-3	
n-Butylbenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	104-51-8	
sec-Butylbenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	135-98-8	
tert-Butylbenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	98-06-6	
Carbon tetrachloride	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	56-23-5	
Chlorobenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	108-90-7	
Chloroethane	ND	ug/kg	787	1	04/21/18 11:05	04/22/18 00:42	75-00-3	
Chloroform	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	67-66-3	
Chloromethane	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	74-87-3	
2-Chlorotoluene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	95-49-8	
4-Chlorotoluene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	787	1	04/21/18 11:05	04/22/18 00:42	96-12-8	
Dibromochloromethane	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	106-93-4	
Dibromomethane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	75-71-8	
1,1-Dichloroethane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	75-34-3	
1,2-Dichloroethane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	107-06-2	
1,1-Dichloroethene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	156-60-5	
Dichlorofluoromethane	ND	ug/kg	787	1	04/21/18 11:05	04/22/18 00:42	75-43-4	
1,2-Dichloropropane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	78-87-5	
1,3-Dichloropropane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	142-28-9	
2,2-Dichloropropane	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	594-20-7	
1,1-Dichloropropene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	60-29-7	
Ethylbenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	394	1	04/21/18 11:05	04/22/18 00:42	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	98-82-8	
p-Isopropyltoluene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	99-87-6	
Methylene Chloride	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	394	1	04/21/18 11:05	04/22/18 00:42	108-10-1	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-TT-03 (2-5 WM) **Lab ID: 10427018006** Collected: 04/11/18 14:50 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	1634-04-4	
Naphthalene	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	91-20-3	
n-Propylbenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	103-65-1	
Styrene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	79-34-5	
Tetrachloroethene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	127-18-4	
Tetrahydrofuran	ND	ug/kg	3150	1	04/21/18 11:05	04/22/18 00:42	109-99-9	
Toluene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	79-00-5	
Trichloroethene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	79-01-6	
Trichlorofluoromethane	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	315	1	04/21/18 11:05	04/22/18 00:42	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	78.7	1	04/21/18 11:05	04/22/18 00:42	108-67-8	
Vinyl chloride	ND	ug/kg	31.5	1	04/21/18 11:05	04/22/18 00:42	75-01-4	
Xylene (Total)	ND	ug/kg	236	1	04/21/18 11:05	04/22/18 00:42	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/21/18 11:05	04/22/18 00:42	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	04/21/18 11:05	04/22/18 00:42	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1	04/21/18 11:05	04/22/18 00:42	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	14.6	5	04/18/18 10:45	04/19/18 14:23	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**44.0**	mg/kg	1.0	1		04/26/18 09:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.53	1	04/20/18 10:25	04/20/18 13:41	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**5.1**	mg/kg	0.99	1	04/18/18 14:45	04/20/18 00:03	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-D1 (11-16 WM) **Lab ID: 10427018007** Collected: 04/11/18 15:35 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.1	1	04/25/18 10:56	04/27/18 15:47	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	309-00-2	
alpha-BHC	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	319-84-6	
beta-BHC	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	319-85-7	
delta-BHC	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	58-89-9	
Chlordane (Technical)	ND	ug/kg	403	20	04/16/18 09:32	04/17/18 02:27	57-74-9	
alpha-Chlordane	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	5103-71-9	
gamma-Chlordane	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	5103-74-2	
4,4'-DDD	ND	ug/kg	80.4	20	04/16/18 09:32	04/17/18 02:27	72-54-8	
4,4'-DDE	ND	ug/kg	80.4	20	04/16/18 09:32	04/17/18 02:27	72-55-9	
4,4'-DDT	ND	ug/kg	80.4	20	04/16/18 09:32	04/17/18 02:27	50-29-3	
Dieldrin	ND	ug/kg	80.4	20	04/16/18 09:32	04/17/18 02:27	60-57-1	
Endosulfan I	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	959-98-8	
Endosulfan II	ND	ug/kg	80.4	20	04/16/18 09:32	04/17/18 02:27	33213-65-9	
Endosulfan sulfate	ND	ug/kg	80.4	20	04/16/18 09:32	04/17/18 02:27	1031-07-8	
Endrin	ND	ug/kg	80.4	20	04/16/18 09:32	04/17/18 02:27	72-20-8	
Endrin aldehyde	ND	ug/kg	80.4	20	04/16/18 09:32	04/17/18 02:27	7421-93-4	
Endrin ketone	ND	ug/kg	80.4	20	04/16/18 09:32	04/17/18 02:27	53494-70-5	
Heptachlor	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	76-44-8	
Heptachlor epoxide	ND	ug/kg	40.3	20	04/16/18 09:32	04/17/18 02:27	1024-57-3	
Methoxychlor	ND	ug/kg	403	20	04/16/18 09:32	04/17/18 02:27	72-43-5	
Toxaphene	ND	ug/kg	1210	20	04/16/18 09:32	04/17/18 02:27	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	04/16/18 09:32	04/17/18 02:27	877-09-8	2M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	04/16/18 09:32	04/17/18 02:27	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	11100-14-4	
PCB, Total	ND	ug/kg	39.8	1	04/13/18 19:35	04/16/18 18:08	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	85	%.	48-125	1	04/13/18 19:35	04/16/18 18:08	877-09-8	
Decachlorobiphenyl (S)	105	%.	30-134	1	04/13/18 19:35	04/16/18 18:08	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-D1 (11-16 WM) **Lab ID: 10427018007** Collected: 04/11/18 15:35 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**57.5**	mg/kg	9.6	1	04/12/18 19:34	04/16/18 12:08		T6
Surrogates								
n-Triacontane (S)	90	%.	50-150	1	04/12/18 19:34	04/16/18 12:08	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	15.6	1	04/23/18 09:23	04/24/18 01:24		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/23/18 09:23	04/24/18 01:24	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**6480**	mg/kg	12.0	1	04/13/18 05:02	04/13/18 15:45	7429-90-5	
Barium	**132**	mg/kg	0.60	1	04/13/18 05:02	04/13/18 15:45	7440-39-3	
Boron	**34.0**	mg/kg	9.0	1	04/13/18 05:02	04/13/18 15:45	7440-42-8	
Copper	**25.3**	mg/kg	0.60	1	04/13/18 05:02	04/13/18 15:45	7440-50-8	
Iron	**19200**	mg/kg	15.0	5	04/13/18 05:02	04/13/18 16:11	7439-89-6	
Manganese	**594**	mg/kg	0.30	1	04/13/18 05:02	04/13/18 15:45	7439-96-5	
Nickel	**18.2**	mg/kg	1.2	1	04/13/18 05:02	04/13/18 15:45	7440-02-0	
Silver	ND	mg/kg	0.60	1	04/13/18 05:02	04/13/18 15:45	7440-22-4	
Tin	ND	mg/kg	4.5	1	04/13/18 05:02	04/13/18 15:45	7440-31-5	
Titanium	**247**	mg/kg	1.5	1	04/13/18 05:02	04/13/18 15:45	7440-32-6	
Zinc	**187**	mg/kg	1.2	1	04/13/18 05:02	04/13/18 15:45	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**27.8**	mg/kg	1.2	5	04/18/18 10:36	04/19/18 08:02	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.6**	mg/kg	0.59	20	04/13/18 05:01	04/13/18 09:41	7440-36-0	
Arsenic	**10.1**	mg/kg	0.59	20	04/13/18 05:01	04/13/18 09:41	7440-38-2	
Beryllium	**0.56**	mg/kg	0.24	20	04/13/18 05:01	04/13/18 09:41	7440-41-7	
Cadmium	**0.95**	mg/kg	0.095	20	04/13/18 05:01	04/13/18 09:41	7440-43-9	
Cobalt	**6.2**	mg/kg	0.59	20	04/13/18 05:01	04/13/18 09:41	7440-48-4	
Lead	**132**	mg/kg	0.12	20	04/13/18 05:01	04/13/18 09:41	7439-92-1	
Lithium	**5.1**	mg/kg	0.59	20	04/13/18 05:01	04/13/18 09:41	7439-93-2	
Selenium	**0.92**	mg/kg	0.59	20	04/13/18 05:01	04/13/18 09:41	7782-49-2	
Strontium	**40.4**	mg/kg	0.59	20	04/13/18 05:01	04/13/18 09:41	7440-24-6	
Vanadium	**37.5**	mg/kg	1.2	20	04/13/18 05:01	04/13/18 09:41	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.060**	mg/kg	0.020	1	04/13/18 05:02	04/15/18 18:24	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**17.3**	%	0.10	1		04/18/18 12:41		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-D1 (11-16 WM) **Lab ID: 10427018007** Collected: 04/11/18 15:35 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	**745**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	208-96-8	
Anthracene	**1480**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	120-12-7	
Benzo(a)anthracene	**3460**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	56-55-3	
Benzo(a)pyrene	**2620**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	50-32-8	
Benzo(b)fluoranthene	**3260**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	205-99-2	
Benzo(g,h,i)perylene	**1390**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	191-24-2	
Benzo(k)fluoranthene	**1550**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	101-55-3	
Butylbenzylphthalate	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	85-68-7	
Carbazole	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	59-50-7	
4-Chloroaniline	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	108-60-1	
2-Chloronaphthalene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	91-58-7	
2-Chlorophenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	7005-72-3	
Chrysene	**3400**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	53-70-3	
Dibenzofuran	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	120-83-2	
Diethylphthalate	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	105-67-9	
Dimethylphthalate	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	131-11-3	
Di-n-butylphthalate	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2050	1	04/13/18 17:55	04/20/18 16:30	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	606-20-2	
Di-n-octylphthalate	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	117-81-7	
Fluoranthene	**8050**	ug/kg	1990	5	04/13/18 17:55	04/19/18 20:45	206-44-0	
Fluorene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	87-68-3	
Hexachlorobenzene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	118-74-1	
Hexachloroethane	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	67-72-1	
Indeno(1,2,3-cd)pyrene	**1230**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	193-39-5	
Isophorone	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	78-59-1	
1-Methylnaphthalene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	90-12-0	
2-Methylnaphthalene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-D1 (11-16 WM) **Lab ID: 10427018007** Collected: 04/11/18 15:35 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	796	1	04/13/18 17:55	04/20/18 16:30		
Naphthalene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	91-20-3	
2-Nitroaniline	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	88-74-4	
3-Nitroaniline	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	99-09-2	
4-Nitroaniline	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	100-01-6	
Nitrobenzene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	98-95-3	
2-Nitrophenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	88-75-5	
4-Nitrophenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	86-30-6	
Pentachlorophenol	ND	ug/kg	808	1	04/13/18 17:55	04/20/18 16:30	87-86-5	
Phenanthrene	**4600**	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	85-01-8	
Phenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	108-95-2	
Pyrene	**6860**	ug/kg	1990	5	04/13/18 17:55	04/19/18 20:45	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	398	1	04/13/18 17:55	04/20/18 16:30	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	55	%.	43-125	1	04/13/18 17:55	04/20/18 16:30	4165-60-0	
2-Fluorobiphenyl (S)	54	%.	30-132	1	04/13/18 17:55	04/20/18 16:30	321-60-8	
p-Terphenyl-d14 (S)	67	%.	62-125	1	04/13/18 17:55	04/20/18 16:30	1718-51-0	
Phenol-d6 (S)	60	%.	48-125	1	04/13/18 17:55	04/20/18 16:30	13127-88-3	
2-Fluorophenol (S)	58	%.	40-125	1	04/13/18 17:55	04/20/18 16:30	367-12-4	
2,4,6-Tribromophenol (S)	60	%.	60-125	1	04/13/18 17:55	04/20/18 16:30	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	83-32-9	
Acenaphthylene	**1190**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	208-96-8	
Anthracene	**2070**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	120-12-7	
Benzo(a)anthracene	**4880**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	56-55-3	
Benzo(a)pyrene	**3730**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	50-32-8	
Benzo(b)fluoranthene	**4990**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	205-99-2	
Benzo(g,h,i)perylene	**1870**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	191-24-2	
Benzo(k)fluoranthene	**1660**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	207-08-9	
Chrysene	**4150**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	218-01-9	
Dibenz(a,h)anthracene	**697**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	53-70-3	
Fluoranthene	**9760**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	206-44-0	
Fluorene	**337**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	86-73-7	
Indeno(1,2,3-cd)pyrene	**1950**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	193-39-5	
Naphthalene	ND	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	91-20-3	
Phenanthrene	**5500**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	85-01-8	
Pyrene	**7640**	ug/kg	301	25	04/12/18 11:52	04/17/18 13:37	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	25	04/12/18 11:52	04/17/18 13:37	321-60-8	D4,S4

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-D1 (11-16 WM) **Lab ID: 10427018007** Collected: 04/11/18 15:35 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	0	%.	57-125	25	04/12/18 11:52	04/17/18 13:37	1718-51-0	S4
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1290	1	04/21/18 11:05	04/22/18 00:59	67-64-1	
Allyl chloride	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	107-05-1	
Benzene	ND	ug/kg	25.8	1	04/21/18 11:05	04/22/18 00:59	71-43-2	
Bromobenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	108-86-1	
Bromochloromethane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	74-97-5	
Bromodichloromethane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	75-27-4	
Bromoform	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	75-25-2	
Bromomethane	ND	ug/kg	644	1	04/21/18 11:05	04/22/18 00:59	74-83-9	
2-Butanone (MEK)	ND	ug/kg	322	1	04/21/18 11:05	04/22/18 00:59	78-93-3	
n-Butylbenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	104-51-8	
sec-Butylbenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	135-98-8	
tert-Butylbenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	98-06-6	
Carbon tetrachloride	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	56-23-5	
Chlorobenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	108-90-7	
Chloroethane	ND	ug/kg	644	1	04/21/18 11:05	04/22/18 00:59	75-00-3	
Chloroform	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	67-66-3	
Chloromethane	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	74-87-3	
2-Chlorotoluene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	95-49-8	
4-Chlorotoluene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	644	1	04/21/18 11:05	04/22/18 00:59	96-12-8	
Dibromochloromethane	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	106-93-4	
Dibromomethane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	75-71-8	
1,1-Dichloroethane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	75-34-3	
1,2-Dichloroethane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	107-06-2	
1,1-Dichloroethene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	156-60-5	
Dichlorofluoromethane	ND	ug/kg	644	1	04/21/18 11:05	04/22/18 00:59	75-43-4	
1,2-Dichloropropane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	78-87-5	
1,3-Dichloropropane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	142-28-9	
2,2-Dichloropropane	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	594-20-7	
1,1-Dichloropropene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	60-29-7	
Ethylbenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	322	1	04/21/18 11:05	04/22/18 00:59	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-D1 (11-16 WM) **Lab ID: 10427018007** Collected: 04/11/18 15:35 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	98-82-8	
p-Isopropyltoluene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	99-87-6	
Methylene Chloride	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	322	1	04/21/18 11:05	04/22/18 00:59	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	1634-04-4	
Naphthalene	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	91-20-3	
n-Propylbenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	103-65-1	
Styrene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	79-34-5	
Tetrachloroethene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	127-18-4	
Tetrahydrofuran	ND	ug/kg	2580	1	04/21/18 11:05	04/22/18 00:59	109-99-9	
Toluene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	79-00-5	
Trichloroethene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	79-01-6	
Trichlorofluoromethane	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	258	1	04/21/18 11:05	04/22/18 00:59	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	64.4	1	04/21/18 11:05	04/22/18 00:59	108-67-8	
Vinyl chloride	ND	ug/kg	25.8	1	04/21/18 11:05	04/22/18 00:59	75-01-4	
Xylene (Total)	ND	ug/kg	193	1	04/21/18 11:05	04/22/18 00:59	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/21/18 11:05	04/22/18 00:59	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/21/18 11:05	04/22/18 00:59	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	04/21/18 11:05	04/22/18 00:59	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	119	50	04/18/18 10:45	04/19/18 14:09	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**27.8**	mg/kg	1.0	1		04/26/18 09:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.45	1	04/20/18 10:25	04/20/18 13:41	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**2.1**	mg/kg	1.0	1	04/18/18 14:45	04/20/18 02:40	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-E1 (10-15 WM) **Lab ID: 10427018008** Collected: 04/11/18 16:10 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.2	1	04/25/18 10:56	04/27/18 15:54	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	309-00-2	
alpha-BHC	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	319-84-6	
beta-BHC	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	319-85-7	
delta-BHC	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	58-89-9	
Chlordane (Technical)	ND	ug/kg	974	50	04/16/18 09:32	04/17/18 01:32	57-74-9	
alpha-Chlordane	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	5103-71-9	
gamma-Chlordane	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	5103-74-2	
4,4'-DDD	ND	ug/kg	194	50	04/16/18 09:32	04/17/18 01:32	72-54-8	
4,4'-DDE	ND	ug/kg	194	50	04/16/18 09:32	04/17/18 01:32	72-55-9	
4,4'-DDT	ND	ug/kg	194	50	04/16/18 09:32	04/17/18 01:32	50-29-3	
Dieldrin	ND	ug/kg	194	50	04/16/18 09:32	04/17/18 01:32	60-57-1	
Endosulfan I	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	959-98-8	
Endosulfan II	ND	ug/kg	194	50	04/16/18 09:32	04/17/18 01:32	33213-65-9	
Endosulfan sulfate	ND	ug/kg	194	50	04/16/18 09:32	04/17/18 01:32	1031-07-8	
Endrin	ND	ug/kg	194	50	04/16/18 09:32	04/17/18 01:32	72-20-8	
Endrin aldehyde	ND	ug/kg	194	50	04/16/18 09:32	04/17/18 01:32	7421-93-4	
Endrin ketone	ND	ug/kg	194	50	04/16/18 09:32	04/17/18 01:32	53494-70-5	
Heptachlor	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	76-44-8	
Heptachlor epoxide	ND	ug/kg	97.4	50	04/16/18 09:32	04/17/18 01:32	1024-57-3	
Methoxychlor	ND	ug/kg	974	50	04/16/18 09:32	04/17/18 01:32	72-43-5	
Toxaphene	ND	ug/kg	2910	50	04/16/18 09:32	04/17/18 01:32	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	50	04/16/18 09:32	04/17/18 01:32	877-09-8	1M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	50	04/16/18 09:32	04/17/18 01:32	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	53469-21-9	
PCB-1248 (Aroclor 1248)	**104**	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	12672-29-6	
PCB-1254 (Aroclor 1254)	**127**	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	11100-14-4	
PCB, Total	**231**	ug/kg	38.5	1	04/13/18 19:35	04/16/18 18:24	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	77	%.	48-125	1	04/13/18 19:35	04/16/18 18:24	877-09-8	
Decachlorobiphenyl (S)	69	%.	30-134	1	04/13/18 19:35	04/16/18 18:24	2051-24-3	

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-E1 (10-15 WM) **Lab ID: 10427018008** Collected: 04/11/18 16:10 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**1520**	mg/kg	873	20	04/12/18 19:34	04/16/18 11:19		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	04/12/18 19:34	04/16/18 11:19	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	16.0	1	04/23/18 09:23	04/24/18 01:00		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/23/18 09:23	04/24/18 01:00	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**6100**	mg/kg	11.4	1	04/13/18 05:02	04/13/18 15:47	7429-90-5	
Barium	**60.1**	mg/kg	0.57	1	04/13/18 05:02	04/13/18 15:47	7440-39-3	
Boron	**31.3**	mg/kg	8.6	1	04/13/18 05:02	04/13/18 15:47	7440-42-8	
Copper	**74.7**	mg/kg	0.57	1	04/13/18 05:02	04/13/18 15:47	7440-50-8	
Iron	**24800**	mg/kg	14.3	5	04/13/18 05:02	04/13/18 16:14	7439-89-6	
Manganese	**360**	mg/kg	0.29	1	04/13/18 05:02	04/13/18 15:47	7439-96-5	
Nickel	**20.6**	mg/kg	1.1	1	04/13/18 05:02	04/13/18 15:47	7440-02-0	
Silver	ND	mg/kg	0.57	1	04/13/18 05:02	04/13/18 15:47	7440-22-4	
Tin	**11.2**	mg/kg	4.3	1	04/13/18 05:02	04/13/18 15:47	7440-31-5	
Titanium	**184**	mg/kg	1.4	1	04/13/18 05:02	04/13/18 15:47	7440-32-6	
Zinc	**227**	mg/kg	1.1	1	04/13/18 05:02	04/13/18 15:47	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**21.2**	mg/kg	1.1	5	04/18/18 10:36	04/19/18 08:06	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.55	20	04/13/18 05:01	04/13/18 09:44	7440-36-0	
Arsenic	**5.6**	mg/kg	0.55	20	04/13/18 05:01	04/13/18 09:44	7440-38-2	
Beryllium	**0.42**	mg/kg	0.22	20	04/13/18 05:01	04/13/18 09:44	7440-41-7	
Cadmium	**2.2**	mg/kg	0.087	20	04/13/18 05:01	04/13/18 09:44	7440-43-9	
Cobalt	**7.1**	mg/kg	0.55	20	04/13/18 05:01	04/13/18 09:44	7440-48-4	
Lead	**149**	mg/kg	0.11	20	04/13/18 05:01	04/13/18 09:44	7439-92-1	
Lithium	**3.8**	mg/kg	0.55	20	04/13/18 05:01	04/13/18 09:44	7439-93-2	
Selenium	ND	mg/kg	0.55	20	04/13/18 05:01	04/13/18 09:44	7782-49-2	
Strontium	**42.3**	mg/kg	0.55	20	04/13/18 05:01	04/13/18 09:44	7440-24-6	
Vanadium	**24.4**	mg/kg	1.1	20	04/13/18 05:01	04/13/18 09:44	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.13**	mg/kg	0.020	1	04/13/18 05:02	04/15/18 18:26	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**14.3**	%	0.10	1		04/18/18 12:42		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	83-32-9	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-E1 (10-15 WM) **Lab ID: 10427018008** Collected: 04/11/18 16:10 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	208-96-8	
Anthracene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	120-12-7	
Benzo(a)anthracene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	56-55-3	
Benzo(a)pyrene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	205-99-2	M1
Benzo(g,h,i)perylene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	101-55-3	
Butylbenzylphthalate	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	85-68-7	
Carbazole	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	59-50-7	
4-Chloroaniline	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	108-60-1	
2-Chloronaphthalene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	91-58-7	
2-Chlorophenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	7005-72-3	
Chrysene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	53-70-3	
Dibenzofuran	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	120-83-2	
Diethylphthalate	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	105-67-9	
Dimethylphthalate	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	131-11-3	
Di-n-butylphthalate	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	19800	1	04/13/18 17:55	04/18/18 18:49	534-52-1	M1
2,4-Dinitrophenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	51-28-5	M1
2,4-Dinitrotoluene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	606-20-2	
Di-n-octylphthalate	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	117-81-7	
Fluoranthene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	206-44-0	M1
Fluorene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	87-68-3	
Hexachlorobenzene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	118-74-1	
Hexachloroethane	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	67-72-1	M1
Indeno(1,2,3-cd)pyrene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	193-39-5	
Isophorone	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	78-59-1	
1-Methylnaphthalene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	90-12-0	
2-Methylnaphthalene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-E1 (10-15 WM) **Lab ID: 10427018008** Collected: 04/11/18 16:10 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	7690	1	04/13/18 17:55	04/18/18 18:49		
Naphthalene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	91-20-3	
2-Nitroaniline	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	88-74-4	
3-Nitroaniline	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	99-09-2	
4-Nitroaniline	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	100-01-6	
Nitrobenzene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	98-95-3	
2-Nitrophenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	88-75-5	
4-Nitrophenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	86-30-6	
Pentachlorophenol	ND	ug/kg	7800	1	04/13/18 17:55	04/18/18 18:49	87-86-5	
Phenanthrene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	85-01-8	
Phenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	108-95-2	
Pyrene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	129-00-0	M1
1,2,4-Trichlorobenzene	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	3840	1	04/13/18 17:55	04/18/18 18:49	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	1	04/13/18 17:55	04/18/18 18:49	4165-60-0	P3,S0
2-Fluorobiphenyl (S)	0	%.	30-132	1	04/13/18 17:55	04/18/18 18:49	321-60-8	S0
p-Terphenyl-d14 (S)	0	%.	62-125	1	04/13/18 17:55	04/18/18 18:49	1718-51-0	S0
Phenol-d6 (S)	0	%.	48-125	1	04/13/18 17:55	04/18/18 18:49	13127-88-3	S0
2-Fluorophenol (S)	0	%.	40-125	1	04/13/18 17:55	04/18/18 18:49	367-12-4	S0
2,4,6-Tribromophenol (S)	0	%.	60-125	1	04/13/18 17:55	04/18/18 18:49	118-79-6	S0
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	83-32-9	
Acenaphthylene	ND	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	208-96-8	
Anthracene	ND	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	120-12-7	
Benzo(a)anthracene	**132**	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	56-55-3	
Benzo(a)pyrene	**143**	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	50-32-8	
Benzo(b)fluoranthene	**165**	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	205-99-2	
Benzo(g,h,i)perylene	**219**	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	207-08-9	
Chrysene	**231**	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	53-70-3	
Fluoranthene	**229**	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	206-44-0	
Fluorene	ND	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	193-39-5	
Naphthalene	ND	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	91-20-3	
Phenanthrene	**415**	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	85-01-8	
Pyrene	**421**	ug/kg	116	2	04/12/18 11:52	04/17/18 12:36	129-00-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-E1 (10-15 WM) **Lab ID: 10427018008** Collected: 04/11/18 16:10 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	2	04/12/18 11:52	04/17/18 12:36	321-60-8	D3,P3, S0
p-Terphenyl-d14 (S)	0	%.	57-125	2	04/12/18 11:52	04/17/18 12:36	1718-51-0	S0
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1460	1	04/21/18 11:05	04/22/18 01:16	67-64-1	
Allyl chloride	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	107-05-1	
Benzene	ND	ug/kg	29.3	1	04/21/18 11:05	04/22/18 01:16	71-43-2	
Bromobenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	108-86-1	
Bromochloromethane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	74-97-5	
Bromodichloromethane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	75-27-4	
Bromoform	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	75-25-2	
Bromomethane	ND	ug/kg	732	1	04/21/18 11:05	04/22/18 01:16	74-83-9	
2-Butanone (MEK)	ND	ug/kg	366	1	04/21/18 11:05	04/22/18 01:16	78-93-3	
n-Butylbenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	104-51-8	
sec-Butylbenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	135-98-8	
tert-Butylbenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	98-06-6	
Carbon tetrachloride	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	56-23-5	
Chlorobenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	108-90-7	
Chloroethane	ND	ug/kg	732	1	04/21/18 11:05	04/22/18 01:16	75-00-3	
Chloroform	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	67-66-3	
Chloromethane	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	74-87-3	
2-Chlorotoluene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	95-49-8	
4-Chlorotoluene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	732	1	04/21/18 11:05	04/22/18 01:16	96-12-8	
Dibromochloromethane	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	106-93-4	
Dibromomethane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	75-71-8	
1,1-Dichloroethane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	75-34-3	
1,2-Dichloroethane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	107-06-2	
1,1-Dichloroethene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	156-60-5	
Dichlorofluoromethane	ND	ug/kg	732	1	04/21/18 11:05	04/22/18 01:16	75-43-4	
1,2-Dichloropropane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	78-87-5	
1,3-Dichloropropane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	142-28-9	
2,2-Dichloropropane	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	594-20-7	
1,1-Dichloropropene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	60-29-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Sample: FD-SB-E1 (10-15 WM) **Lab ID: 10427018008** Collected: 04/11/18 16:10 Received: 04/11/18 17:13 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Ethylbenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	366	1	04/21/18 11:05	04/22/18 01:16	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	98-82-8	
p-Isopropyltoluene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	99-87-6	
Methylene Chloride	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	366	1	04/21/18 11:05	04/22/18 01:16	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	1634-04-4	
Naphthalene	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	91-20-3	
n-Propylbenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	103-65-1	
Styrene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	79-34-5	
Tetrachloroethene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	127-18-4	
Tetrahydrofuran	ND	ug/kg	2930	1	04/21/18 11:05	04/22/18 01:16	109-99-9	
Toluene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	79-00-5	
Trichloroethene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	79-01-6	
Trichlorofluoromethane	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	293	1	04/21/18 11:05	04/22/18 01:16	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	73.2	1	04/21/18 11:05	04/22/18 01:16	108-67-8	
Vinyl chloride	ND	ug/kg	29.3	1	04/21/18 11:05	04/22/18 01:16	75-01-4	
Xylene (Total)	ND	ug/kg	220	1	04/21/18 11:05	04/22/18 01:16	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/21/18 11:05	04/22/18 01:16	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/21/18 11:05	04/22/18 01:16	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1	04/21/18 11:05	04/22/18 01:16	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	113	50	04/18/18 10:45	04/19/18 14:10	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**21.2**	mg/kg	1.0	1		04/26/18 09:11	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.39**	mg/kg	0.31	1	04/20/18 10:25	04/20/18 13:45	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	04/18/18 14:45	04/19/18 22:06	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 141622 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 559956 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.16	04/27/18 14:14	N3

METHOD BLANK: 559957 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.05	04/27/18 14:20	N3

METHOD BLANK: 559958 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.14	04/27/18 14:27	N3

LABORATORY CONTROL SAMPLE: 559959

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	99.7	116	117	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559960 559961

Parameter	Units	10427018004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	374	387	412	449	110	116	65-135	9	35	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559962 559963

Parameter	Units	10427291002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	344	356	391	403	114	113	65-135	3	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 533563 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2898329 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	04/23/18 14:54	
a,a,a-Trifluorotoluene (S)	%.	98	80-150	04/23/18 14:54	

LABORATORY CONTROL SAMPLE & LCSD: 2898330 2898331

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	42.4	41.8	85	84	80-120	2	20	
a,a,a-Trifluorotoluene (S)	%.				99	98	80-150			

MATRIX SPIKE SAMPLE: 2899187

Parameter	Units	10427018001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	22.8	78.6	175	194	80-120	C0,M1
a,a,a-Trifluorotoluene (S)	%.				98	80-150	

SAMPLE DUPLICATE: 2899188

Parameter	Units	10427018003 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	ND	ND		20	
a,a,a-Trifluorotoluene (S)	%.	99	98	5		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 532184 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2890276 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	04/15/18 17:59	

LABORATORY CONTROL SAMPLE: 2890277

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.5	0.54	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890278 2890279

Parameter	Units	10427018001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.14	.72	.73	0.92	0.92	108	105	80-120	0	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 532178 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2890252 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	9.7	04/13/18 14:57	
Barium	mg/kg	ND	0.49	04/13/18 14:57	
Boron	mg/kg	ND	7.3	04/13/18 14:57	
Copper	mg/kg	ND	0.49	04/13/18 14:57	
Iron	mg/kg	ND	2.4	04/13/18 14:57	
Manganese	mg/kg	ND	0.24	04/13/18 14:57	
Nickel	mg/kg	ND	0.97	04/13/18 14:57	
Silver	mg/kg	ND	0.49	04/13/18 14:57	
Tin	mg/kg	ND	3.6	04/13/18 14:57	
Titanium	mg/kg	ND	1.2	04/13/18 14:57	
Zinc	mg/kg	ND	0.97	04/13/18 14:57	

LABORATORY CONTROL SAMPLE: 2890253

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	952	938	98	80-120	
Barium	mg/kg	47.6	48.9	103	80-120	
Boron	mg/kg	47.6	43.9	92	80-120	
Copper	mg/kg	47.6	47.5	100	80-120	
Iron	mg/kg	952	972	102	80-120	
Manganese	mg/kg	47.6	50.0	105	80-120	
Nickel	mg/kg	47.6	47.5	100	80-120	
Silver	mg/kg	23.8	22.4	94	80-120	
Tin	mg/kg	47.6	47.9	101	80-120	
Titanium	mg/kg	47.6	48.3	101	80-120	
Zinc	mg/kg	47.6	47.2	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890254 2890255

Parameter	Units	10427160001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	2780	5170	5170	7210	7390	86	89	75-125	3	20	
Barium	mg/kg	752	258	258	779	811	10	23	75-125	4	20	M1
Boron	mg/kg	ND	258	258	237	240	89	90	75-125	1	20	
Copper	mg/kg	567	258	258	743	764	68	76	75-125	3	20	M1
Iron	mg/kg	30200	5170	5170	25700	27900	-87	-45	75-125	8	20	P6
Manganese	mg/kg	2080	258	258	2040	2130	-15	21	75-125	4	20	P6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890254 2890255

Parameter	Units	10427160001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nickel	mg/kg	9.7	258	258	257	260	96	97	75-125	1	20	
Silver	mg/kg	3.2	129	129	121	123	91	93	75-125	2	20	
Tin	mg/kg	29.9	258	258	250	256	85	88	75-125	2	20	
Titanium	mg/kg	222	258	258	378	365	60	56	75-125	3	20	M1
Zinc	mg/kg	810	258	258	854	892	17	32	75-125	4	20	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 437311 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2020384 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.20	04/19/18 06:49	N2

LABORATORY CONTROL SAMPLE: 2020385

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.9	3.9	102	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2020386 2020387

Parameter	Units	10427018004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	14.2	4.22	4.46	18.2	16.5	93	51	75-125	10	20	M0,N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 532177 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2890248 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.48	04/16/18 14:11	
Arsenic	mg/kg	ND	0.48	04/16/18 14:11	
Beryllium	mg/kg	ND	0.19	04/16/18 14:11	
Cadmium	mg/kg	ND	0.077	04/16/18 14:11	
Cobalt	mg/kg	ND	0.48	04/16/18 14:11	
Lead	mg/kg	ND	0.096	04/16/18 14:11	
Lithium	mg/kg	ND	0.48	04/16/18 14:11	
Selenium	mg/kg	ND	0.48	04/16/18 14:11	
Strontium	mg/kg	ND	0.48	04/16/18 14:11	
Vanadium	mg/kg	ND	0.96	04/16/18 14:11	

LABORATORY CONTROL SAMPLE: 2890249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	47.6	46.5	98	80-120	
Arsenic	mg/kg	47.6	44.6	94	80-120	
Beryllium	mg/kg	47.6	51.0	107	80-120	
Cadmium	mg/kg	47.6	46.6	98	80-120	
Cobalt	mg/kg	47.6	46.1	97	80-120	
Lead	mg/kg	47.6	46.2	97	80-120	
Lithium	mg/kg	47.6	51.3	108	80-120	
Selenium	mg/kg	47.6	50.0	105	80-120	
Strontium	mg/kg	47.6	44.6	94	80-120	
Vanadium	mg/kg	47.6	45.7	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890250 2890251

Parameter	Units	10427154001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	2.8	117	115	94.8	94.5	78	80	75-125	0	20	
Arsenic	mg/kg	29.6	117	115	133	135	88	92	75-125	1	20	
Beryllium	mg/kg	ND	117	115	105	103	89	90	75-125	1	20	
Cadmium	mg/kg	2.3	117	115	108	109	90	93	75-125	1	20	
Cobalt	mg/kg	4.4	117	115	112	113	92	95	75-125	1	20	
Lead	mg/kg	36.3	117	115	139	143	88	93	75-125	3	20	
Lithium	mg/kg	3.0	117	115	108	106	90	90	75-125	2	20	
Selenium	mg/kg	4.2	117	115	109	109	90	91	75-125	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890250 2890251

Parameter	Units	10427154001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	mg/kg	195	117	115	283	304	75	95	75-125	7	20	
Vanadium	mg/kg	14.1	117	115	121	123	91	95	75-125	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 532990 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

SAMPLE DUPLICATE: 2894446

Parameter	Units	10427653001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.5	10.1	3	30	

SAMPLE DUPLICATE: 2894447

Parameter	Units	10427654004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	4.2	4.1	3	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 533507 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10427018001

METHOD BLANK: 2898020 Matrix: Solid
Associated Lab Samples: 10427018001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	04/20/18 22:52	
1,1,1-Trichloroethane	ug/kg	ND	50.0	04/20/18 22:52	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	04/20/18 22:52	
1,1,2-Trichloroethane	ug/kg	ND	50.0	04/20/18 22:52	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	04/20/18 22:52	
1,1-Dichloroethane	ug/kg	ND	50.0	04/20/18 22:52	
1,1-Dichloroethene	ug/kg	ND	50.0	04/20/18 22:52	
1,1-Dichloropropene	ug/kg	ND	50.0	04/20/18 22:52	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	04/20/18 22:52	
1,2,3-Trichloropropane	ug/kg	ND	200	04/20/18 22:52	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	04/20/18 22:52	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	04/20/18 22:52	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	04/20/18 22:52	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	04/20/18 22:52	
1,2-Dichlorobenzene	ug/kg	ND	50.0	04/20/18 22:52	
1,2-Dichloroethane	ug/kg	ND	50.0	04/20/18 22:52	
1,2-Dichloropropane	ug/kg	ND	50.0	04/20/18 22:52	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	04/20/18 22:52	
1,3-Dichlorobenzene	ug/kg	ND	50.0	04/20/18 22:52	
1,3-Dichloropropane	ug/kg	ND	50.0	04/20/18 22:52	
1,4-Dichlorobenzene	ug/kg	ND	50.0	04/20/18 22:52	
2,2-Dichloropropane	ug/kg	ND	200	04/20/18 22:52	
2-Butanone (MEK)	ug/kg	ND	250	04/20/18 22:52	
2-Chlorotoluene	ug/kg	ND	50.0	04/20/18 22:52	
4-Chlorotoluene	ug/kg	ND	50.0	04/20/18 22:52	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	04/20/18 22:52	
Acetone	ug/kg	ND	1000	04/20/18 22:52	
Allyl chloride	ug/kg	ND	200	04/20/18 22:52	
Benzene	ug/kg	ND	20.0	04/20/18 22:52	
Bromobenzene	ug/kg	ND	50.0	04/20/18 22:52	
Bromochloromethane	ug/kg	ND	50.0	04/20/18 22:52	
Bromodichloromethane	ug/kg	ND	50.0	04/20/18 22:52	
Bromoform	ug/kg	ND	200	04/20/18 22:52	
Bromomethane	ug/kg	ND	500	04/20/18 22:52	
Carbon tetrachloride	ug/kg	ND	50.0	04/20/18 22:52	
Chlorobenzene	ug/kg	ND	50.0	04/20/18 22:52	
Chloroethane	ug/kg	ND	500	04/20/18 22:52	
Chloroform	ug/kg	ND	50.0	04/20/18 22:52	
Chloromethane	ug/kg	ND	200	04/20/18 22:52	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	04/20/18 22:52	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	04/20/18 22:52	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

METHOD BLANK: 2898020 Matrix: Solid
Associated Lab Samples: 10427018001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	04/20/18 22:52	
Dibromomethane	ug/kg	ND	50.0	04/20/18 22:52	
Dichlorodifluoromethane	ug/kg	ND	200	04/20/18 22:52	
Dichlorofluoromethane	ug/kg	ND	500	04/20/18 22:52	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	04/20/18 22:52	
Ethylbenzene	ug/kg	ND	50.0	04/20/18 22:52	
Hexachloro-1,3-butadiene	ug/kg	ND	250	04/20/18 22:52	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	04/20/18 22:52	
Methyl-tert-butyl ether	ug/kg	ND	50.0	04/20/18 22:52	
Methylene Chloride	ug/kg	ND	200	04/20/18 22:52	
n-Butylbenzene	ug/kg	ND	50.0	04/20/18 22:52	
n-Propylbenzene	ug/kg	ND	50.0	04/20/18 22:52	
Naphthalene	ug/kg	ND	200	04/20/18 22:52	
p-Isopropyltoluene	ug/kg	ND	50.0	04/20/18 22:52	
sec-Butylbenzene	ug/kg	ND	50.0	04/20/18 22:52	
Styrene	ug/kg	ND	50.0	04/20/18 22:52	
tert-Butylbenzene	ug/kg	ND	50.0	04/20/18 22:52	
Tetrachloroethene	ug/kg	ND	50.0	04/20/18 22:52	
Tetrahydrofuran	ug/kg	ND	2000	04/20/18 22:52	
Toluene	ug/kg	ND	50.0	04/20/18 22:52	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	04/20/18 22:52	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	04/20/18 22:52	
Trichloroethene	ug/kg	ND	50.0	04/20/18 22:52	
Trichlorofluoromethane	ug/kg	ND	200	04/20/18 22:52	
Vinyl chloride	ug/kg	ND	20.0	04/20/18 22:52	
Xylene (Total)	ug/kg	ND	150	04/20/18 22:52	
1,2-Dichloroethane-d4 (S)	%.	97	75-125	04/20/18 22:52	
4-Bromofluorobenzene (S)	%.	101	75-125	04/20/18 22:52	
Toluene-d8 (S)	%.	96	75-125	04/20/18 22:52	

LABORATORY CONTROL SAMPLE & LCSD: 2898021 2898022

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	843	866	84	87	59-125	3	20	
1,1,1-Trichloroethane	ug/kg	1000	903	927	90	93	59-125	3	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	870	874	87	87	58-125	0	20	
1,1,2-Trichloroethane	ug/kg	1000	853	868	85	87	64-125	2	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	878	882	88	88	65-125	0	20	
1,1-Dichloroethane	ug/kg	1000	906	939	91	94	63-125	4	20	
1,1-Dichloroethene	ug/kg	1000	918	946	92	95	59-125	3	20	
1,1-Dichloropropene	ug/kg	1000	899	933	90	93	64-125	4	20	
1,2,3-Trichlorobenzene	ug/kg	1000	778	800	78	80	55-126	3	20	
1,2,3-Trichloropropane	ug/kg	1000	859	778	86	78	62-125	10	20	
1,2,4-Trichlorobenzene	ug/kg	1000	810	827	81	83	62-125	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE & LCSD: 2898021 2898022

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	857	854	86	85	59-125	0	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	1850	1870	74	75	54-125	1	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	852	862	85	86	64-125	1	20	
1,2-Dichlorobenzene	ug/kg	1000	812	814	81	81	63-125	0	20	
1,2-Dichloroethane	ug/kg	1000	837	850	84	85	57-125	2	20	
1,2-Dichloropropane	ug/kg	1000	914	903	91	90	67-125	1	20	
1,3,5-Trimethylbenzene	ug/kg	1000	893	847	89	85	59-125	5	20	
1,3-Dichlorobenzene	ug/kg	1000	763	776	76	78	64-125	2	20	
1,3-Dichloropropane	ug/kg	1000	873	877	87	88	64-125	1	20	
1,4-Dichlorobenzene	ug/kg	1000	852	811	85	81	63-125	5	20	
2,2-Dichloropropane	ug/kg	1000	925	938	93	94	37-126	1	20	
2-Butanone (MEK)	ug/kg	5000	4410	4620	88	92	48-125	5	20	
2-Chlorotoluene	ug/kg	1000	811	817	81	82	62-125	1	20	
4-Chlorotoluene	ug/kg	1000	851	821	85	82	63-125	4	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4420	4660	88	93	52-135	5	20	
Acetone	ug/kg	5000	4790	5000	96	100	65-125	4	20	
Allyl chloride	ug/kg	1000	943	989	94	99	52-125	5	20	
Benzene	ug/kg	1000	899	910	90	91	61-125	1	20	
Bromobenzene	ug/kg	1000	797	841	80	84	64-125	5	20	
Bromochloromethane	ug/kg	1000	886	892	89	89	65-125	1	20	
Bromodichloromethane	ug/kg	1000	870	864	87	86	57-125	1	20	
Bromoform	ug/kg	1000	718	746	72	75	57-125	4	20	
Bromomethane	ug/kg	1000	867	906	87	91	60-125	4	20	
Carbon tetrachloride	ug/kg	1000	887	893	89	89	58-125	1	20	
Chlorobenzene	ug/kg	1000	839	864	84	86	66-125	3	20	
Chloroethane	ug/kg	1000	882	919	88	92	62-125	4	20	
Chloroform	ug/kg	1000	829	844	83	84	59-125	2	20	
Chloromethane	ug/kg	1000	875	920	88	92	50-125	5	20	
cis-1,2-Dichloroethene	ug/kg	1000	882	885	88	89	61-125	0	20	
cis-1,3-Dichloropropene	ug/kg	1000	885	879	89	88	61-125	1	20	
Dibromochloromethane	ug/kg	1000	769	800	77	80	60-125	4	20	
Dibromomethane	ug/kg	1000	872	852	87	85	69-125	2	20	
Dichlorodifluoromethane	ug/kg	1000	707	723	71	72	38-125	2	20	
Dichlorofluoromethane	ug/kg	1000	865	883	86	88	67-125	2	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1800	1500	180	150	60-125	19	20	L3
Ethylbenzene	ug/kg	1000	866	868	87	87	62-125	0	20	
Hexachloro-1,3-butadiene	ug/kg	1000	754	772	75	77	56-125	2	20	
Isopropylbenzene (Cumene)	ug/kg	1000	895	896	89	90	65-125	0	20	
Methyl-tert-butyl ether	ug/kg	1000	891	909	89	91	59-125	2	20	
Methylene Chloride	ug/kg	1000	959	959	96	96	64-125	0	20	
n-Butylbenzene	ug/kg	1000	878	861	88	86	59-125	2	20	
n-Propylbenzene	ug/kg	1000	853	868	85	87	61-125	2	20	
Naphthalene	ug/kg	1000	876	863	88	86	53-125	1	20	
p-Isopropyltoluene	ug/kg	1000	867	849	87	85	63-125	2	20	
sec-Butylbenzene	ug/kg	1000	899	881	90	88	62-125	2	20	
Styrene	ug/kg	1000	858	881	86	88	66-125	3	20	
tert-Butylbenzene	ug/kg	1000	840	856	84	86	64-125	2	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE & LCSD: 2898021 2898022

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	857	870	86	87	67-125	2	20	
Tetrahydrofuran	ug/kg	10000	9790	10200	98	102	62-125	4	20	
Toluene	ug/kg	1000	880	859	88	86	61-125	2	20	
trans-1,2-Dichloroethene	ug/kg	1000	966	977	97	98	64-125	1	20	
trans-1,3-Dichloropropene	ug/kg	1000	890	898	89	90	56-125	1	20	
Trichloroethene	ug/kg	1000	864	847	86	85	67-125	2	20	
Trichlorofluoromethane	ug/kg	1000	833	892	83	89	65-125	7	20	
Vinyl chloride	ug/kg	1000	926	963	93	96	57-125	4	20	
Xylene (Total)	ug/kg	3000	2620	2670	87	89	62-125	2	20	
1,2-Dichloroethane-d4 (S)	%.				97	99	75-125			
4-Bromofluorobenzene (S)	%.				98	97	75-125			
Toluene-d8 (S)	%.				100	100	75-125			

MATRIX SPIKE SAMPLE: 2898023

Parameter	Units	10427374003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<0.057 mg/kg	1110	1180	107	64-146	
1,1,1-Trichloroethane	ug/kg	<0.057 mg/kg	1110	1230	111	56-148	
1,1,2,2-Tetrachloroethane	ug/kg	<0.057 mg/kg	1110	1210	110	36-150	
1,1,2-Trichloroethane	ug/kg	<0.057 mg/kg	1110	1190	107	67-148	
1,1,2-Trichlorotrifluoroethane	ug/kg	<0.23 mg/kg	1110	1170	106	60-142	
1,1-Dichloroethane	ug/kg	<0.057 mg/kg	1110	1250	113	57-140	
1,1-Dichloroethene	ug/kg	<0.057 mg/kg	1110	1240	112	59-139	
1,1-Dichloropropene	ug/kg	<0.057 mg/kg	1110	1250	113	61-142	
1,2,3-Trichlorobenzene	ug/kg	<0.057 mg/kg	1110	1120	101	69-150	
1,2,3-Trichloropropane	ug/kg	<0.23 mg/kg	1110	1130	102	64-150	
1,2,4-Trichlorobenzene	ug/kg	<0.057 mg/kg	1110	1150	103	71-149	
1,2,4-Trimethylbenzene	ug/kg	<0.057 mg/kg	1110	1190	106	67-149	
1,2-Dibromo-3-chloropropane	ug/kg	<0.57 mg/kg	2770	2570	93	61-150	
1,2-Dibromoethane (EDB)	ug/kg	<0.057 mg/kg	1110	1190	107	67-147	
1,2-Dichlorobenzene	ug/kg	<0.057 mg/kg	1110	1140	103	70-142	
1,2-Dichloroethane	ug/kg	<0.057 mg/kg	1110	1150	104	58-132	
1,2-Dichloropropane	ug/kg	<0.057 mg/kg	1110	1230	111	64-144	
1,3,5-Trimethylbenzene	ug/kg	<0.057 mg/kg	1110	1190	108	71-146	
1,3-Dichlorobenzene	ug/kg	<0.057 mg/kg	1110	1100	100	71-142	
1,3-Dichloropropane	ug/kg	<0.057 mg/kg	1110	1180	107	68-140	
1,4-Dichlorobenzene	ug/kg	<0.057 mg/kg	1110	1090	99	68-142	
2,2-Dichloropropane	ug/kg	<0.23 mg/kg	1110	1240	112	34-150	
2-Butanone (MEK)	ug/kg	<0.28 mg/kg	5540	6550	118	51-150	
2-Chlorotoluene	ug/kg	<0.057 mg/kg	1110	1130	102	66-144	
4-Chlorotoluene	ug/kg	<0.057 mg/kg	1110	1150	104	66-140	
4-Methyl-2-pentanone (MIBK)	ug/kg	<0.28 mg/kg	5540	6100	110	63-150	
Acetone	ug/kg	<1.1 mg/kg	5540	7130	129	54-150	
Allyl chloride	ug/kg	<0.23 mg/kg	1110	1320	119	53-135	
Benzene	ug/kg	<0.023 mg/kg	1110	1240	111	65-135	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

MATRIX SPIKE SAMPLE: 2898023

Parameter	Units	10427374003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/kg	<0.057 mg/kg	1110	1150	104	71-141	
Bromochloromethane	ug/kg	<0.057 mg/kg	1110	1220	110	62-145	
Bromodichloromethane	ug/kg	<0.057 mg/kg	1110	1220	110	59-148	
Bromoform	ug/kg	<0.23 mg/kg	1110	1050	95	57-145	
Bromomethane	ug/kg	<0.57 mg/kg	1110	1110	100	51-129	
Carbon tetrachloride	ug/kg	<0.057 mg/kg	1110	1210	109	55-144	
Chlorobenzene	ug/kg	<0.057 mg/kg	1110	1160	105	70-142	
Chloroethane	ug/kg	<0.57 mg/kg	1110	1120	101	61-135	
Chloroform	ug/kg	<0.057 mg/kg	1110	1140	102	58-135	
Chloromethane	ug/kg	<0.23 mg/kg	1110	1020	92	37-125	
cis-1,2-Dichloroethene	ug/kg	<0.057 mg/kg	1110	1240	112	60-138	
cis-1,3-Dichloropropene	ug/kg	<0.057 mg/kg	1110	1230	111	62-142	
Dibromochloromethane	ug/kg	<0.23 mg/kg	1110	1080	97	65-141	
Dibromomethane	ug/kg	<0.057 mg/kg	1110	1210	109	72-150	
Dichlorodifluoromethane	ug/kg	<0.23 mg/kg	1110	663	60	30-125	
Dichlorofluoromethane	ug/kg	<0.57 mg/kg	1110	1050	95	62-148	
Diethyl ether (Ethyl ether)	ug/kg	<0.23 mg/kg	1110	2520	227	62-135	M0
Ethylbenzene	ug/kg	<0.057 mg/kg	1110	1190	107	72-138	
Hexachloro-1,3-butadiene	ug/kg	<0.28 mg/kg	1110	1130	102	38-150	
Isopropylbenzene (Cumene)	ug/kg	<0.057 mg/kg	1110	1220	111	75-148	
Methyl-tert-butyl ether	ug/kg	<0.057 mg/kg	1110	1230	111	63-139	
Methylene Chloride	ug/kg	<0.23 mg/kg	1110	1340	119	58-135	
n-Butylbenzene	ug/kg	<0.057 mg/kg	1110	1220	110	63-150	
n-Propylbenzene	ug/kg	<0.057 mg/kg	1110	1190	107	70-146	
Naphthalene	ug/kg	<0.23 mg/kg	1110	1220	109	63-150	
p-Isopropyltoluene	ug/kg	<0.057 mg/kg	1110	1180	107	72-150	
sec-Butylbenzene	ug/kg	<0.057 mg/kg	1110	1230	111	66-150	
Styrene	ug/kg	<0.057 mg/kg	1110	1250	113	72-146	
tert-Butylbenzene	ug/kg	<0.057 mg/kg	1110	1180	106	71-148	
Tetrachloroethene	ug/kg	<0.057 mg/kg	1110	1170	105	70-150	
Tetrahydrofuran	ug/kg	<2.3 mg/kg	11100	13600	123	62-150	
Toluene	ug/kg	<0.057 mg/kg	1110	1200	107	65-142	
trans-1,2-Dichloroethene	ug/kg	<0.057 mg/kg	1110	1290	116	55-141	
trans-1,3-Dichloropropene	ug/kg	<0.057 mg/kg	1110	1220	110	57-147	
Trichloroethene	ug/kg	<0.057 mg/kg	1110	1170	106	62-150	
Trichlorofluoromethane	ug/kg	<0.23 mg/kg	1110	987	89	51-150	
Vinyl chloride	ug/kg	<0.023 mg/kg	1110	1080	97	45-132	
Xylene (Total)	ug/kg	<0.17 mg/kg	3320	3640	109	75-140	
1,2-Dichloroethane-d4 (S)	%.				100	75-125	
4-Bromofluorobenzene (S)	%.				101	75-125	
Toluene-d8 (S)	%.				100	75-125	

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

SAMPLE DUPLICATE: 2898024

Parameter	Units	10427374004 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<0.059 mg/kg	ND		30	
1,1,1-Trichloroethane	ug/kg	<0.059 mg/kg	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	<0.059 mg/kg	ND		30	
1,1,2-Trichloroethane	ug/kg	<0.059 mg/kg	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	<0.24 mg/kg	ND		30	
1,1-Dichloroethane	ug/kg	<0.059 mg/kg	ND		30	
1,1-Dichloroethene	ug/kg	<0.059 mg/kg	ND		30	
1,1-Dichloropropene	ug/kg	<0.059 mg/kg	ND		30	
1,2,3-Trichlorobenzene	ug/kg	<0.059 mg/kg	ND		30	
1,2,3-Trichloropropane	ug/kg	<0.24 mg/kg	ND		30	
1,2,4-Trichlorobenzene	ug/kg	<0.059 mg/kg	ND		30	
1,2,4-Trimethylbenzene	ug/kg	0.14 mg/kg	202	36	30	D6
1,2-Dibromo-3-chloropropane	ug/kg	<0.59 mg/kg	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	<0.059 mg/kg	ND		30	
1,2-Dichlorobenzene	ug/kg	<0.059 mg/kg	ND		30	
1,2-Dichloroethane	ug/kg	<0.059 mg/kg	ND		30	
1,2-Dichloropropane	ug/kg	<0.059 mg/kg	ND		30	
1,3,5-Trimethylbenzene	ug/kg	<0.059 mg/kg	35.7J		30	
1,3-Dichlorobenzene	ug/kg	<0.059 mg/kg	ND		30	
1,3-Dichloropropane	ug/kg	<0.059 mg/kg	ND		30	
1,4-Dichlorobenzene	ug/kg	<0.059 mg/kg	ND		30	
2,2-Dichloropropane	ug/kg	<0.24 mg/kg	ND		30	
2-Butanone (MEK)	ug/kg	<0.29 mg/kg	ND		30	
2-Chlorotoluene	ug/kg	<0.059 mg/kg	ND		30	
4-Chlorotoluene	ug/kg	<0.059 mg/kg	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	<0.29 mg/kg	ND		30	
Acetone	ug/kg	<1.2 mg/kg	ND		30	
Allyl chloride	ug/kg	<0.24 mg/kg	ND		30	
Benzene	ug/kg	0.035 mg/kg	52.0	39	30	D6
Bromobenzene	ug/kg	<0.059 mg/kg	ND		30	
Bromochloromethane	ug/kg	<0.059 mg/kg	ND		30	
Bromodichloromethane	ug/kg	<0.059 mg/kg	ND		30	
Bromoform	ug/kg	<0.24 mg/kg	ND		30	
Bromomethane	ug/kg	<0.59 mg/kg	ND		30	
Carbon tetrachloride	ug/kg	<0.059 mg/kg	ND		30	
Chlorobenzene	ug/kg	<0.059 mg/kg	ND		30	
Chloroethane	ug/kg	<0.59 mg/kg	ND		30	
Chloroform	ug/kg	<0.059 mg/kg	ND		30	
Chloromethane	ug/kg	<0.24 mg/kg	ND		30	
cis-1,2-Dichloroethene	ug/kg	<0.059 mg/kg	ND		30	
cis-1,3-Dichloropropene	ug/kg	<0.059 mg/kg	ND		30	
Dibromochloromethane	ug/kg	<0.24 mg/kg	ND		30	
Dibromomethane	ug/kg	<0.059 mg/kg	ND		30	
Dichlorodifluoromethane	ug/kg	<0.24 mg/kg	ND		30	
Dichlorofluoromethane	ug/kg	<0.59 mg/kg	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	<0.24 mg/kg	ND		30	
Ethylbenzene	ug/kg	0.074 mg/kg	83.3	12	30	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

SAMPLE DUPLICATE: 2898024

Parameter	Units	10427374004 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	<0.29 mg/kg	ND		30	
Isopropylbenzene (Cumene)	ug/kg	<0.059 mg/kg	55.5J		30	
Methyl-tert-butyl ether	ug/kg	<0.059 mg/kg	ND		30	
Methylene Chloride	ug/kg	<0.24 mg/kg	30.8J		30	
n-Butylbenzene	ug/kg	<0.059 mg/kg	23.8J		30	
n-Propylbenzene	ug/kg	0.059 mg/kg	64.8	9	30	
Naphthalene	ug/kg	<0.24 mg/kg	292		30	
p-Isopropyltoluene	ug/kg	<0.059 mg/kg	18.7J		30	
sec-Butylbenzene	ug/kg	<0.059 mg/kg	22.1J		30	
Styrene	ug/kg	<0.059 mg/kg	ND		30	
tert-Butylbenzene	ug/kg	<0.059 mg/kg	ND		30	
Tetrachloroethene	ug/kg	<0.059 mg/kg	ND		30	
Tetrahydrofuran	ug/kg	<2.4 mg/kg	ND		30	
Toluene	ug/kg	0.20 mg/kg	247	19	30	
trans-1,2-Dichloroethene	ug/kg	<0.059 mg/kg	ND		30	
trans-1,3-Dichloropropene	ug/kg	<0.059 mg/kg	ND		30	
Trichloroethene	ug/kg	<0.059 mg/kg	ND		30	
Trichlorofluoromethane	ug/kg	<0.24 mg/kg	ND		30	
Vinyl chloride	ug/kg	<0.024 mg/kg	ND		30	
Xylene (Total)	ug/kg	0.46 mg/kg	588	24	30	
1,2-Dichloroethane-d4 (S)	%.	97	97	1		
4-Bromofluorobenzene (S)	%.	102	102	1		
Toluene-d8 (S)	%.	97	97	1		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 533615 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2898727 Matrix: Solid
Associated Lab Samples: 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	04/21/18 16:19	
1,1,1-Trichloroethane	ug/kg	ND	50.0	04/21/18 16:19	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	04/21/18 16:19	
1,1,2-Trichloroethane	ug/kg	ND	50.0	04/21/18 16:19	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	04/21/18 16:19	
1,1-Dichloroethane	ug/kg	ND	50.0	04/21/18 16:19	
1,1-Dichloroethene	ug/kg	ND	50.0	04/21/18 16:19	
1,1-Dichloropropene	ug/kg	ND	50.0	04/21/18 16:19	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	04/21/18 16:19	
1,2,3-Trichloropropane	ug/kg	ND	200	04/21/18 16:19	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	04/21/18 16:19	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	04/21/18 16:19	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	04/21/18 16:19	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	04/21/18 16:19	
1,2-Dichlorobenzene	ug/kg	ND	50.0	04/21/18 16:19	
1,2-Dichloroethane	ug/kg	ND	50.0	04/21/18 16:19	
1,2-Dichloropropane	ug/kg	ND	50.0	04/21/18 16:19	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	04/21/18 16:19	
1,3-Dichlorobenzene	ug/kg	ND	50.0	04/21/18 16:19	
1,3-Dichloropropane	ug/kg	ND	50.0	04/21/18 16:19	
1,4-Dichlorobenzene	ug/kg	ND	50.0	04/21/18 16:19	
2,2-Dichloropropane	ug/kg	ND	200	04/21/18 16:19	
2-Butanone (MEK)	ug/kg	ND	250	04/21/18 16:19	
2-Chlorotoluene	ug/kg	ND	50.0	04/21/18 16:19	
4-Chlorotoluene	ug/kg	ND	50.0	04/21/18 16:19	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	04/21/18 16:19	
Acetone	ug/kg	ND	1000	04/21/18 16:19	
Allyl chloride	ug/kg	ND	200	04/21/18 16:19	
Benzene	ug/kg	ND	20.0	04/21/18 16:19	
Bromobenzene	ug/kg	ND	50.0	04/21/18 16:19	
Bromochloromethane	ug/kg	ND	50.0	04/21/18 16:19	
Bromodichloromethane	ug/kg	ND	50.0	04/21/18 16:19	
Bromoform	ug/kg	ND	200	04/21/18 16:19	MN
Bromomethane	ug/kg	ND	500	04/21/18 16:19	
Carbon tetrachloride	ug/kg	ND	50.0	04/21/18 16:19	
Chlorobenzene	ug/kg	ND	50.0	04/21/18 16:19	
Chloroethane	ug/kg	ND	500	04/21/18 16:19	
Chloroform	ug/kg	ND	50.0	04/21/18 16:19	
Chloromethane	ug/kg	ND	200	04/21/18 16:19	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	04/21/18 16:19	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	04/21/18 16:19	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

METHOD BLANK: 2898727 Matrix: Solid
Associated Lab Samples: 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	04/21/18 16:19	
Dibromomethane	ug/kg	ND	50.0	04/21/18 16:19	
Dichlorodifluoromethane	ug/kg	ND	200	04/21/18 16:19	
Dichlorofluoromethane	ug/kg	ND	500	04/21/18 16:19	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	04/21/18 16:19	
Ethylbenzene	ug/kg	ND	50.0	04/21/18 16:19	
Hexachloro-1,3-butadiene	ug/kg	ND	250	04/21/18 16:19	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	04/21/18 16:19	
Methyl-tert-butyl ether	ug/kg	ND	50.0	04/21/18 16:19	
Methylene Chloride	ug/kg	ND	200	04/21/18 16:19	
n-Butylbenzene	ug/kg	ND	50.0	04/21/18 16:19	
n-Propylbenzene	ug/kg	ND	50.0	04/21/18 16:19	
Naphthalene	ug/kg	ND	200	04/21/18 16:19	
p-Isopropyltoluene	ug/kg	ND	50.0	04/21/18 16:19	
sec-Butylbenzene	ug/kg	ND	50.0	04/21/18 16:19	
Styrene	ug/kg	ND	50.0	04/21/18 16:19	
tert-Butylbenzene	ug/kg	ND	50.0	04/21/18 16:19	
Tetrachloroethene	ug/kg	ND	50.0	04/21/18 16:19	
Tetrahydrofuran	ug/kg	ND	2000	04/21/18 16:19	
Toluene	ug/kg	ND	50.0	04/21/18 16:19	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	04/21/18 16:19	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	04/21/18 16:19	
Trichloroethene	ug/kg	ND	50.0	04/21/18 16:19	
Trichlorofluoromethane	ug/kg	ND	200	04/21/18 16:19	
Vinyl chloride	ug/kg	ND	20.0	04/21/18 16:19	
Xylene (Total)	ug/kg	ND	150	04/21/18 16:19	
1,2-Dichloroethane-d4 (S)	%.	96	75-125	04/21/18 16:19	
4-Bromofluorobenzene (S)	%.	101	75-125	04/21/18 16:19	
Toluene-d8 (S)	%.	97	75-125	04/21/18 16:19	

LABORATORY CONTROL SAMPLE & LCSD: 2898728 2898729

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	1080	1030	108	103	59-125	5	20	
1,1,1-Trichloroethane	ug/kg	1000	1120	1040	112	104	59-125	8	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	991	956	99	96	58-125	4	20	
1,1,2-Trichloroethane	ug/kg	1000	1030	970	103	97	64-125	6	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	1080	940	108	94	65-125	14	20	
1,1-Dichloroethane	ug/kg	1000	1060	968	106	97	63-125	9	20	
1,1-Dichloroethene	ug/kg	1000	1070	966	107	97	59-125	10	20	
1,1-Dichloropropene	ug/kg	1000	1230	1100	123	110	64-125	10	20	
1,2,3-Trichlorobenzene	ug/kg	1000	992	952	99	95	55-126	4	20	
1,2,3-Trichloropropane	ug/kg	1000	1000	966	100	97	62-125	3	20	
1,2,4-Trichlorobenzene	ug/kg	1000	1000	969	100	97	62-125	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE & LCSD: 2898728 2898729

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	1000	961	100	96	59-125	4	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2500	2400	100	96	54-125	4	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	1120	1020	112	102	64-125	9	20	
1,2-Dichlorobenzene	ug/kg	1000	1030	972	103	97	63-125	5	20	
1,2-Dichloroethane	ug/kg	1000	983	905	98	90	57-125	8	20	
1,2-Dichloropropane	ug/kg	1000	1020	952	102	95	67-125	7	20	
1,3,5-Trimethylbenzene	ug/kg	1000	1020	982	102	98	59-125	4	20	
1,3-Dichlorobenzene	ug/kg	1000	1020	956	102	96	64-125	7	20	
1,3-Dichloropropane	ug/kg	1000	1020	969	102	97	64-125	5	20	
1,4-Dichlorobenzene	ug/kg	1000	961	927	96	93	63-125	4	20	
2,2-Dichloropropane	ug/kg	1000	1060	990	106	99	37-126	7	20	
2-Butanone (MEK)	ug/kg	5000	5780	5160	116	103	48-125	11	20	
2-Chlorotoluene	ug/kg	1000	1020	966	102	97	62-125	5	20	
4-Chlorotoluene	ug/kg	1000	1020	950	102	95	63-125	7	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4950	4640	99	93	52-135	6	20	
Acetone	ug/kg	5000	6410	5530	128	111	65-125	15	20	L3
Allyl chloride	ug/kg	1000	1050	946	105	95	52-125	11	20	
Benzene	ug/kg	1000	1070	989	107	99	61-125	8	20	
Bromobenzene	ug/kg	1000	1080	1020	108	102	64-125	6	20	
Bromochloromethane	ug/kg	1000	1070	934	107	93	65-125	14	20	
Bromodichloromethane	ug/kg	1000	1090	1010	109	101	57-125	7	20	
Bromoform	ug/kg	1000	1070	1000	107	100	57-125	7	20	
Bromomethane	ug/kg	1000	887	802	89	80	60-125	10	20	
Carbon tetrachloride	ug/kg	1000	1120	1030	112	103	58-125	9	20	
Chlorobenzene	ug/kg	1000	1030	955	103	95	66-125	8	20	
Chloroethane	ug/kg	1000	898	849	90	85	62-125	6	20	
Chloroform	ug/kg	1000	997	901	100	90	59-125	10	20	
Chloromethane	ug/kg	1000	831	776	83	78	50-125	7	20	
cis-1,2-Dichloroethene	ug/kg	1000	1050	952	105	95	61-125	10	20	
cis-1,3-Dichloropropene	ug/kg	1000	1100	1030	110	103	61-125	7	20	
Dibromochloromethane	ug/kg	1000	1010	943	101	94	60-125	7	20	
Dibromomethane	ug/kg	1000	1110	1000	111	100	69-125	11	20	
Dichlorodifluoromethane	ug/kg	1000	717	630	72	63	38-125	13	20	
Dichlorofluoromethane	ug/kg	1000	1000	883	100	88	67-125	12	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	2280	2050	228	205	60-125	11	20	L3,SS
Ethylbenzene	ug/kg	1000	1070	989	107	99	62-125	8	20	
Hexachloro-1,3-butadiene	ug/kg	1000	1070	1010	107	101	56-125	5	20	
Isopropylbenzene (Cumene)	ug/kg	1000	1100	1030	110	103	65-125	6	20	
Methyl-tert-butyl ether	ug/kg	1000	965	891	97	89	59-125	8	20	
Methylene Chloride	ug/kg	1000	978	908	98	91	64-125	7	20	
n-Butylbenzene	ug/kg	1000	1050	1020	105	102	59-125	3	20	
n-Propylbenzene	ug/kg	1000	1060	987	106	99	61-125	7	20	
Naphthalene	ug/kg	1000	995	970	99	97	53-125	3	20	
p-Isopropyltoluene	ug/kg	1000	1060	1000	106	100	63-125	6	20	
sec-Butylbenzene	ug/kg	1000	1020	980	102	98	62-125	4	20	
Styrene	ug/kg	1000	1030	994	103	99	66-125	3	20	
tert-Butylbenzene	ug/kg	1000	1030	984	103	98	64-125	4	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE & LCSD: 2898728 2898729

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	1130	1030	113	103	67-125	10	20	
Tetrahydrofuran	ug/kg	10000	10600	9790	106	98	62-125	8	20	
Toluene	ug/kg	1000	988	931	99	93	61-125	6	20	
trans-1,2-Dichloroethene	ug/kg	1000	1110	1010	111	101	64-125	10	20	
trans-1,3-Dichloropropene	ug/kg	1000	1060	1000	106	100	56-125	6	20	
Trichloroethene	ug/kg	1000	1130	1030	113	103	67-125	9	20	
Trichlorofluoromethane	ug/kg	1000	1050	949	105	95	65-125	10	20	
Vinyl chloride	ug/kg	1000	964	875	96	88	57-125	10	20	
Xylene (Total)	ug/kg	3000	3080	2900	103	97	62-125	6	20	
1,2-Dichloroethane-d4 (S)	%.				97	98	75-125			
4-Bromofluorobenzene (S)	%.				97	100	75-125			
Toluene-d8 (S)	%.				99	100	75-125			

MATRIX SPIKE SAMPLE: 2898730

Parameter	Units	10427790001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	1130	1150	102	64-146	
1,1,1-Trichloroethane	ug/kg	ND	1130	1230	109	56-148	
1,1,2,2-Tetrachloroethane	ug/kg	ND	1130	1240	110	36-150	
1,1,2-Trichloroethane	ug/kg	ND	1130	1190	106	67-148	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	1130	1160	103	60-142	
1,1-Dichloroethane	ug/kg	ND	1130	1270	113	57-140	
1,1-Dichloroethene	ug/kg	ND	1130	1270	113	59-139	
1,1-Dichloropropene	ug/kg	ND	1130	1240	111	61-142	
1,2,3-Trichlorobenzene	ug/kg	ND	1130	1090	97	69-150	
1,2,3-Trichloropropane	ug/kg	ND	1130	1170	104	64-150	
1,2,4-Trichlorobenzene	ug/kg	ND	1130	1130	101	71-149	
1,2,4-Trimethylbenzene	ug/kg	ND	1130	1160	103	67-149	
1,2-Dibromo-3-chloropropane	ug/kg	ND	2810	2470	88	61-150	
1,2-Dibromoethane (EDB)	ug/kg	ND	1130	1170	105	67-147	
1,2-Dichlorobenzene	ug/kg	ND	1130	1120	100	70-142	
1,2-Dichloroethane	ug/kg	ND	1130	1140	102	58-132	
1,2-Dichloropropane	ug/kg	ND	1130	1260	112	64-144	
1,3,5-Trimethylbenzene	ug/kg	ND	1130	1210	108	71-146	
1,3-Dichlorobenzene	ug/kg	ND	1130	1100	98	71-142	
1,3-Dichloropropane	ug/kg	ND	1130	1180	105	68-140	
1,4-Dichlorobenzene	ug/kg	ND	1130	1130	101	68-142	
2,2-Dichloropropane	ug/kg	ND	1130	1330	118	34-150	
2-Butanone (MEK)	ug/kg	ND	5620	6160	110	51-150	
2-Chlorotoluene	ug/kg	ND	1130	1100	98	66-144	
4-Chlorotoluene	ug/kg	ND	1130	1150	102	66-140	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	5620	6050	108	63-150	
Acetone	ug/kg	ND	5620	6420	114	54-150	
Allyl chloride	ug/kg	ND	1130	1310	117	53-135	
Benzene	ug/kg	ND	1130	1250	111	65-135	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

MATRIX SPIKE SAMPLE: 2898730

Parameter	Units	10427790001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/kg	ND	1130	1150	102	71-141	
Bromochloromethane	ug/kg	ND	1130	1210	107	62-145	
Bromodichloromethane	ug/kg	ND	1130	1200	107	59-148	
Bromoform	ug/kg	ND	1130	994	88	57-145	
Bromomethane	ug/kg	ND	1130	1090	97	51-129	
Carbon tetrachloride	ug/kg	ND	1130	1200	107	55-144	
Chlorobenzene	ug/kg	ND	1130	1150	102	70-142	
Chloroethane	ug/kg	ND	1130	1160	103	61-135	
Chloroform	ug/kg	ND	1130	1130	100	58-135	
Chloromethane	ug/kg	ND	1130	1100	98	37-125	
cis-1,2-Dichloroethene	ug/kg	ND	1130	1210	107	60-138	
cis-1,3-Dichloropropene	ug/kg	ND	1130	1220	109	62-142	
Dibromochloromethane	ug/kg	ND	1130	1050	93	65-141	
Dibromomethane	ug/kg	ND	1130	1180	105	72-150	
Dichlorodifluoromethane	ug/kg	ND	1130	785	70	30-125	
Dichlorofluoromethane	ug/kg	ND	1130	1090	97	62-148	
Diethyl ether (Ethyl ether)	ug/kg	ND	1130	2490	221	62-135	M0,SS
Ethylbenzene	ug/kg	ND	1130	1170	104	72-138	
Hexachloro-1,3-butadiene	ug/kg	ND	1130	1030	91	38-150	
Isopropylbenzene (Cumene)	ug/kg	ND	1130	1240	110	75-148	
Methyl-tert-butyl ether	ug/kg	ND	1130	1250	112	63-139	
Methylene Chloride	ug/kg	ND	1130	1280	114	58-135	
n-Butylbenzene	ug/kg	ND	1130	1210	108	63-150	
n-Propylbenzene	ug/kg	ND	1130	1200	107	70-146	
Naphthalene	ug/kg	ND	1130	1170	104	63-150	
p-Isopropyltoluene	ug/kg	ND	1130	1190	106	72-150	
sec-Butylbenzene	ug/kg	ND	1130	1250	111	66-150	
Styrene	ug/kg	ND	1130	1220	109	72-146	
tert-Butylbenzene	ug/kg	ND	1130	1170	104	71-148	
Tetrachloroethene	ug/kg	ND	1130	1180	105	70-150	
Tetrahydrofuran	ug/kg	ND	11300	12900	115	62-150	
Toluene	ug/kg	ND	1130	1180	105	65-142	
trans-1,2-Dichloroethene	ug/kg	ND	1130	1290	115	55-141	
trans-1,3-Dichloropropene	ug/kg	ND	1130	1210	107	57-147	
Trichloroethene	ug/kg	ND	1130	1210	108	62-150	
Trichlorofluoromethane	ug/kg	ND	1130	1080	96	51-150	
Vinyl chloride	ug/kg	ND	1130	1160	103	45-132	
Xylene (Total)	ug/kg	ND	3370	3640	108	75-140	
1,2-Dichloroethane-d4 (S)	%.				99	75-125	
4-Bromofluorobenzene (S)	%.				103	75-125	
Toluene-d8 (S)	%.				98	75-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

SAMPLE DUPLICATE: 2898731

Parameter	Units	10427790002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	ND		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	ND		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

SAMPLE DUPLICATE: 2898731

Parameter	Units	10427790002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	ND		30	
n-Propylbenzene	ug/kg	ND	ND		30	
Naphthalene	ug/kg	ND	ND		30	
p-Isopropyltoluene	ug/kg	ND	ND		30	
sec-Butylbenzene	ug/kg	ND	ND		30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	97	97	1		
4-Bromofluorobenzene (S)	%.	99	101	1		
Toluene-d8 (S)	%.	97	97	1		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 532491 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2891843 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/16/18 21:16	
4,4'-DDE	ug/kg	ND	3.3	04/16/18 21:16	
4,4'-DDT	ug/kg	ND	3.3	04/16/18 21:16	
Aldrin	ug/kg	ND	1.7	04/16/18 21:16	
alpha-BHC	ug/kg	ND	1.7	04/16/18 21:16	
alpha-Chlordane	ug/kg	ND	1.7	04/16/18 21:16	
beta-BHC	ug/kg	ND	1.7	04/16/18 21:16	
Chlordane (Technical)	ug/kg	ND	16.7	04/16/18 21:16	
delta-BHC	ug/kg	ND	1.7	04/16/18 21:16	
Dieldrin	ug/kg	ND	3.3	04/16/18 21:16	
Endosulfan I	ug/kg	ND	1.7	04/16/18 21:16	
Endosulfan II	ug/kg	ND	3.3	04/16/18 21:16	
Endosulfan sulfate	ug/kg	ND	3.3	04/16/18 21:16	
Endrin	ug/kg	ND	3.3	04/16/18 21:16	
Endrin aldehyde	ug/kg	ND	3.3	04/16/18 21:16	
Endrin ketone	ug/kg	ND	3.3	04/16/18 21:16	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/16/18 21:16	
gamma-Chlordane	ug/kg	ND	1.7	04/16/18 21:16	
Heptachlor	ug/kg	ND	1.7	04/16/18 21:16	
Heptachlor epoxide	ug/kg	ND	1.7	04/16/18 21:16	
Methoxychlor	ug/kg	ND	16.7	04/16/18 21:16	
Toxaphene	ug/kg	ND	50.0	04/16/18 21:16	
Decachlorobiphenyl (S)	%.	96	30-150	04/16/18 21:16	
Tetrachloro-m-xylene (S)	%.	98	30-150	04/16/18 21:16	

LABORATORY CONTROL SAMPLE: 2891844

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	33.5	100	62-127	
4,4'-DDE	ug/kg	33.3	33.3	100	66-125	
4,4'-DDT	ug/kg	33.3	33.6	101	67-128	
Aldrin	ug/kg	16.7	15.1	91	66-125	
alpha-BHC	ug/kg	16.7	16.1	96	64-125	
alpha-Chlordane	ug/kg	16.7	15.5	93	68-125	
beta-BHC	ug/kg	16.7	15.4	93	69-125	
delta-BHC	ug/kg	16.7	13.0	78	42-133	
Dieldrin	ug/kg	33.3	34.2	103	69-126	
Endosulfan I	ug/kg	16.7	14.2	85	63-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE: 2891844

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endosulfan II	ug/kg	33.3	33.0	99	69-125	
Endosulfan sulfate	ug/kg	33.3	28.8	87	56-137	
Endrin	ug/kg	33.3	31.5	95	69-125	
Endrin aldehyde	ug/kg	33.3	31.4	94	65-125	
Endrin ketone	ug/kg	33.3	33.1	99	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	15.9	95	67-125	
gamma-Chlordane	ug/kg	16.7	14.0	84	63-125	
Heptachlor	ug/kg	16.7	16.2	97	69-125	
Heptachlor epoxide	ug/kg	16.7	15.5	93	68-125	
Methoxychlor	ug/kg	167	163	98	65-134	
Decachlorobiphenyl (S)	%.			94	30-150	
Tetrachloro-m-xylene (S)	%.			98	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891845 2891846

Parameter	Units	10427018001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	50.7	50.5	53.3	56.7	105	112	56-125	6	20	
4,4'-DDE	ug/kg	ND	50.7	50.5	56.1	55.9	111	110	32-150	0	20	
4,4'-DDT	ug/kg	ND	50.7	50.5	54.8	52.9	108	105	60-132	4	20	
Aldrin	ug/kg	ND	25.4	25.3	20J	21.5J	79	85	56-125		20	
alpha-BHC	ug/kg	ND	25.4	25.3	25.2J	24.3J	99	96	54-136		20	
alpha-Chlordane	ug/kg	ND	25.4	25.3	25.7	28.8	101	114	54-133	12	20	
beta-BHC	ug/kg	ND	25.4	25.3	26.7	26.6	105	105	30-150	0	20	
delta-BHC	ug/kg	ND	25.4	25.3	17.1J	18.7J	68	74	45-145		20	
Dieldrin	ug/kg	ND	50.7	50.5	63.9	54.7	126	108	47-150	15	20	
Endosulfan I	ug/kg	ND	25.4	25.3	24.1J	24.4J	95	97	35-145		20	
Endosulfan II	ug/kg	ND	50.7	50.5	46.4J	49.1J	92	97	50-147		20	
Endosulfan sulfate	ug/kg	ND	50.7	50.5	39.2J	44J	77	87	54-132		20	
Endrin	ug/kg	ND	50.7	50.5	41.8J	44.2J	82	87	62-125		20	
Endrin aldehyde	ug/kg	ND	50.7	50.5	45.3J	48.8J	89	97	33-150		20	
Endrin ketone	ug/kg	ND	50.7	50.5	45.9J	49.7J	91	98	56-144		20	
gamma-BHC (Lindane)	ug/kg	ND	25.4	25.3	23.7J	25.1J	94	99	63-125		20	
gamma-Chlordane	ug/kg	ND	25.4	25.3	21.9J	23.2J	86	92	45-132		20	
Heptachlor	ug/kg	ND	25.4	25.3	21.1J	23.1J	83	91	51-142		20	
Heptachlor epoxide	ug/kg	ND	25.4	25.3	14.1J	25.5	56	101	50-142		20	
Methoxychlor	ug/kg	ND	254	253	278	283	109	112	58-139	2	20	
Decachlorobiphenyl (S)	%.						0	0	30-150			S4
Tetrachloro-m-xylene (S)	%.						0	0	30-150			4M, D3, S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 532316 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2890749 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/16/18 15:30	
Decachlorobiphenyl (S)	%.	90	30-134	04/16/18 15:30	
Tetrachloro-m-xylene (S)	%.	89	48-125	04/16/18 15:30	

LABORATORY CONTROL SAMPLE: 2890750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	578	87	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	588	88	62-125	
Decachlorobiphenyl (S)	%.			97	30-134	
Tetrachloro-m-xylene (S)	%.			97	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890820 2890821

Parameter	Units	10427018004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	779	782	625	654	80	84	30-150	5	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	779	782	650	643	83	82	30-138	1	30	
Decachlorobiphenyl (S)	%.						80	76	30-134			
Tetrachloro-m-xylene (S)	%.						80	80	48-125			

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 532275 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10427018001, 10427018002, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2890574 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/18/18 16:57	
1,2-Dichlorobenzene	ug/kg	ND	330	04/18/18 16:57	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/18/18 16:57	
1,3-Dichlorobenzene	ug/kg	ND	330	04/18/18 16:57	
1,4-Dichlorobenzene	ug/kg	ND	330	04/18/18 16:57	
1-Methylnaphthalene	ug/kg	ND	330	04/18/18 16:57	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/18/18 16:57	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/18/18 16:57	
2,4-Dichlorophenol	ug/kg	ND	330	04/18/18 16:57	
2,4-Dimethylphenol	ug/kg	ND	330	04/18/18 16:57	
2,4-Dinitrophenol	ug/kg	ND	330	04/18/18 16:57	
2,4-Dinitrotoluene	ug/kg	ND	330	04/18/18 16:57	
2,6-Dinitrotoluene	ug/kg	ND	330	04/18/18 16:57	
2-Chloronaphthalene	ug/kg	ND	330	04/18/18 16:57	
2-Chlorophenol	ug/kg	ND	330	04/18/18 16:57	
2-Methylnaphthalene	ug/kg	ND	330	04/18/18 16:57	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/18/18 16:57	
2-Nitroaniline	ug/kg	ND	330	04/18/18 16:57	
2-Nitrophenol	ug/kg	ND	330	04/18/18 16:57	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/18/18 16:57	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/18/18 16:57	
3-Nitroaniline	ug/kg	ND	330	04/18/18 16:57	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/18/18 16:57	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/18/18 16:57	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/18/18 16:57	
4-Chloroaniline	ug/kg	ND	330	04/18/18 16:57	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/18/18 16:57	
4-Nitroaniline	ug/kg	ND	330	04/18/18 16:57	
4-Nitrophenol	ug/kg	ND	330	04/18/18 16:57	
Acenaphthene	ug/kg	ND	330	04/18/18 16:57	
Acenaphthylene	ug/kg	ND	330	04/18/18 16:57	
Anthracene	ug/kg	ND	330	04/18/18 16:57	
Benzo(a)anthracene	ug/kg	ND	330	04/18/18 16:57	
Benzo(a)pyrene	ug/kg	ND	330	04/18/18 16:57	
Benzo(b)fluoranthene	ug/kg	ND	330	04/18/18 16:57	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/18/18 16:57	
Benzo(k)fluoranthene	ug/kg	ND	330	04/18/18 16:57	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/18/18 16:57	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/18/18 16:57	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/18/18 16:57	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/18/18 16:57	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

METHOD BLANK: 2890574 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/18/18 16:57	
Carbazole	ug/kg	ND	330	04/18/18 16:57	
Chrysene	ug/kg	ND	330	04/18/18 16:57	
Di-n-butylphthalate	ug/kg	ND	330	04/18/18 16:57	
Di-n-octylphthalate	ug/kg	ND	330	04/18/18 16:57	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/18/18 16:57	
Dibenzofuran	ug/kg	ND	330	04/18/18 16:57	
Diethylphthalate	ug/kg	ND	330	04/18/18 16:57	
Dimethylphthalate	ug/kg	ND	330	04/18/18 16:57	
Fluoranthene	ug/kg	ND	330	04/18/18 16:57	
Fluorene	ug/kg	ND	330	04/18/18 16:57	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/18/18 16:57	
Hexachlorobenzene	ug/kg	ND	330	04/18/18 16:57	
Hexachloroethane	ug/kg	ND	330	04/18/18 16:57	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/18/18 16:57	
Isophorone	ug/kg	ND	330	04/18/18 16:57	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/18/18 16:57	
N-Nitrosodimethylamine	ug/kg	ND	330	04/18/18 16:57	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/18/18 16:57	
Naphthalene	ug/kg	ND	330	04/18/18 16:57	
Nitrobenzene	ug/kg	ND	330	04/18/18 16:57	
Pentachlorophenol	ug/kg	ND	670	04/18/18 16:57	
Phenanthrene	ug/kg	ND	330	04/18/18 16:57	
Phenol	ug/kg	ND	330	04/18/18 16:57	
Pyrene	ug/kg	ND	330	04/18/18 16:57	
2,4,6-Tribromophenol (S)	%.	77	60-125	04/18/18 16:57	
2-Fluorobiphenyl (S)	%.	79	30-132	04/18/18 16:57	
2-Fluorophenol (S)	%.	72	40-125	04/18/18 16:57	
Nitrobenzene-d5 (S)	%.	71	43-125	04/18/18 16:57	
p-Terphenyl-d14 (S)	%.	86	62-125	04/18/18 16:57	
Phenol-d6 (S)	%.	72	48-125	04/18/18 16:57	

LABORATORY CONTROL SAMPLE: 2890575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	983	59	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1010	61	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1320	79	63-125	
1,3-Dichlorobenzene	ug/kg	1670	980	59	38-125	
1,4-Dichlorobenzene	ug/kg	1670	984	59	39-125	
1-Methylnaphthalene	ug/kg	1670	1190	72	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1340	81	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1340	80	61-125	
2,4-Dichlorophenol	ug/kg	1670	1230	74	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE: 2890575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1140	69	51-125	
2,4-Dinitrophenol	ug/kg	1670	1290	78	30-132	6M
2,4-Dinitrotoluene	ug/kg	1670	1580	95	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1490	89	63-125	
2-Chloronaphthalene	ug/kg	1670	1310	79	61-125	
2-Chlorophenol	ug/kg	1670	987	59	46-125	
2-Methylnaphthalene	ug/kg	1670	1160	70	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1070	64	50-125	
2-Nitroaniline	ug/kg	1670	1330	80	61-125	
2-Nitrophenol	ug/kg	1670	1110	66	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1150	69	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1260	75	47-125	
3-Nitroaniline	ug/kg	1670	1270	76	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1540J	93	30-141	6M
4-Bromophenylphenyl ether	ug/kg	1670	1380	83	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1360	82	64-125	
4-Chloroaniline	ug/kg	1670	853	51	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1390	83	64-125	
4-Nitroaniline	ug/kg	1670	1290	77	59-125	
4-Nitrophenol	ug/kg	1670	1300	78	54-125	
Acenaphthene	ug/kg	1670	1320	79	62-125	
Acenaphthylene	ug/kg	1670	1320	79	61-125	
Anthracene	ug/kg	1670	1360	81	66-125	
Benzo(a)anthracene	ug/kg	1670	1410	84	69-125	
Benzo(a)pyrene	ug/kg	1670	1410	85	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1410	85	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1470	88	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1440	87	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1070	64	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	914	55	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	773	46	37-125	6M
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1530	92	69-131	
Butylbenzylphthalate	ug/kg	1670	1500	90	69-129	
Carbazole	ug/kg	1670	1430	86	66-125	
Chrysene	ug/kg	1670	1430	86	68-125	
Di-n-butylphthalate	ug/kg	1670	1510	90	69-125	
Di-n-octylphthalate	ug/kg	1670	1580	95	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1510	91	64-125	
Dibenzofuran	ug/kg	1670	1410	84	65-125	
Diethylphthalate	ug/kg	1670	1450	87	67-125	
Dimethylphthalate	ug/kg	1670	1440	86	67-125	
Fluoranthene	ug/kg	1670	1430	86	66-125	
Fluorene	ug/kg	1670	1390	83	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	951	57	40-125	
Hexachlorobenzene	ug/kg	1670	1400	84	62-125	
Hexachloroethane	ug/kg	1670	939	56	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1490	90	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE: 2890575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1170	70	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1090	65	50-125	
N-Nitrosodimethylamine	ug/kg	1670	956	57	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1390	84	65-125	
Naphthalene	ug/kg	1670	1040	62	48-125	
Nitrobenzene	ug/kg	1670	984	59	48-125	
Pentachlorophenol	ug/kg	1670	1300	78	41-125	
Phenanthrene	ug/kg	1670	1350	81	66-125	
Phenol	ug/kg	1670	1000	60	46-125	
Pyrene	ug/kg	1670	1420	85	69-125	
2,4,6-Tribromophenol (S)	%.			84	60-125	
2-Fluorobiphenyl (S)	%.			69	30-132	
2-Fluorophenol (S)	%.			52	40-125	
Nitrobenzene-d5 (S)	%.			53	43-125	
p-Terphenyl-d14 (S)	%.			85	62-125	
Phenol-d6 (S)	%.			57	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890607 2890608

Parameter	Units	10427018008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	1940	1950	1400J	1390J	73	71	30-127		30	
1,2-Dichlorobenzene	ug/kg	ND	1940	1950	1330J	1150J	69	59	30-125		30	
1,2-Diphenylhydrazine	ug/kg	ND	1940	1950	1410J	1360J	73	70	30-150		30	
1,3-Dichlorobenzene	ug/kg	ND	1940	1950	1270J	1060J	66	54	30-125		30	
1,4-Dichlorobenzene	ug/kg	ND	1940	1950	1280J	1100J	66	57	30-125		30	
1-Methylnaphthalene	ug/kg	ND	1940	1950	1560J	1520J	79	76	42-125		30	
2,4,5-Trichlorophenol	ug/kg	ND	1940	1950	1400J	1400J	73	72	30-150		30	
2,4,6-Trichlorophenol	ug/kg	ND	1940	1950	1450J	1420J	75	73	30-150		30	
2,4-Dichlorophenol	ug/kg	ND	1940	1950	1490J	1420J	77	73	30-135		30	
2,4-Dimethylphenol	ug/kg	ND	1940	1950	1540J	1470J	79	76	30-148		30	
2,4-Dinitrophenol	ug/kg	ND	1940	1950	ND	ND	0	0	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	ND	1940	1950	1030J	818J	53	42	30-150		30	
2,6-Dinitrotoluene	ug/kg	ND	1940	1950	1150J	1010J	60	52	30-150		30	
2-Chloronaphthalene	ug/kg	ND	1940	1950	1460J	1430J	76	74	30-138		30	
2-Chlorophenol	ug/kg	ND	1940	1950	1480J	1380J	76	71	30-130		30	
2-Methylnaphthalene	ug/kg	ND	1940	1950	1570J	1510J	79	76	46-125		30	
2-Methylphenol(o-Cresol)	ug/kg	ND	1940	1950	1440J	1440J	75	74	30-133		30	
2-Nitroaniline	ug/kg	ND	1940	1950	1610J	1580J	83	81	30-150		30	
2-Nitrophenol	ug/kg	ND	1940	1950	813J	ND	42	31	30-134		30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	1940	1950	1460J	1380J	75	71	30-138		30	
3,3'-Dichlorobenzidine	ug/kg	ND	1940	1950	ND	ND	32	41	30-149		30	
3-Nitroaniline	ug/kg	ND	1940	1950	1780J	1750J	92	90	30-150		30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1940	1950	ND	ND	0	0	30-133		30	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890607 2890608

Parameter	Units	10427018008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	1940	1950	1520J	1460J	79	75	44-125		30	
4-Chloro-3-methylphenol	ug/kg	ND	1940	1950	1490J	1440J	77	74	30-150		30	
4-Chloroaniline	ug/kg	ND	1940	1950	ND	ND	49	46	30-125		30	
4-Chlorophenylphenyl ether	ug/kg	ND	1940	1950	1530J	1440J	79	74	44-125		30	
4-Nitroaniline	ug/kg	ND	1940	1950	1670J	1750J	86	90	30-150		30	
4-Nitrophenol	ug/kg	ND	1940	1950	ND	1280J	47	66	30-150		30	
Acenaphthene	ug/kg	ND	1940	1950	1540J	1790J	80	92	40-125		30	
Acenaphthylene	ug/kg	ND	1940	1950	1560J	1460J	81	75	30-150		30	
Anthracene	ug/kg	ND	1940	1950	1650J	2080J	77	99	30-150		30	
Benzo(a)anthracene	ug/kg	ND	1940	1950	1910J	3050J	78	136	30-150		30	
Benzo(a)pyrene	ug/kg	ND	1940	1950	1810J	2600J	94	134	30-150		30	
Benzo(b)fluoranthene	ug/kg	ND	1940	1950	1910J	2960J	99	152	30-150		30	M1
Benzo(g,h,i)perylene	ug/kg	ND	1940	1950	1930J	2310J	99	119	30-150		30	
Benzo(k)fluoranthene	ug/kg	ND	1940	1950	1630J	2200J	84	113	30-150		30	
bis(2-Chloroethoxy)methane	ug/kg	ND	1940	1950	1420J	1370J	73	70	30-134		30	
bis(2-Chloroethyl) ether	ug/kg	ND	1940	1950	1210J	1180J	62	61	30-125		30	
bis(2-Chloroisopropyl) ether	ug/kg	ND	1940	1950	1150J	1050J	59	54	30-125		30	6M
bis(2-Ethylhexyl)phthalate	ug/kg	ND	1940	1950	3800J	2960J	76	33	30-150		30	
Butylbenzylphthalate	ug/kg	ND	1940	1950	1790J	1760J	93	91	30-150		30	
Carbazole	ug/kg	ND	1940	1950	1650J	1960J	82	98	41-125		30	
Chrysene	ug/kg	ND	1940	1950	2000J	3120J	82	139	30-150		30	
Di-n-butylphthalate	ug/kg	ND	1940	1950	2730J	1930J	141	99	30-150		30	
Di-n-octylphthalate	ug/kg	ND	1940	1950	1870J	1770J	96	91	30-150		30	
Dibenz(a,h)anthracene	ug/kg	ND	1940	1950	1570J	1660J	81	85	30-150		30	
Dibenzofuran	ug/kg	ND	1940	1950	1620J	1590J	84	82	45-125		30	
Diethylphthalate	ug/kg	ND	1940	1950	1530J	1530J	79	79	30-150		30	
Dimethylphthalate	ug/kg	ND	1940	1950	1600J	1500J	82	77	30-150		30	
Fluoranthene	ug/kg	ND	1940	1950	2260J	5090	76	221	30-150		30	M1
Fluorene	ug/kg	ND	1940	1950	1660J	1740J	77	81	30-150		30	
Hexachloro-1,3-butadiene	ug/kg	ND	1940	1950	1420J	1230J	73	63	30-128		30	
Hexachlorobenzene	ug/kg	ND	1940	1950	1570J	1500J	81	77	30-150		30	
Hexachloroethane	ug/kg	ND	1940	1950	ND	ND	41	26	30-125		30	M1
Indeno(1,2,3-cd)pyrene	ug/kg	ND	1940	1950	1690J	2080J	88	107	30-150		30	
Isophorone	ug/kg	ND	1940	1950	1440J	1380J	74	71	30-140		30	
N-Nitroso-di-n-propylamine	ug/kg	ND	1940	1950	1410J	1300J	73	67	30-147		30	
N-Nitrosodimethylamine	ug/kg	ND	1940	1950	ND	ND	52	45	30-125		30	
N-Nitrosodiphenylamine	ug/kg	ND	1940	1950	1760J	1700J	91	87	30-150		30	
Naphthalene	ug/kg	ND	1940	1950	1470J	1460J	76	75	44-125		30	
Nitrobenzene	ug/kg	ND	1940	1950	1290J	1270J	67	65	30-136		30	
Pentachlorophenol	ug/kg	ND	1940	1950	ND	ND	56	48	30-150		30	
Phenanthrene	ug/kg	ND	1940	1950	2210J	4090	53	150	30-150		30	
Phenol	ug/kg	ND	1940	1950	1380J	1340J	71	69	30-129		30	
Pyrene	ug/kg	ND	1940	1950	2560J	5020	76	203	30-150		30	M1
2,4,6-Tribromophenol (S)	%.						64	68	60-125			
2-Fluorobiphenyl (S)	%.						61	64	30-132			
2-Fluorophenol (S)	%.						54	56	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890607 2890608

Parameter	Units	10427018008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						50	52	43-125			P3
p-Terphenyl-d14 (S)	%.						79	78	62-125			
Phenol-d6 (S)	%.						59	57	48-125			

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 533467 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10427018003

METHOD BLANK: 2897876 Matrix: Solid
Associated Lab Samples: 10427018003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/24/18 14:01	
1,2-Dichlorobenzene	ug/kg	ND	330	04/24/18 14:01	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/24/18 14:01	
1,3-Dichlorobenzene	ug/kg	ND	330	04/24/18 14:01	
1,4-Dichlorobenzene	ug/kg	ND	330	04/24/18 14:01	
1-Methylnaphthalene	ug/kg	ND	330	04/24/18 14:01	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/24/18 14:01	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/24/18 14:01	
2,4-Dichlorophenol	ug/kg	ND	330	04/24/18 14:01	
2,4-Dimethylphenol	ug/kg	ND	330	04/24/18 14:01	
2,4-Dinitrophenol	ug/kg	ND	330	04/24/18 14:01	
2,4-Dinitrotoluene	ug/kg	ND	330	04/24/18 14:01	
2,6-Dinitrotoluene	ug/kg	ND	330	04/24/18 14:01	
2-Chloronaphthalene	ug/kg	ND	330	04/24/18 14:01	
2-Chlorophenol	ug/kg	ND	330	04/24/18 14:01	
2-Methylnaphthalene	ug/kg	ND	330	04/24/18 14:01	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/24/18 14:01	
2-Nitroaniline	ug/kg	ND	330	04/24/18 14:01	
2-Nitrophenol	ug/kg	ND	330	04/24/18 14:01	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/24/18 14:01	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/24/18 14:01	
3-Nitroaniline	ug/kg	ND	330	04/24/18 14:01	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/24/18 14:01	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/24/18 14:01	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/24/18 14:01	
4-Chloroaniline	ug/kg	ND	330	04/24/18 14:01	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/24/18 14:01	
4-Nitroaniline	ug/kg	ND	330	04/24/18 14:01	
4-Nitrophenol	ug/kg	ND	330	04/24/18 14:01	
Acenaphthene	ug/kg	ND	330	04/24/18 14:01	
Acenaphthylene	ug/kg	ND	330	04/24/18 14:01	
Anthracene	ug/kg	ND	330	04/24/18 14:01	
Benzo(a)anthracene	ug/kg	ND	330	04/24/18 14:01	
Benzo(a)pyrene	ug/kg	ND	330	04/24/18 14:01	
Benzo(b)fluoranthene	ug/kg	ND	330	04/24/18 14:01	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/24/18 14:01	
Benzo(k)fluoranthene	ug/kg	ND	330	04/24/18 14:01	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/24/18 14:01	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/24/18 14:01	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/24/18 14:01	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/24/18 14:01	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

METHOD BLANK: 2897876 Matrix: Solid
Associated Lab Samples: 10427018003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/24/18 14:01	
Carbazole	ug/kg	ND	330	04/24/18 14:01	
Chrysene	ug/kg	ND	330	04/24/18 14:01	
Di-n-butylphthalate	ug/kg	ND	330	04/24/18 14:01	
Di-n-octylphthalate	ug/kg	ND	330	04/24/18 14:01	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/24/18 14:01	
Dibenzofuran	ug/kg	ND	330	04/24/18 14:01	
Diethylphthalate	ug/kg	ND	330	04/24/18 14:01	
Dimethylphthalate	ug/kg	ND	330	04/24/18 14:01	
Fluoranthene	ug/kg	ND	330	04/24/18 14:01	
Fluorene	ug/kg	ND	330	04/24/18 14:01	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/24/18 14:01	
Hexachlorobenzene	ug/kg	ND	330	04/24/18 14:01	
Hexachloroethane	ug/kg	ND	330	04/24/18 14:01	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/24/18 14:01	
Isophorone	ug/kg	ND	330	04/24/18 14:01	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/24/18 14:01	
N-Nitrosodimethylamine	ug/kg	ND	330	04/24/18 14:01	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/24/18 14:01	
Naphthalene	ug/kg	ND	330	04/24/18 14:01	
Nitrobenzene	ug/kg	ND	330	04/24/18 14:01	
Pentachlorophenol	ug/kg	ND	670	04/24/18 14:01	
Phenanthrene	ug/kg	ND	330	04/24/18 14:01	
Phenol	ug/kg	ND	330	04/24/18 14:01	
Pyrene	ug/kg	ND	330	04/24/18 14:01	
2,4,6-Tribromophenol (S)	%.	93	60-125	04/24/18 14:01	
2-Fluorobiphenyl (S)	%.	90	30-132	04/24/18 14:01	
2-Fluorophenol (S)	%.	85	40-125	04/24/18 14:01	
Nitrobenzene-d5 (S)	%.	85	43-125	04/24/18 14:01	
p-Terphenyl-d14 (S)	%.	108	62-125	04/24/18 14:01	
Phenol-d6 (S)	%.	85	48-125	04/24/18 14:01	

LABORATORY CONTROL SAMPLE: 2897877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1270	76	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1260	75	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1430	86	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1220	73	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1230	74	39-125	
1-Methylnaphthalene	ug/kg	1670	1360	82	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1490	89	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1470	88	61-125	
2,4-Dichlorophenol	ug/kg	1670	1440	86	57-125	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE: 2897877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1350	81	51-125	
2,4-Dinitrophenol	ug/kg	1670	1200	72	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1740	104	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1630	98	63-125	
2-Chloronaphthalene	ug/kg	1670	1430	86	61-125	
2-Chlorophenol	ug/kg	1670	1270	76	46-125	
2-Methylnaphthalene	ug/kg	1670	1340	81	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1290	77	50-125	
2-Nitroaniline	ug/kg	1670	1510	91	61-125	
2-Nitrophenol	ug/kg	1670	1350	81	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1360	81	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1450	87	47-125	
3-Nitroaniline	ug/kg	1670	1460	88	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1530J	92	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1520	91	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1560	93	64-125	
4-Chloroaniline	ug/kg	1670	1050	63	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1500	90	64-125	
4-Nitroaniline	ug/kg	1670	1510	91	59-125	
4-Nitrophenol	ug/kg	1670	1430	86	54-125	
Acenaphthene	ug/kg	1670	1440	87	62-125	
Acenaphthylene	ug/kg	1670	1450	87	61-125	
Anthracene	ug/kg	1670	1490	89	66-125	
Benzo(a)anthracene	ug/kg	1670	1580	95	69-125	
Benzo(a)pyrene	ug/kg	1670	1560	94	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1540	92	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1650	99	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1590	96	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1310	79	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1200	72	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1030	62	37-125	6M
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1800	108	69-131	
Butylbenzylphthalate	ug/kg	1670	1740	104	69-129	
Carbazole	ug/kg	1670	1580	95	66-125	
Chrysene	ug/kg	1670	1580	95	68-125	
Di-n-butylphthalate	ug/kg	1670	1700	102	69-125	
Di-n-octylphthalate	ug/kg	1670	1830	110	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1680	101	64-125	
Dibenzofuran	ug/kg	1670	1500	90	65-125	
Diethylphthalate	ug/kg	1670	1600	96	67-125	
Dimethylphthalate	ug/kg	1670	1590	95	67-125	
Fluoranthene	ug/kg	1670	1560	94	66-125	
Fluorene	ug/kg	1670	1490	89	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1210	72	40-125	
Hexachlorobenzene	ug/kg	1670	1550	93	62-125	
Hexachloroethane	ug/kg	1670	1230	74	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1650	99	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE: 2897877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1350	81	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1260	75	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1170	70	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1570	94	65-125	
Naphthalene	ug/kg	1670	1270	76	48-125	
Nitrobenzene	ug/kg	1670	1250	75	48-125	
Pentachlorophenol	ug/kg	1670	1220	73	41-125	
Phenanthrene	ug/kg	1670	1490	89	66-125	
Phenol	ug/kg	1670	1250	75	46-125	
Pyrene	ug/kg	1670	1600	96	69-125	
2,4,6-Tribromophenol (S)	%.			97	60-125	
2-Fluorobiphenyl (S)	%.			81	30-132	
2-Fluorophenol (S)	%.			74	40-125	
Nitrobenzene-d5 (S)	%.			72	43-125	
p-Terphenyl-d14 (S)	%.			99	62-125	
Phenol-d6 (S)	%.			74	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897878 2897879

Parameter	Units	10427906003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	<70.8	1850	1840	1210	1310	66	71	30-127	8	30	
1,2-Dichlorobenzene	ug/kg	<68.9	1850	1840	1250	1250	68	68	30-125	0	30	
1,2-Diphenylhydrazine	ug/kg	<66.0	1850	1840	1010	1080	55	59	30-150	7	30	
1,3-Dichlorobenzene	ug/kg	<68.1	1850	1840	1220	1220	66	66	30-125	0	30	
1,4-Dichlorobenzene	ug/kg	<66.5	1850	1840	1230	1210	67	66	30-125	2	30	
1-Methylnaphthalene	ug/kg	<57.3	1850	1840	1270	1360	69	74	42-125	7	30	
2,4,5-Trichlorophenol	ug/kg	<71.3	1850	1840	1160	1250	63	68	30-150	8	30	
2,4,6-Trichlorophenol	ug/kg	<51.8	1850	1840	1240	1360	67	74	30-150	9	30	
2,4-Dichlorophenol	ug/kg	<68.8	1850	1840	1290	1390	70	75	30-135	8	30	
2,4-Dimethylphenol	ug/kg	<137	1850	1840	1290	1430	70	78	30-148	10	30	
2,4-Dinitrophenol	ug/kg	<82.1	1850	1840	ND	ND	0	0	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	<49.4	1850	1840	555	642	30	35	30-150	14	30	
2,6-Dinitrotoluene	ug/kg	<50.9	1850	1840	710	771	39	42	30-150	8	30	
2-Chloronaphthalene	ug/kg	<51.8	1850	1840	1250	1330	68	72	30-138	6	30	
2-Chlorophenol	ug/kg	<72.6	1850	1840	1320	1350	72	74	30-130	2	30	
2-Methylnaphthalene	ug/kg	<56.6	1850	1840	1260	1350	68	73	46-125	7	30	
2-Methylphenol(o-Cresol)	ug/kg	<91.9	1850	1840	1310	1370	71	74	30-133	4	30	
2-Nitroaniline	ug/kg	<80.6	1850	1840	1610	1730	87	94	30-150	7	30	
2-Nitrophenol	ug/kg	<68.7	1850	1840	562	610	30	33	30-134	8	30	
3&4-Methylphenol(m&p Cresol)	ug/kg	<82.3	1850	1840	1330	1390	72	75	30-138	5	30	
3,3'-Dichlorobenzidine	ug/kg	<87.3	1850	1840	1460	1420	79	77	30-149	2	30	
3-Nitroaniline	ug/kg	<89.4	1850	1840	1860	1890	101	102	30-150	1	30	
4,6-Dinitro-2-methylphenol	ug/kg	<147	1850	1840	ND	ND	0	0	30-133		30	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897878 2897879

Parameter	Units	10427906003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	<61.5	1850	1840	1260	1390	68	76	44-125	10	30	
4-Chloro-3-methylphenol	ug/kg	<50.6	1850	1840	1280	1420	70	77	30-150	10	30	
4-Chloroaniline	ug/kg	<102	1850	1840	1060	953	57	52	30-125	11	30	
4-Chlorophenylphenyl ether	ug/kg	<49.9	1850	1840	1280	1360	69	74	44-125	6	30	
4-Nitroaniline	ug/kg	<65.1	1850	1840	1800	1850	97	100	30-150	3	30	
4-Nitrophenol	ug/kg	<105	1850	1840	1100	1160	60	63	30-150	6	30	
Acenaphthene	ug/kg	<59.8	1850	1840	1150	1250	63	68	40-125	8	30	
Acenaphthylene	ug/kg	<50.0	1850	1840	1220	1320	66	72	30-150	8	30	
Anthracene	ug/kg	<52.6	1850	1840	1220	1340	66	73	30-150	9	30	
Benzo(a)anthracene	ug/kg	<42.4	1850	1840	1220	1340	66	73	30-150	10	30	
Benzo(a)pyrene	ug/kg	<41.3	1850	1840	1120	1270	61	69	30-150	13	30	
Benzo(b)fluoranthene	ug/kg	<44.2	1850	1840	1200	1290	65	70	30-150	7	30	
Benzo(g,h,i)perylene	ug/kg	<31.6	1850	1840	967	1090	53	59	30-150	12	30	
Benzo(k)fluoranthene	ug/kg	<44.2	1850	1840	1160	1300	63	71	30-150	12	30	
bis(2-Chloroethoxy)methane	ug/kg	<70.8	1850	1840	1300	1370	71	74	30-134	5	30	
bis(2-Chloroethyl) ether	ug/kg	<80.0	1850	1840	1200	1280	65	70	30-125	7	30	
bis(2-Chloroisopropyl) ether	ug/kg	<84.7	1850	1840	1050	1060	57	57	30-125	1	30	6M
bis(2-Ethylhexyl)phthalate	ug/kg	104J	1850	1840	1490	1660	75	84	30-150	11	30	
Butylbenzylphthalate	ug/kg	140J	1850	1840	1560	1660	77	83	30-150	7	30	
Carbazole	ug/kg	<49.1	1850	1840	1360	1450	74	79	41-125	7	30	
Chrysene	ug/kg	<36.7	1850	1840	1210	1350	66	73	30-150	11	30	
Di-n-butylphthalate	ug/kg	<49.9	1850	1840	1430	1550	78	84	30-150	8	30	
Di-n-octylphthalate	ug/kg	<112	1850	1840	1450	1570	79	85	30-150	7	30	
Dibenz(a,h)anthracene	ug/kg	<37.7	1850	1840	1150	1260	63	69	30-150	9	30	
Dibenzofuran	ug/kg	<53.0	1850	1840	1270	1370	69	74	45-125	7	30	
Diethylphthalate	ug/kg	<43.3	1850	1840	1380	1480	75	81	30-150	7	30	
Dimethylphthalate	ug/kg	<56.2	1850	1840	1400	1470	76	80	30-150	5	30	
Fluoranthene	ug/kg	<39.0	1850	1840	1210	1340	65	72	30-150	10	30	
Fluorene	ug/kg	<50.9	1850	1840	1260	1340	68	73	30-150	6	30	
Hexachloro-1,3-butadiene	ug/kg	<84.2	1850	1840	1150	1270	62	69	30-128	9	30	
Hexachlorobenzene	ug/kg	<47.2	1850	1840	1060	1220	58	66	30-150	14	30	
Hexachloroethane	ug/kg	<74.7	1850	1840	303J	252J	16	14	30-125		30	M1
Indeno(1,2,3-cd)pyrene	ug/kg	<42.5	1850	1840	1070	1180	58	64	30-150	9	30	
Isophorone	ug/kg	<83.7	1850	1840	1230	1350	67	73	30-140	9	30	
N-Nitroso-di-n-propylamine	ug/kg	<112	1850	1840	1300	1290	70	70	30-147	0	30	
N-Nitrosodimethylamine	ug/kg	<95.6	1850	1840	1240	1190	67	65	30-125	4	30	
N-Nitrosodiphenylamine	ug/kg	<44.9	1850	1840	1360	1470	74	80	30-150	8	30	
Naphthalene	ug/kg	<69.5	1850	1840	1240	1320	67	72	44-125	6	30	
Nitrobenzene	ug/kg	<73.4	1850	1840	1180	1230	64	67	30-136	4	30	
Pentachlorophenol	ug/kg	<108	1850	1840	528J	591J	29	32	30-150		30	M1
Phenanthrene	ug/kg	<50.0	1850	1840	1240	1330	66	71	30-150	8	30	
Phenol	ug/kg	<70.6	1850	1840	1250	1290	68	70	30-129	3	30	
Pyrene	ug/kg	<38.4	1850	1840	1270	1400	67	74	30-150	10	30	
2,4,6-Tribromophenol (S)	%.						62	67	60-125			
2-Fluorobiphenyl (S)	%.						67	71	30-132			
2-Fluorophenol (S)	%.						68	69	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897878 2897879

Parameter	Units	10427906003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						61	65	43-125			
p-Terphenyl-d14 (S)	%.						72	78	62-125			
Phenol-d6 (S)	%.						66	70	48-125			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 532017 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2889031 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/16/18 10:37	
Acenaphthylene	ug/kg	ND	10.0	04/16/18 10:37	
Anthracene	ug/kg	ND	10.0	04/16/18 10:37	
Benzo(a)anthracene	ug/kg	ND	10.0	04/16/18 10:37	
Benzo(a)pyrene	ug/kg	ND	10.0	04/16/18 10:37	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/16/18 10:37	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/16/18 10:37	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/16/18 10:37	
Chrysene	ug/kg	ND	10.0	04/16/18 10:37	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/16/18 10:37	
Fluoranthene	ug/kg	ND	10.0	04/16/18 10:37	
Fluorene	ug/kg	ND	10.0	04/16/18 10:37	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/16/18 10:37	
Naphthalene	ug/kg	ND	10.0	04/16/18 10:37	
Phenanthrene	ug/kg	ND	10.0	04/16/18 10:37	
Pyrene	ug/kg	ND	10.0	04/16/18 10:37	
2-Fluorobiphenyl (S)	%.	67	42-125	04/16/18 10:37	
p-Terphenyl-d14 (S)	%.	94	57-125	04/16/18 10:37	

LABORATORY CONTROL SAMPLE: 2889032

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	23.8	71	52-125	
Acenaphthylene	ug/kg	33.3	25.1	75	50-125	
Anthracene	ug/kg	33.3	27.1	81	65-125	
Benzo(a)anthracene	ug/kg	33.3	29.8	89	60-125	
Benzo(a)pyrene	ug/kg	33.3	28.7	86	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	30.9	93	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	30.3	91	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	29.7	89	67-125	
Chrysene	ug/kg	33.3	29.9	90	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	34.4	103	63-125	
Fluoranthene	ug/kg	33.3	30.4	91	75-125	
Fluorene	ug/kg	33.3	24.9	75	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	32.9	99	63-125	
Naphthalene	ug/kg	33.3	24.4	73	49-125	
Phenanthrene	ug/kg	33.3	26.9	81	65-125	
Pyrene	ug/kg	33.3	29.9	90	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

LABORATORY CONTROL SAMPLE: 2889032

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Fluorobiphenyl (S)	%.			78	42-125	
p-Terphenyl-d14 (S)	%.			95	57-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2889033 2889034

Parameter	Units	10427017002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	35.4	35.2	27.4	30.9	78	88	30-125	12	30	
Acenaphthylene	ug/kg	0.018 mg/kg	35.4	35.2	36.3	35.7	51	49	30-133	2	30	
Anthracene	ug/kg	0.030 mg/kg	35.4	35.2	49.3	44.1	55	40	30-150	11	30	
Benzo(a)anthracene	ug/kg	0.11 mg/kg	35.4	35.2	107	91.4	-14	-59	30-150	16	30	M1
Benzo(a)pyrene	ug/kg	0.11 mg/kg	35.4	35.2	108	94.6	-6	-44	30-150	13	30	M1
Benzo(b)fluoranthene	ug/kg	0.14 mg/kg	35.4	35.2	140	107	-8	-101	30-150	27	30	M1
Benzo(g,h,i)perylene	ug/kg	0.059 mg/kg	35.4	35.2	69.7	66.6	31	22	30-150	5	30	M1
Benzo(k)fluoranthene	ug/kg	0.052 mg/kg	35.4	35.2	61.5	68.2	27	46	30-150	10	30	M1
Chrysene	ug/kg	0.12 mg/kg	35.4	35.2	98.6	90.3	-60	-84	30-150	9	30	M1
Dibenz(a,h)anthracene	ug/kg	0.020 mg/kg	35.4	35.2	43.0	35.6	64	43	30-131	19	30	
Fluoranthene	ug/kg	0.20 mg/kg	35.4	35.2	167	135	-85	-174	30-150	21	30	M1
Fluorene	ug/kg	ND	35.4	35.2	30.5	32.5	86	92	30-147	6	30	
Indeno(1,2,3-cd)pyrene	ug/kg	0.058 mg/kg	35.4	35.2	68.8	66.7	31	25	30-150	3	30	M1
Naphthalene	ug/kg	ND	35.4	35.2	20.8	20.3	59	57	30-131	3	30	
Phenanthrene	ug/kg	0.083 mg/kg	35.4	35.2	80.5	69.8	-6	-36	30-150	14	30	M1
Pyrene	ug/kg	0.18 mg/kg	35.4	35.2	157	129	-74	-155	30-150	20	30	M1
2-Fluorobiphenyl (S)	%.						73	78	42-125			
p-Terphenyl-d14 (S)	%.						104	97	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 531964 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006

METHOD BLANK: 2888898 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	04/13/18 12:00	
n-Triacontane (S)	%.	93	50-150	04/13/18 12:00	

LABORATORY CONTROL SAMPLE & LCSD: 2888899 2888900

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	71.9	76.6	90	96	70-120	6	20	
n-Triacontane (S)	%.				83	92	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 532104 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10427018007, 10427018008

METHOD BLANK: 2889696 Matrix: Solid
Associated Lab Samples: 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	04/16/18 10:58	
n-Triacontane (S)	%.	95	50-150	04/16/18 10:58	

LABORATORY CONTROL SAMPLE & LCSD: 2889697 2889698

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	82.3	69.9	103	87	70-120	16	20	
n-Triacontane (S)	%.				109	90	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 437577 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 2021337 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/19/18 13:14	

LABORATORY CONTROL SAMPLE: 2021338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1110	995	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2021707 2021708

Parameter	Units	50194083001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	962	1040	866	884	90	85	75-125	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2021709 2021710

Parameter	Units	50194083001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	38.9	40.3	25.7	34.4	66	85	75-125	29	20	M3,R1

SAMPLE DUPLICATE: 2021711

Parameter	Units	10427018007 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	D3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 286553 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

METHOD BLANK: 1676305 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002, 10427018003, 10427018004, 10427018005, 10427018006, 10427018007, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/20/18 13:32	

LABORATORY CONTROL SAMPLE: 1676306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1676307 1676308

Parameter	Units	40167646001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.089J	1.9	2	2.0	2.1	98	99	80-120	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1676309 1676310

Parameter	Units	10427291004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.40	2.4	2.2	2.5	2.2	88	82	80-120	12	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 140731 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10427018001, 10427018002

METHOD BLANK: 557012 Matrix: Solid
Associated Lab Samples: 10427018001, 10427018002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.99	04/17/18 21:06	

LABORATORY CONTROL SAMPLE: 557011

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	48.7	50.0	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 557013 557014

Parameter	Units	10427018001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	1.7	48.5	48.9	19.9	18.7	37	35	80-120	7	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 557015 557016

Parameter	Units	10427159001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	48.8	47.6	23.2	26.5	48	56	80-120	13	20	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 140842 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10427018006, 10427018008

METHOD BLANK: 557419 Matrix: Solid
Associated Lab Samples: 10427018006, 10427018008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.99	04/19/18 16:14	

LABORATORY CONTROL SAMPLE: 557418

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	50.3	52.6	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 557420 557421

Parameter	Units	10427291004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	1.4	49.8	49.8	12.1	12.9	21	23	80-120	7	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 557422 557423

Parameter	Units	10427291008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	49.7	49	35.4	35.5	69	71	80-120	0	20	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

QC Batch: 140846 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10427018003, 10427018004, 10427018005, 10427018007

METHOD BLANK: 557430 Matrix: Solid
Associated Lab Samples: 10427018003, 10427018004, 10427018005, 10427018007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	1.0	04/20/18 01:22	

LABORATORY CONTROL SAMPLE: 557429

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	49.7	52.1	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 557431 557432

Parameter	Units	10427018004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	2.1	48.9	49.8	35.7	43.7	69	84	80-120	20	20	M1

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QUALIFIERS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10427018

[1]	Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

ANALYTE QUALIFIERS

1M	Sample was black in color and slightly viscous.
2M	Sample was black in color.
3M	Sample was brown in color.
4M	Sample was dark brown in color.
5M	Sample was yellow in color.
6M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
C0	Result confirmed by second analysis.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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QUALIFIERS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

ANALYTE QUALIFIERS

D4	Sample was diluted due to the presence of high levels of target analytes.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
MN	The reporting limit has been raised in accordance with Minnesota Statutes 4740.2100 Subpart 8. C, D. Reporting Limit Evaluation Rule.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427018001	**FD-TT-01 (10-12 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427018002	**FD-TT-02 (7-9 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427018003	**FD-SB-A1 (3-6 S)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427018006	**FD-TT-03 (2-5 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427018001	**FD-TT-01 (10-12 WM)**	EPA 3550	532491	EPA 8081B	532802
10427018002	**FD-TT-02 (7-9 WM)**	EPA 3550	532491	EPA 8081B	532802
10427018003	**FD-SB-A1 (3-6 S)**	EPA 3550	532491	EPA 8081B	532802
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 3550	532491	EPA 8081B	532802
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 3550	532491	EPA 8081B	532802
10427018006	**FD-TT-03 (2-5 WM)**	EPA 3550	532491	EPA 8081B	532802
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 3550	532491	EPA 8081B	532802
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 3550	532491	EPA 8081B	532802
10427018001	**FD-TT-01 (10-12 WM)**	EPA 3550	532316	EPA 8082A	532613
10427018002	**FD-TT-02 (7-9 WM)**	EPA 3550	532316	EPA 8082A	532613
10427018003	**FD-SB-A1 (3-6 S)**	EPA 3550	532316	EPA 8082A	532613
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 3550	532316	EPA 8082A	532613
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 3550	532316	EPA 8082A	532613
10427018006	**FD-TT-03 (2-5 WM)**	EPA 3550	532316	EPA 8082A	532613
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 3550	532316	EPA 8082A	532613
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 3550	532316	EPA 8082A	532613
10427018001	**FD-TT-01 (10-12 WM)**	WI MOD DRO	531964	WI MOD DRO	532306
10427018002	**FD-TT-02 (7-9 WM)**	WI MOD DRO	531964	WI MOD DRO	532306
10427018003	**FD-SB-A1 (3-6 S)**	WI MOD DRO	531964	WI MOD DRO	532306
10427018004	**FD-SB-B1 (11-13 WM)**	WI MOD DRO	531964	WI MOD DRO	532306
10427018005	**FD-SB-C1 (5-8 WM)**	WI MOD DRO	531964	WI MOD DRO	532306
10427018006	**FD-TT-03 (2-5 WM)**	WI MOD DRO	531964	WI MOD DRO	532306
10427018007	**FD-SB-D1 (11-16 WM)**	WI MOD DRO	532104	WI MOD DRO	532518
10427018008	**FD-SB-E1 (10-15 WM)**	WI MOD DRO	532104	WI MOD DRO	532518
10427018001	**FD-TT-01 (10-12 WM)**	EPA 5030 Medium Soil	533563	WI MOD GRO	533834
10427018002	**FD-TT-02 (7-9 WM)**	EPA 5030 Medium Soil	533563	WI MOD GRO	533834
10427018003	**FD-SB-A1 (3-6 S)**	EPA 5030 Medium Soil	533563	WI MOD GRO	533834
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 5030 Medium Soil	533563	WI MOD GRO	533834
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 5030 Medium Soil	533563	WI MOD GRO	533834
10427018006	**FD-TT-03 (2-5 WM)**	EPA 5030 Medium Soil	533563	WI MOD GRO	533834
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 5030 Medium Soil	533563	WI MOD GRO	533834
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 5030 Medium Soil	533563	WI MOD GRO	533834
10427018001	**FD-TT-01 (10-12 WM)**	EPA 3050	532178	EPA 6010C	532248
10427018002	**FD-TT-02 (7-9 WM)**	EPA 3050	532178	EPA 6010C	532248
10427018003	**FD-SB-A1 (3-6 S)**	EPA 3050	532178	EPA 6010C	532248
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 3050	532178	EPA 6010C	532248
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 3050	532178	EPA 6010C	532248
10427018006	**FD-TT-03 (2-5 WM)**	EPA 3050	532178	EPA 6010C	532248

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 3050	532178	EPA 6010C	532248
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 3050	532178	EPA 6010C	532248
10427018001	**FD-TT-01 (10-12 WM)**	EPA 3050B	437311	EPA 6020	437864
10427018002	**FD-TT-02 (7-9 WM)**	EPA 3050B	437311	EPA 6020	437864
10427018003	**FD-SB-A1 (3-6 S)**	EPA 3050B	437311	EPA 6020	437864
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 3050B	437311	EPA 6020	437864
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 3050B	437311	EPA 6020	437864
10427018006	**FD-TT-03 (2-5 WM)**	EPA 3050B	437311	EPA 6020	437864
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 3050B	437311	EPA 6020	437864
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 3050B	437311	EPA 6020	437864
10427018001	**FD-TT-01 (10-12 WM)**	EPA 3050	532177	EPA 6020A	532245
10427018002	**FD-TT-02 (7-9 WM)**	EPA 3050	532177	EPA 6020A	532245
10427018003	**FD-SB-A1 (3-6 S)**	EPA 3050	532177	EPA 6020A	532245
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 3050	532177	EPA 6020A	532245
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 3050	532177	EPA 6020A	532245
10427018006	**FD-TT-03 (2-5 WM)**	EPA 3050	532177	EPA 6020A	532245
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 3050	532177	EPA 6020A	532245
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 3050	532177	EPA 6020A	532245
10427018001	**FD-TT-01 (10-12 WM)**	EPA 7471	532184	EPA 7471	532397
10427018002	**FD-TT-02 (7-9 WM)**	EPA 7471	532184	EPA 7471	532397
10427018003	**FD-SB-A1 (3-6 S)**	EPA 7471	532184	EPA 7471	532397
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 7471	532184	EPA 7471	532397
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 7471	532184	EPA 7471	532397
10427018006	**FD-TT-03 (2-5 WM)**	EPA 7471	532184	EPA 7471	532397
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 7471	532184	EPA 7471	532397
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 7471	532184	EPA 7471	532397
10427018001	**FD-TT-01 (10-12 WM)**	ASTM D2974	532990		
10427018002	**FD-TT-02 (7-9 WM)**	ASTM D2974	532990		
10427018003	**FD-SB-A1 (3-6 S)**	ASTM D2974	532990		
10427018004	**FD-SB-B1 (11-13 WM)**	ASTM D2974	532990		
10427018005	**FD-SB-C1 (5-8 WM)**	ASTM D2974	532990		
10427018006	**FD-TT-03 (2-5 WM)**	ASTM D2974	532990		
10427018007	**FD-SB-D1 (11-16 WM)**	ASTM D2974	532990		
10427018008	**FD-SB-E1 (10-15 WM)**	ASTM D2974	532990		
10427018001	**FD-TT-01 (10-12 WM)**	EPA 3550	532275	EPA 8270D	532657
10427018002	**FD-TT-02 (7-9 WM)**	EPA 3550	532275	EPA 8270D	532657
10427018003	**FD-SB-A1 (3-6 S)**	EPA 3550	533467	EPA 8270D	533832
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 3550	532275	EPA 8270D	532657
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 3550	532275	EPA 8270D	532657
10427018006	**FD-TT-03 (2-5 WM)**	EPA 3550	532275	EPA 8270D	532657
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 3550	532275	EPA 8270D	532657
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 3550	532275	EPA 8270D	532657
10427018001	**FD-TT-01 (10-12 WM)**	EPA 3550	532017	EPA 8270D by SIM	532494
10427018002	**FD-TT-02 (7-9 WM)**	EPA 3550	532017	EPA 8270D by SIM	532494
10427018003	**FD-SB-A1 (3-6 S)**	EPA 3550	532017	EPA 8270D by SIM	532494

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(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 3550	532017	EPA 8270D by SIM	532494
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 3550	532017	EPA 8270D by SIM	532494
10427018006	**FD-TT-03 (2-5 WM)**	EPA 3550	532017	EPA 8270D by SIM	532494
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 3550	532017	EPA 8270D by SIM	532494
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 3550	532017	EPA 8270D by SIM	532494
10427018001	**FD-TT-01 (10-12 WM)**	EPA 5035/5030B	533507	EPA 8260B	533754
10427018002	**FD-TT-02 (7-9 WM)**	EPA 5035/5030B	533615	EPA 8260B	533771
10427018003	**FD-SB-A1 (3-6 S)**	EPA 5035/5030B	533615	EPA 8260B	533771
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 5035/5030B	533615	EPA 8260B	533771
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 5035/5030B	533615	EPA 8260B	533771
10427018006	**FD-TT-03 (2-5 WM)**	EPA 5035/5030B	533615	EPA 8260B	533771
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 5035/5030B	533615	EPA 8260B	533771
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 5035/5030B	533615	EPA 8260B	533771
10427018001	**FD-TT-01 (10-12 WM)**	EPA 3060A	437577	EPA 7196A	437974
10427018002	**FD-TT-02 (7-9 WM)**	EPA 3060A	437577	EPA 7196A	437974
10427018003	**FD-SB-A1 (3-6 S)**	EPA 3060A	437577	EPA 7196A	437974
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 3060A	437577	EPA 7196A	437974
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 3060A	437577	EPA 7196A	437974
10427018006	**FD-TT-03 (2-5 WM)**	EPA 3060A	437577	EPA 7196A	437974
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 3060A	437577	EPA 7196A	437974
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 3060A	437577	EPA 7196A	437974
10427018001	**FD-TT-01 (10-12 WM)**	Trivalent Chromium Calculation	439162		
10427018002	**FD-TT-02 (7-9 WM)**	Trivalent Chromium Calculation	439162		
10427018003	**FD-SB-A1 (3-6 S)**	Trivalent Chromium Calculation	439162		
10427018004	**FD-SB-B1 (11-13 WM)**	Trivalent Chromium Calculation	439162		
10427018005	**FD-SB-C1 (5-8 WM)**	Trivalent Chromium Calculation	439162		
10427018006	**FD-TT-03 (2-5 WM)**	Trivalent Chromium Calculation	439162		
10427018007	**FD-SB-D1 (11-16 WM)**	Trivalent Chromium Calculation	439162		
10427018008	**FD-SB-E1 (10-15 WM)**	Trivalent Chromium Calculation	439162		
10427018001	**FD-TT-01 (10-12 WM)**	EPA 9012A	286553	EPA 9012	286614
10427018002	**FD-TT-02 (7-9 WM)**	EPA 9012A	286553	EPA 9012	286614
10427018003	**FD-SB-A1 (3-6 S)**	EPA 9012A	286553	EPA 9012	286614
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 9012A	286553	EPA 9012	286614
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 9012A	286553	EPA 9012	286614
10427018006	**FD-TT-03 (2-5 WM)**	EPA 9012A	286553	EPA 9012	286614
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 9012A	286553	EPA 9012	286614
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 9012A	286553	EPA 9012	286614
10427018001	**FD-TT-01 (10-12 WM)**	EPA 300.0	140731	EPA 9056A	140736
10427018002	**FD-TT-02 (7-9 WM)**	EPA 300.0	140731	EPA 9056A	140736
10427018003	**FD-SB-A1 (3-6 S)**	EPA 300.0	140846	EPA 9056A	140854

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427018

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427018004	**FD-SB-B1 (11-13 WM)**	EPA 300.0	140846	EPA 9056A	140854
10427018005	**FD-SB-C1 (5-8 WM)**	EPA 300.0	140846	EPA 9056A	140854
10427018006	**FD-TT-03 (2-5 WM)**	EPA 300.0	140842	EPA 9056A	140851
10427018007	**FD-SB-D1 (11-16 WM)**	EPA 300.0	140846	EPA 9056A	140854
10427018008	**FD-SB-E1 (10-15 WM)**	EPA 300.0	140842	EPA 9056A	140851

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WO#: 10427018

10427018

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number: COC

Turnaround Time: CO

PROJECT/CLIENT INFO		LABORATORY	ONLY
Facility Code:	MPCA-Freeway LF solids	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA-FreewayLF solids	Project Task Code:	Address: 18-00383
Project Manager:			EPIC Profile #38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

Lab Work Order Sticker

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

Location Identifier	Sample Type	Date	Time	Start Depth, ~~meters~~ feet	End Depth, ~~meters~~ feet	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: see attached for soils/waste (-dioxins)	ANALYSIS: +dioxins	Lab Sample No.	#	
~~FD-SB-~~ DUP 4/11/18	S	4/11/18				C	SD									1	
FD-TT-01 (0-12 wm)	S	4/11/18	1020			C	SD				13		X	X		2	001
FB-TT-01 (0-12 wm)	S	4/11/18	1220			C	SD				13		X			3	002
FD-SB-01 (3-5 wm)	S	4/11/18	1300			C	SD				13		X	X		4	003
~~FD-SB-~~ DUP 4/11/18	S	4/11/18				C	SD				13		X			5	
FB-SB-BL (0-12 wm)	S	4/11/18	1350			C	SD				13		X			6	004
FD-SB-01 (5-8 wm)	S	4/11/18	1430			C	SD				13		X	X		7	005
FD-TT-03 (2-5 wm)	S	4/11/18	1458			C	SD				13		X			8	006
FD-SB-01 (11-16 wm)	S	4/11/18	1533			C	SD				13		X	X		9	007
FB-SB-EL (10-15 wm)	S	4/11/18	1610			C	SD				13		X			10	008

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/11/18 1650	Nate Nilsson / Pace	4/11/18 16:50
Nate Nilsson / Pace	4/11/18 17:13		4/11/18 1713

T= 6.2

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MN Pollution Control

Project #: **WO#: 10427018**

PM: JMA **Due Date: 04/19/18**

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☒Pace ☐SpeeDee ☐Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒Yes ☐No Seals Intact? ☒Yes ☐No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☒Bubble Bags ☐None ☐Other: Temp Blank? ☒Yes ☐No

Thermometer Used: ☐151401163 ☒G87A9155100842

Type of Ice: ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Cooler Temp Read (°C): 6.0 Cooler Temp Corrected (°C): 6.2 Biological Tissue Frozen? ☐Yes ☐No ☒N/A

Temp should be above freezing to 6°C Correction Factor: +0.2 Date and Initials of Person Examining Contents: 4/11/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☒No

Did samples originate from a foreign source (internationally including Hawaii and Puerto Rico)? ☐Yes ☒No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒Yes	☐No		1.
Chain of Custody Filled Out?	☒Yes	☐No		2.
Chain of Custody Relinquished?	☒Yes	☐No		3.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☒Yes	☐No		5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		6.
Rush Turn Around Time Requested?	☐Yes	☒No		7.
Sufficient Volume?	☒Yes	☐No		8.
Correct Containers Used?	☒Yes	☐No		9.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒Yes	☐No		12.
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☒N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☒N/A	
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐Yes	☐No	☒N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☒N/A	14.
Trip Blank Present?	☐Yes	☒No	☐N/A	15.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION: Field Data Required? ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 04/12/2018

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*) Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

WO#: 12107092

PM: HRZ Due Date: 04/26/18
CLIENT: PACE MPLS

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory. State Of Origin: MI

Workorder: 10427018 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/11/2018 **Results Requested By:** 4/26/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury by 1630	LAB USE ONLY
1	FD-TT-01 (10-12 WM)	PS	4/11/2018 10:20	10427018001	Solid	1	X	
2	FD-TT-02 (7-9 WM)	PS	4/11/2018 12:20	10427018002	Solid	1	X	
3	FD-SB-A1 (3-6 S)	PS	4/11/2018 13:00	10427018003	Solid	1	X	
4	FD-SB-B1 (11-13 WM)	PS	4/11/2018 13:50	10427018004	Solid	1	X	
5	FD-SB-C1 (5-8 WM)	PS	4/11/2018 14:30	10427018005	Solid	1	X	
6	FD-TT-03 (2-5 WM)	PS	4/11/2018 14:50	10427018006	Solid	1	X	
7	FD-SB-D1 (11-16 WM)	PS	4/11/2018 15:35	10427018007	Solid	1	X	
8	FD-SB-E1 (10-15 WM)	PS	4/11/2018 16:10	10427018008	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	/Pace	04/12/18 11:20		
2	Pace	4/12/18 1730	RJ Clark 4-12-18	1900
3	RJ Clark 4-12-18	2150		4/13/18 08:00

Comments: Samples also sent to Pace - Virginia

Cooler Temperature on Receipt 2.8 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: PACE MPLS

Project #: **WO#: 12107092**

PM: HRZ **Due Date: 04/26/18**

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 01339252/1710 ☐ IR-1 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 2.8 Cooler Temp Corrected °C: 2.8 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: 0.0 Date and Initials of Person Examining Contents: 4/13/18 JB

If temperature is ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☑ NA

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☑ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☐ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Heather Zik **Date:** 4/13/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

WO# : 12107092

12107092

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427018 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/11/2018 **Results Requested By:** 4/26/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Fluoride by method 9056	LAB USE ONLY
1	FD-TT-01 (10-12 WM)	PS	4/11/2018 10:20	10427018001	Solid	1	X	
2	FD-TT-02 (7-9 WM)	PS	4/11/2018 12:20	10427018002	Solid	1	X	
3	FD-SB-A1 (3-6 S)	PS	4/11/2018 13:00	10427018003	Solid	1	X	
4	FD-SB-B1 (11-13 WM)	PS	4/11/2018 13:50	10427018004	Solid	1	X	
5	FD-SB-C1 (5-8 WM)	PS	4/11/2018 14:30	10427018005	Solid	1	X	
6	FD-TT-03 (2-5 WM)	PS	4/11/2018 14:50	10427018006	Solid	1	X	
7	FD-SB-D1 (11-16 WM)	PS	4/11/2018 15:35	10427018007	Solid	1	X	
8	FD-SB-E1 (10-15 WM)	PS	4/11/2018 16:10	10427018008	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	/Pace	04/12/18 11:17		
2	Pace	4/12/18 1700	DJ Chpp	4-12-18 1900
3	DJ Chpp	4-12-18 2330	B Mathers	4/13/18 0603

Comments: Samples also sent to Pace - Duluth.

Cooler Temperature on Receipt 4.9 °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: WO#: 12107092 Due Date: 04/26/18 PM: HRZ CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 4.6 Cooler Temp Corrected °C: 4.9 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 4-13-18, PL

Comments: BM 4/13/18

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☐ Yes	☑ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution: DID not Receive "002". Received two containers for 001 – send 1 back to cities. BM 4/13/18

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Heather Sidle Date: 4/13/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO# : 10427018

10427018

Subcontracting Laboratory.

State Of Origin: MN

Pace Analytical®
www.pacelabs.com

Workorder: 10427018 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/11/2018 Results Requested By: 4/26/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Fluoride by method 9056	LAB USE ONLY
1	FD-TT-01 (10-12 WM)	PS	4/11/2018 10:20	10427018001	Solid	1	X	
2	FD-TT-02 (7-9 WM)	PS	4/11/2018 12:20	10427018002	Solid	1	X	
3	FD-SB-A1 (3-6 S)	PS	4/11/2018 13:00	10427018003	Solid	1	X	
4	FD-SB-B1 (11-13 WM)	PS	4/11/2018 13:50	10427018004	Solid	1	X	
5	FD-SB-C1 (5-8 WM)	PS	4/11/2018 14:30	10427018005	Solid	1	X	
6	FD-TT-03 (2-5 WM)	PS	4/11/2018 14:50	10427018006	Solid	1	X	
7	FD-SB-D1 (11-16 WM)	PS	4/11/2018 15:35	10427018007	Solid	1	X	
8	FD-SB-E1 (10-15 WM)	PS	4/11/2018 16:10	10427018008	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	/Pace	04/12/18 11:17	DJ Cher	4-12-18 1900
2	DJ Cher	4-12-18 2330	DJ Cher	4-13-18 1415
3	DJ Cher	4-13-18 1800		4-13-18 1800

Comments: Samples also sent to Pace - Duluth.

Cooler Temperature on Receipt 3.8 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

returning -001

Chain of Custody

SSM

40167462

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427018 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/11/2018 **Results Requested By:** 4/26/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

	Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Cyanide by EPA 9012	LAB USE ONLY
001	1	FD-TT-01 (10-12 WM)	PS	4/11/2018 10:20	10427018001	Solid	1	X	
002	2	FD-TT-02 (7-9 WM)	PS	4/11/2018 12:20	10427018002	Solid	1	X	
003	3	FD-SB-A1 (3-6 S)	PS	4/11/2018 13:00	10427018003	Solid	1	X	
004	4	FD-SB-B1 (11-13 WM)	PS	4/11/2018 13:50	10427018004	Solid	1	X	
005	5	FD-SB-C1 (5-8 WM)	PS	4/11/2018 14:30	10427018005	Solid	1	X	
006	6	FD-TT-03 (2-5 WM)	PS	4/11/2018 14:50	10427018006	Solid	1	X	
007	7	FD-SB-D1 (11-16 WM)	PS	4/11/2018 15:35	10427018007	Solid	1	X	
008	8	FD-SB-E1 (10-15 WM)	PS	4/11/2018 16:10	10427018008	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	/Pace	04/12/18 11:22		
2	PACE	4/12/18 17:20		
3	WATTCO	4/13/18 0835	DSouza pace	4/13/18 0835

Comments

Cooler Temperature on Receipt 3.5 °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Pace MN

Project # 40167462

All containers needing preservation have been checked and noted below: □Yes □No ☑N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/ Time:

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001																					1												
002																					1												2.5 / 5 / 10
003																					1												2.5 / 5 / 10
004																					1												2.5 / 5 / 10
005																					1												2.5 / 5 / 10
006																					1												2.5 / 5 / 10
007																					1												2.5 / 5 / 10
008																					1												2.5 / 5 / 10
009																					1												2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : □Yes □No ☑N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: WO#: 40167462

Client Name: Pace MN

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☑ Waltco ☐ Client ☐ Pace Other:

Tracking #: 1691258-1

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 66 **Type of Ice:** Wet Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3 /Corr: 3.5

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 4/13/18
Initials: RS

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☑N/A	4. IRWO RS 4/13/18
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume: ☑Yes ☐No ☐N/A MS/MSD	☐Yes ☐No ☑N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. no Times on client labels RS 4/13/18
-Includes date/time/ID/Analysis Matrix: S		
Trip Blank Present:	☐Yes ☑No ☐N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: CK **Date:** 4/13/18

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory

State Of Origin: MN

Workorder: 10427018 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/11/2018 **Results Requested By:** 4/26/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						Requested Analysis: Chromium III	Chromium VI	Total Cr by 6020										S0194478 LAB USE ONLY
1	FD-TT-01 (10-12 WM)	PS	4/11/2018 10:20	10427018001	Solid	1						X	X	X										001
2	FD-TT-02 (7-9 WM)	PS	4/11/2018 12:20	10427018002	Solid	1						X	X	X										002
3	FD-SB-A1 (3-6 S)	PS	4/11/2018 13:00	10427018003	Solid	1						X	X	X										003
4	FD-SB-B1 (11-13 WM)	PS	4/11/2018 13:50	10427018004	Solid	1						X	X	X										004
5	FD-SB-C1 (5-8 WM)	PS	4/11/2018 14:30	10427018005	Solid	1						X	X	X										005
6	FD-TT-03 (2-5 WM)	PS	4/11/2018 14:50	10427018006	Solid	1						X	X	X										006
7	FD-SB-D1 (11-16 WM)	PS	4/11/2018 15:35	10427018007	Solid	1						X	X	X										007
8	FD-SB-E1 (10-15 WM)	PS	4/11/2018 16:10	10427018008	Solid	1						X	X	X										008

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] /Pace	04/12/18 11:19		
2	[signature] PACE	4/12/18 1455	FED EX	
3	FEDEX	4/13 1145	[signature]	4/13 1145

Comments

Cooler Temperature on Receipt 4.5 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50194478

Date/Time and Initials of person examining contents: _____

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9832 1647

Custody Seal on Cooler/Box Present: ☒ Yes ☐ No **Seals Intact:** ☒ Yes ☒ No VOF 4/13/18

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer: (1) 2 3 4 5 6 A B C D E F Ice Type: ☒ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☒ N/A

Cooler Temperature: 4.5°C / 4.5°C Ice Visible in Sample Containers?: ☐ Yes ☒ No ☐ N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☒ N/A

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		✓	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			✓
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		✓				
Chain of Custody Present:	✓		Dissolved Metals field filtered?:			✓
Chain of Custody Filled Out:	✓					
Short Hold Time Analysis (<72hr)?: Analysis:		✓	Headspace Wisconsin Sulfide			✓
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			✓
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			✓
Rush TAT Requested:		✓	Headspace in VOA Vials (>6mm):			✓
Containers Intact?:	✓		Trip Blank Present?:		✓	
Sample Labels Match COC?: Except TCs, which only require sample ID	✓		Trip Blank Custody Seals?:		✓	

Comments:

Sample Container Count

WO# : 50194478

50194478

CLIENT: PACE MN

COC PAGE 1 of 1

COC ID# _____

Project # 50194478

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	SBS Bulk Kit R	Matrix SL (Soil/Wat Aqueous	pH <2	pH >9	pH>12
1							1											SL			
2							1														
3							1														
4							1														
5							1														
6							1														
7							1														
8							1														
9																					
10																					
11																					
12																					

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic
BP1N	1 liter HNO3 plastic
BP1S	1 liter H2SO4 plastic
BP1U	1 liter unpreserved plastic
BP1Z	1 liter NaOH, Zn, Ac
BP2A	500mL NaOH, Asc Acid plastic
BP2N	500mL HNO3 plastic
BP2O	500mL NaOH plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Ac
BP3B	250mL NaOH plastic
BP3N	250mL HNO3 plastic
BP3S	250mL H2SO4 plastic
BP3U	250mL unpreserved plastic
BP3Z	250mL NaOH, Zn Ac plastic

AF	Air Filter
C	Air Cassettes
R	Terra core kit
SP5T	120mL Coliform Na Thiosulfate
U	Summa Can
ZPLC	Ziploc Bag

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April 25, 2018

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

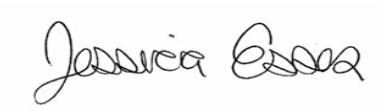
RE: 18-00383 MPCA Freeway LF Solid - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/17/2018.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jessica Esser

Project Manager

Certification List			Expires
ADEQ	Arkansas Department of Environmental Quality	17-065-0	09/26/2018
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2019
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2018
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2018
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2018
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2018
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2017-154	08/31/2018
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2018
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2018

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1700 Elm Street, Suite 200	Project Number: 10427018
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FD-TT-01 (10-12 WM) (10427018001)	A181603-01	Solid	04/11/2018	04/13/2018
FD-TT-02 (7-9 WM) (10427018002)	A181603-02	Solid	04/11/2018	04/17/2018
FD-SB-A1 (3-6 S) (10427018003)	A181603-03	Solid	04/11/2018	04/13/2018
FD-SB-B1 (11-13 WM) (10427018004)	A181603-04	Solid	04/11/2018	04/17/2018
FD-SB-C1 (5-8 WM) (10427018005)	A181603-05	Solid	04/11/2018	04/13/2018
FD-TT-03 (2-5 WM) (10427018006)	A181603-06	Solid	04/11/2018	04/17/2018
FD-SB-D1 (11-16 WM) (10427018007)	A181603-07	Solid	04/11/2018	04/13/2018
FD-SB-E1 (10-15 WM) (10427018008)	A181603-08	Solid	04/11/2018	04/17/2018

CASE NARRATIVE

Sample Receipt Information:
4 samples were received on 04/13/2018 and 4 samples were received on 04/17/2018. Samples were received at 5.8 and 1.8 degrees Celsius. Samples were received in acceptable condition, with the exception of one label discrepancy.

Sample A181603-06 had a discrepancy between the sample description on the chain of custody (COC) and the sample description on the container. Per the client, the COC sample description is correct.

Please see the COC document at the end of this report for additional information.

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FD-TT-01 (10-12 WM) (10427018001)

A181603-01 (Solid)

Date Sampled
04/11/2018 10:20

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	**0.13**	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:15	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 11:40	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:15	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 11:40	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:15	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:15	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:15	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:15	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:15	EPA 8321B	
Surrogate: DCAA		*90.5 %*		*70.8-116*	*04/20/2018*	*04/21/2018 12:15*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**72.4**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FD-TT-02 (7-9 WM) (10427018002)

A181603-02 (Solid)

Date Sampled
04/11/2018 12:20

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 13:22	EPA 8321B	
2,4-DB	**0.12**	0.10	mg/kg dry	1	04/20/2018	04/21/2018 13:22	EPA 8321B	P
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:46	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:46	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:46	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 12:46	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 13:22	EPA 8321B	
Picloram	**0.16**	0.10	mg/kg dry	1	04/20/2018	04/21/2018 13:22	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 13:22	EPA 8321B	
Surrogate: DCAA		*82.1 %*		*70.8-116*	*04/20/2018*	*04/21/2018 13:22*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**61.3**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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FD-SB-A1 (3-6 S) (10427018003)

A181603-03 (Solid)

Date Sampled
04/11/2018 13:00

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:29	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:29	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:29	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:29	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:29	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:29	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:29	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:29	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:29	EPA 8321B	
Surrogate: DCAA		*64.4 %*		*70.8-116*	*04/20/2018*	*04/21/2018 14:29*	*EPA 8321B*	*S*
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**71.6**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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FD-SB-B1 (11-13 WM) (10427018004)

A181603-04 (Solid)

Date Sampled
04/11/2018 13:50

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 15:36	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 15:36	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 15:36	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 14:57	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 15:36	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 15:36	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 15:36	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 15:36	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 15:36	EPA 8321B	
Surrogate: DCAA		*92.5 %*		*70.8-116*	*04/20/2018*	*04/21/2018 15:36*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**80.6**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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FD-SB-C1 (5-8 WM) (10427018005)

A181603-05 (Solid)

Date Sampled
04/11/2018 14:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 18:15	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 18:57	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 18:15	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 18:57	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 18:57	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 18:57	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 18:57	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 18:57	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 18:57	EPA 8321B	
Surrogate: DCAA		*90.1 %*		*70.8-116*	*04/20/2018*	*04/21/2018 18:57*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**83.5**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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FD-TT-03 (2-5 WM) (10427018006)

A181603-06 (Solid)

Date Sampled
04/11/2018 14:50

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:04	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:04	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:04	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:04	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 19:21	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:04	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:04	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:04	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:04	EPA 8321B	
Surrogate: DCAA		*70.7 %*		*70.8-116*	*04/20/2018*	*04/21/2018 20:04*	*EPA 8321B*	*S*
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**67.5**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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FD-SB-D1 (11-16 WM) (10427018007)

A181603-07 (Solid)

Date Sampled
04/11/2018 15:35

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:27	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 21:11	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 21:11	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 21:11	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 21:11	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 21:11	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 21:11	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 21:11	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 20:27	EPA 8321B	
Surrogate: DCAA		*94.9 %*		*70.8-116*	*04/20/2018*	*04/21/2018 21:11*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**85.0**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FD-SB-E1 (10-15 WM) (10427018008)

A181603-08 (Solid)

Date Sampled
04/11/2018 16:10

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 21:33	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 22:18	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 21:33	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 22:18	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 22:18	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 22:18	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 22:18	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 22:18	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 22:18	EPA 8321B	
Surrogate: DCAA		*87.0 %*		*70.8-116*	*04/20/2018*	*04/21/2018 22:18*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**86.0**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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1700 Elm Street, Suite 200	Project Number: 10427018
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804171 - EPA 3570										
Blank (A804171-BLK1)				Prepared: 04/20/2018 Analyzed: 04/20/2018 18:21						
2,4-D	ND	0.10	mg/kg wet							
2,4-D [2C]	ND	0.10	mg/kg wet							
2,4-DB	ND	0.10	mg/kg wet							
2,4-DB [2C]	ND	0.10	mg/kg wet							
2,4,5-T	ND	0.10	mg/kg wet							
2,4,5-T [2C]	ND	0.10	mg/kg wet							
2,4,5-TP	ND	0.10	mg/kg wet							
2,4,5-TP [2C]	ND	0.10	mg/kg wet							
Bentazon	ND	0.10	mg/kg wet							
Bentazon [2C]	ND	0.10	mg/kg wet							
Dicamba	ND	0.10	mg/kg wet							
Dicamba [2C]	ND	0.10	mg/kg wet							
MCPA	ND	0.10	mg/kg wet							
MCPA [2C]	ND	0.10	mg/kg wet							
Picloram	ND	0.10	mg/kg wet							
Picloram [2C]	ND	0.10	mg/kg wet							
Triclopyr	ND	0.10	mg/kg wet							
Triclopyr [2C]	ND	0.10	mg/kg wet							
Surrogate: DCAA	*21.2*		*mg/kg wet*	*20.00*		*106*	*70.8-116*			
Surrogate: DCAA [2C]	*19.0*		*mg/kg wet*	*20.00*		*95.3*	*62.3-114*			
LCS (A804171-BS1)				Prepared: 04/20/2018 Analyzed: 04/20/2018 17:14						
2,4-D	1.92	0.10	mg/kg wet	2.000		96.2	81.6-107			
2,4-D [2C]	1.66	0.10	mg/kg wet	2.000		83.2	71.8-120			
2,4-DB	1.77	0.10	mg/kg wet	2.000		88.7	76.4-107			
2,4-DB [2C]	1.69	0.10	mg/kg wet	2.000		84.5	62.2-129			
2,4,5-T	1.93	0.10	mg/kg wet	2.000		96.6	81.2-110			
2,4,5-T [2C]	1.88	0.10	mg/kg wet	2.000		93.8	70.6-125			
2,4,5-TP	1.87	0.10	mg/kg wet	2.000		93.5	79.1-106			
2,4,5-TP [2C]	1.69	0.10	mg/kg wet	2.000		84.4	68.2-118			
Bentazon	1.07	0.10	mg/kg wet	1.000		107	82.5-119			
Bentazon [2C]	0.806	0.10	mg/kg wet	1.000		80.6	73.3-125			
Dicamba	1.98	0.10	mg/kg wet	2.000		98.8	85.1-108			
Dicamba [2C]	1.85	0.10	mg/kg wet	2.000		92.4	71.4-115			
Picloram	0.991	0.10	mg/kg wet	1.000		99.1	86.1-106			
Picloram [2C]	0.878	0.10	mg/kg wet	1.000		87.8	74.5-114			
Triclopyr	1.89	0.10	mg/kg wet	2.000		94.4	78.6-106			
Triclopyr [2C]	1.67	0.10	mg/kg wet	2.000		83.4	69.4-118			
Surrogate: DCAA	*20.9*		*mg/kg wet*	*20.00*		*105*	*70.8-116*			
Surrogate: DCAA [2C]	*18.7*		*mg/kg wet*	*20.00*		*93.5*	*62.3-114*			
LCS (A804171-BS2)				Prepared: 04/20/2018 Analyzed: 04/20/2018 16:07						
MCPA	2.15	0.10	mg/kg wet	2.000		107	79.4-116			
MCPA [2C]	1.92	0.10	mg/kg wet	2.000		96.2	77-123			

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427018
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804171 - EPA 3570										
LCS (A804171-BS2)				Prepared: 04/20/2018 Analyzed: 04/20/2018 16:07						
Surrogate: DCAA	*21.1*		*mg/kg wet*	*20.00*		*106*	*70.8-116*			
Surrogate: DCAA [2C]	*21.1*		*mg/kg wet*	*20.00*		*105*	*62.3-114*			
Matrix Spike (A804171-MS1)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/20/2018 22:50						
2,4-D	1.92	0.10	mg/kg dry	2.156	ND	89.2	71.4-105			
2,4-D [2C]	1.82	0.10	mg/kg dry	2.156	0.0525	81.8	50.5-123			
2,4-DB	1.86	0.10	mg/kg dry	2.156	ND	86.1	46.4-117			
2,4-DB [2C]	1.72	0.10	mg/kg dry	2.156	ND	79.7	44.5-121			
2,4,5-T	2.03	0.10	mg/kg dry	2.156	ND	94.1	66.2-110			
2,4,5-T [2C]	1.94	0.10	mg/kg dry	2.156	ND	90.0	43.6-126			
2,4,5-TP	1.97	0.10	mg/kg dry	2.156	ND	91.3	52.4-114			
2,4,5-TP [2C]	1.83	0.10	mg/kg dry	2.156	ND	85.0	47.6-117			
Bentazon	1.02	0.10	mg/kg dry	1.078	0.0456	90.9	61.5-117			
Bentazon [2C]	0.920	0.10	mg/kg dry	1.078	ND	85.3	50.7-127			
Dicamba	1.59	0.10	mg/kg dry	2.156	ND	73.9	48.4-111			
Dicamba [2C]	1.56	0.10	mg/kg dry	2.156	ND	72.3	43.3-108			
Picloram	0.633	0.10	mg/kg dry	1.078	ND	58.7	26.7-110			
Picloram [2C]	0.389	0.10	mg/kg dry	1.078	0.0164	34.6	10.8-110			
Triclopyr	1.95	0.10	mg/kg dry	2.156	ND	90.7	56-113			
Triclopyr [2C]	1.78	0.10	mg/kg dry	2.156	0.0278	81.2	47.9-120			
Surrogate: DCAA	*21.4*		*mg/kg dry*	*21.56*		*99.2*	*70.8-116*			
Surrogate: DCAA [2C]	*19.1*		*mg/kg dry*	*21.56*		*88.6*	*62.3-114*			
Matrix Spike (A804171-MS2)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/21/2018 01:04						
MCPA	2.22	0.10	mg/kg dry	2.156	ND	103	74.2-114			
MCPA [2C]	2.11	0.10	mg/kg dry	2.156	ND	97.8	60.9-122			
Surrogate: DCAA	*21.5*		*mg/kg dry*	*21.56*		*99.6*	*70.8-116*			
Surrogate: DCAA [2C]	*21.8*		*mg/kg dry*	*21.56*		*101*	*62.3-114*			
Matrix Spike Dup (A804171-MSD1)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/20/2018 23:57						
2,4-D	1.96	0.10	mg/kg dry	2.156	ND	90.7	71.4-105	1.67	20	
2,4-D [2C]	1.88	0.10	mg/kg dry	2.156	0.0525	84.8	50.5-123	3.52	20	
2,4-DB	1.86	0.10	mg/kg dry	2.156	ND	86.1	46.4-117	0.0708	20	
2,4-DB [2C]	1.81	0.10	mg/kg dry	2.156	ND	84.1	44.5-121	5.40	20	
2,4,5-T	2.01	0.10	mg/kg dry	2.156	ND	93.3	66.2-110	0.865	20	
2,4,5-T [2C]	1.92	0.10	mg/kg dry	2.156	ND	89.0	43.6-126	1.06	20	
2,4,5-TP	1.95	0.10	mg/kg dry	2.156	ND	90.3	52.4-114	1.05	20	
2,4,5-TP [2C]	1.83	0.10	mg/kg dry	2.156	ND	84.9	47.6-117	0.106	20	
Bentazon	1.04	0.10	mg/kg dry	1.078	0.0456	92.2	61.5-117	1.44	20	
Bentazon [2C]	0.960	0.10	mg/kg dry	1.078	ND	89.1	50.7-127	4.28	20	
Dicamba	1.62	0.10	mg/kg dry	2.156	ND	74.9	48.4-111	1.41	20	
Dicamba [2C]	1.60	0.10	mg/kg dry	2.156	ND	74.1	43.3-108	2.52	20	
Picloram	0.641	0.10	mg/kg dry	1.078	ND	59.5	26.7-110	1.30	20	
Picloram [2C]	0.387	0.10	mg/kg dry	1.078	0.0164	34.4	10.8-110	0.574	20	

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427018
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804171 - EPA 3570										
Matrix Spike Dup (A804171-MSD1)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/20/2018 23:57						
Triclopyr	1.97	0.10	mg/kg dry	2.156	ND	91.4	56-113	0.809	20	
Triclopyr [2C]	1.78	0.10	mg/kg dry	2.156	0.0278	81.1	47.9-120	0.221	20	
Surrogate: DCAA	*21.2*		*mg/kg dry*	*21.56*		*98.4*	*70.8-116*			
Surrogate: DCAA [2C]	*18.9*		*mg/kg dry*	*21.56*		*87.9*	*62.3-114*			
Matrix Spike Dup (A804171-MSD2)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/21/2018 02:11						
MCPA	2.21	0.10	mg/kg dry	2.156	ND	103	74.2-114	0.307	20	
MCPA [2C]	2.08	0.10	mg/kg dry	2.156	ND	96.5	60.9-122	1.37	20	
Surrogate: DCAA	*21.6*		*mg/kg dry*	*21.56*		*100*	*70.8-116*			
Surrogate: DCAA [2C]	*21.9*		*mg/kg dry*	*21.56*		*102*	*62.3-114*			

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427018
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Classical Chemistry Parameters - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804163 - % Solids										
Duplicate (A804163-DUP1)		**Source: A181607-09**		Prepared: 04/18/2018 Analyzed: 04/19/2018 11:20						
% Solids	90.0	0.00	% by Weight		90.3			0.390	20	

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427018
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
P	The difference in the concentrations between the primary and confirmation column was > 40%.
LC	Results may be biased low because of low continuing calibration verification (CCV).
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A181603

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427018 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/11/2018 **Results Requested By:** 4/26/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: 8270D MSSV MDA LIST 2		LAB USE ONLY
1	FD-TT-01 (10-12 WM)	PS	4/11/2018 10:20	10427018001	Solid	1	X		01
2	FD-TT-02 (7-9 WM)	PS	4/11/2018 12:20	10427018002	Solid	1	X		02 (1)
3	FD-SB-A1 (3-6 S)	PS	4/11/2018 13:00	10427018003	Solid	1	X		03
4	FD-SB-B1 (11-13 WM)	PS	4/11/2018 13:50	10427018004	Solid	1	X		04 (1)
5	FD-SB-C1 (5-8 WM)	PS	4/11/2018 14:30	10427018005	Solid	1	X		05
6	FD-TT-03 (2-5 WM)	PS	4/11/2018 14:50	10427018006	Solid	1	X	Client label has 5	06 (1)
7	FD-SB-D1 (11-16 WM)	PS	4/11/2018 15:35	10427018007	Solid	1	X		07
8	FD-SB-E1 (10-15 WM)	PS	4/11/2018 16:10	10427018008	Solid	1	X		08 (1)

Transfers	Released By	Date/Time	Received By	Date/Time
1	/Pace	04/12/18 11:14	Kari-Ann Kyllo	4/13/18
2	PACE	4/12/18 1600		0925
3				

Comments

Method 8321
(1) Samples received 04-17-18 jv

Cooler Temperature on Receipt 5.8 °C **Custody Seal** Y or (N) **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

160142274 7/12/18

A181603

Chain of Custody

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427018 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/11/2018 **Results Requested By:** 4/26/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: 8270D MSSV MDA LIST 2	LAB USE ONLY
~~1~~	~~FD-TT-01 (10-12 WM)~~	~~PS~~	~~4/11/2018 10:20~~	~~10427018001~~	~~Solid~~	~~1~~	~~X~~	
2	FD-TT-02 (7-9 WM)	PS	4/11/2018 12:20	10427018002	Solid	1	X	
~~3~~	~~FD-SB-A1 (3-6 S)~~	~~PS~~	~~4/11/2018 13:00~~	~~10427018003~~	~~Solid~~	~~1~~	~~X~~	
4	FD-SB-B1 (11-13 WM)	PS	4/11/2018 13:50	10427018004	Solid	1	X	
~~5~~	~~FD-SB-C1 (5-8 WM)~~	~~PS~~	~~4/11/2018 14:30~~	~~10427018005~~	~~Solid~~	~~1~~	~~X~~	
6	FD-TT-03 (2-5 WM)	PS	4/11/2018 14:50	10427018006	Solid	1	X	
~~7~~	~~FD-SB-D1 (11-16 WM)~~	~~PS~~	~~4/11/2018 15:35~~	~~10427018007~~	~~Solid~~	~~1~~	~~X~~	
8	FD-SB-E1 (10-15 WM)	PS	4/11/2018 16:10	10427018008	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	4/16/18 1333	[signature]	4/17/18 0906
2				
3				

Comments

Containers for samples -002, -004, -006, -008 (not originally sent 4/12)

Method 8321

Cooler Temperature on Receipt 1.8 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

160142274
Exp 7/12/18

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Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10427280
Sample Receipt Date: 04/13/2018
Client Project #: 18-00383
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

April 27, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
April 27, 2018

Report of Laboratory Analysis

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The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
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Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on five samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 45-64%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 104%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Report No.....10427280

Appendix A

Sample Management

WO# : 10427280

10427280

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number:

Turnaround Time:

COC ID:

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MPCA-Freeway LF 5a/16	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA - Freeway LF 5a/16	Project Task Code:	Address: 18-00383
Project Manager:			Epic Profile # 38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wt=Ground=Groundwater; Wt=Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

PRESERV.

ANALYSIS: see attached list (- Dioxins); + Dioxins

Location Identifier	Sample Type	Date	Time	Start Depth, ft/in/meters	End Depth, ft/in/meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	see attached list (- Dioxins)	+ Dioxins					Lab Sample No.	#
FD-SB-01 (10-14.5 S)	S	4/12/18	1015			C	SD				13	X	X					001	1
FD-SB-01 (5-10 S)	S	4/12/18	1045			C	SD				13	X							2
FD-IT-05 (4-9 wm)	S	4/12/18	0945			C	SD				13	X	X					002	3
FD-IT-06 (2-5 wm)	S	4/12/18	1140			C	SD				13	X							4
FD-IT-07 (6-11 wm)	S	4/12/18	1300			C	SD				13	X	X					003	5
FD-IT-08 (8-12 wm)	S	4/12/18	1430			C	SD				13	X							6
FS-SB-01 (5-8 wm)	S	4/12/18	1720			C	SD				13	X	X				004	~~003~~	7
FS-SB-02 (5-10 S)	S	4/12/18	1910			C	SD				13	X							8
FS-SB-03 (1.5-3.0 S)	S	4/12/18	1955			C	SD				13	X	X				005	~~004~~	9
																			10

4/13/18 JD

4/13/18 JD

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/13/18/0745	[illegible]	4/13/18 800

T = 3.1

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: **WO#: 10427280**

PM: SCU **Due Date: 04/27/18**

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☒ Other: PB **Temp Blank?** ☒ Yes ☐ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 2.9 **Cooler Temp Corrected (°C):** 3.1 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** PC 4/13/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No		12. No time on label
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 04/13/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigation Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*) Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

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Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-SB-F1 (10-14.5 S)		
Lab Sample ID	10427280001		
Filename	U180422B_08		
Injected By	BAL		
Total Amount Extracted	15.0 g	Matrix	Solid
% Moisture	32.6	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	04/12/2018 10:15
ICAL ID	U180405	Received	04/13/2018 12:05
CCal Filename(s)	U180422A_16 & U180422B_15	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/22/2018 19:54

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	63

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-TT-05 (4-9 WM)		
Lab Sample ID	10427280002		
Filename	U180422B_09		
Injected By	BAL		
Total Amount Extracted	13.7 g	Matrix	Solid
% Moisture	28.0	Dilution	NA
Dry Weight Extracted	9.86 g	Collected	04/12/2018 09:45
ICAL ID	U180405	Received	04/13/2018 12:05
CCal Filename(s)	U180422A_16 & U180422B_15	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/22/2018 20:42

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	56
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	58

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-TT-07 (6-11 WM)		
Lab Sample ID	10427280003		
Filename	U180422B_10		
Injected By	BAL		
Total Amount Extracted	13.2 g	Matrix	Solid
% Moisture	28.0	Dilution	NA
Dry Weight Extracted	9.50 g	Collected	04/12/2018 13:00
ICAL ID	U180405	Received	04/13/2018 12:05
CCal Filename(s)	U180422A_16 & U180422B_15	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/22/2018 21:31

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	2.7	-----	1.0	2,3,7,8-TCDD-13C	2.00	60
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	59

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	TS-SB-01 (5-8 WM)		
Lab Sample ID	10427280004		
Filename	U180422B_11		
Injected By	BAL		
Total Amount Extracted	11.4 g	Matrix	Solid
% Moisture	10.4	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	04/12/2018 17:20
ICAL ID	U180405	Received	04/13/2018 12:05
CCal Filename(s)	U180422A_16 & U180422B_15	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/22/2018 22:19

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	64
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	65

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	TS-SB-03 (1.5-3.0 S)		
Lab Sample ID	10427280005		
Filename	U180422B_12		
Injected By	BAL		
Total Amount Extracted	13.6 g	Matrix	Solid
% Moisture	12.1	Dilution	NA
Dry Weight Extracted	12.0 g	Collected	04/12/2018 19:55
ICAL ID	U180405	Received	04/13/2018 12:05
CCal Filename(s)	U180422A_16 & U180422B_15	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/22/2018 23:07

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	45
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	47

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61774	Matrix	Solid
Filename	Y180422A_04	Dilution	NA
Total Amount Extracted	79.7 g	Extracted	04/17/2018 15:45
ICAL ID	Y180204	Analyzed	04/22/2018 16:10
CCal Filename(s)	Y180421B_16 & Y180422A_12	Injected By	BAL

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	63

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61775		
Filename	Y180422A_01	Matrix	Solid
Total Amount Extracted	75.1 g	Dilution	NA
ICAL ID	Y180204	Extracted	04/17/2018 15:45
CCal Filename(s)	Y180421B_16 & Y180422A_12	Analyzed	04/22/2018 13:59
Method Blank ID	BLANK-61774	Injected By	BAL

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.21	104	2,3,7,8-TCDD-13C	2.0	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	62

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 02, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 13, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6451
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Alaska Certification UST-107
California Certification #2973
California Certification #2973
Montana Certificate #CERT0103
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Montana DHHS Certification #: CERT0102
Nevada DCNR Certification #: MN000372018-1
Minnesota Dept of Health Certification #: 1382680
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10427291001	**FD-SB-F1 (10-14.5 S)**	Solid	04/12/18 10:15	04/13/18 08:00
10427291002	**FB-SB-G1 (5-10 S)**	Solid	04/12/18 10:45	04/13/18 08:00
10427291003	**FD-TT-05 (4-9 WM)**	Solid	04/12/18 09:45	04/13/18 08:00
10427291004	**FD-TT-06 (2-5 WM)**	Solid	04/12/18 11:40	04/13/18 08:00
10427291005	**FD-TT-07 (6-11 WM)**	Solid	04/12/18 13:00	04/13/18 08:00
10427291006	**FD-TT-08 (5-12 WM)**	Solid	04/12/18 14:30	04/13/18 08:00
10427291007	**TS-SB-01 (5-8 WM)**	Solid	04/12/18 17:20	04/13/18 08:00
10427291008	**TS-SB-02 (5-10 S)**	Solid	04/12/18 19:10	04/13/18 08:00
10427291009	**TS-SB-03 (1.5-3.0 S)**	Solid	04/12/18 19:55	04/13/18 08:00

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Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM, IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427291002	**FB-SB-G1 (5-10 S)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427291003	**FD-TT-05 (4-9 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM, IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427291004	**FD-TT-06 (2-5 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM, IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427291005	**FD-TT-07 (6-11 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM, IP	11	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427291006	**FD-TT-08 (5-12 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM, IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427291007	**TS-SB-01 (5-8 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM, IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427291008	**TS-SB-02 (5-10 S)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-SB-F1 (10-14.5 S) **Lab ID: 10427291001** Collected: 04/12/18 10:15 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	13.7	1	04/25/18 10:56	04/27/18 16:00	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	309-00-2	
alpha-BHC	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	319-84-6	
beta-BHC	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	319-85-7	
delta-BHC	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	58-89-9	
Chlordane (Technical)	ND	ug/kg	24.7	1	04/16/18 10:57	04/20/18 02:15	57-74-9	
alpha-Chlordane	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	5103-71-9	
gamma-Chlordane	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	5103-74-2	
4,4'-DDD	ND	ug/kg	4.9	1	04/16/18 10:57	04/20/18 02:15	72-54-8	
4,4'-DDE	ND	ug/kg	4.9	1	04/16/18 10:57	04/20/18 02:15	72-55-9	
4,4'-DDT	ND	ug/kg	4.9	1	04/16/18 10:57	04/20/18 02:15	50-29-3	
Dieldrin	ND	ug/kg	4.9	1	04/16/18 10:57	04/20/18 02:15	60-57-1	
Endosulfan I	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	959-98-8	
Endosulfan II	ND	ug/kg	4.9	1	04/16/18 10:57	04/20/18 02:15	33213-65-9	
Endosulfan sulfate	ND	ug/kg	4.9	1	04/16/18 10:57	04/20/18 02:15	1031-07-8	
Endrin	ND	ug/kg	4.9	1	04/16/18 10:57	04/20/18 02:15	72-20-8	
Endrin aldehyde	ND	ug/kg	4.9	1	04/16/18 10:57	04/20/18 02:15	7421-93-4	
Endrin ketone	ND	ug/kg	4.9	1	04/16/18 10:57	04/20/18 02:15	53494-70-5	
Heptachlor	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	76-44-8	
Heptachlor epoxide	ND	ug/kg	2.5	1	04/16/18 10:57	04/20/18 02:15	1024-57-3	
Methoxychlor	ND	ug/kg	24.7	1	04/16/18 10:57	04/20/18 02:15	72-43-5	
Toxaphene	ND	ug/kg	74.0	1	04/16/18 10:57	04/20/18 02:15	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	96	%.	30-150	1	04/16/18 10:57	04/20/18 02:15	877-09-8	
Decachlorobiphenyl (S)	86	%.	30-150	1	04/16/18 10:57	04/20/18 02:15	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	11100-14-4	
PCB, Total	ND	ug/kg	48.9	1	04/13/18 19:35	04/16/18 18:55	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	64	%.	48-125	1	04/13/18 19:35	04/16/18 18:55	877-09-8	
Decachlorobiphenyl (S)	76	%.	30-134	1	04/13/18 19:35	04/16/18 18:55	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	12.7	1	04/16/18 14:24	04/19/18 19:52		

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-SB-F1 (10-14.5 S) **Lab ID: 10427291001** Collected: 04/12/18 10:15 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	76	%.	50-150	1	04/16/18 14:24	04/19/18 19:52	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	14.8	1	04/24/18 13:27	04/25/18 00:21		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/24/18 13:27	04/25/18 00:21	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**10700**	mg/kg	14.5	1	04/18/18 09:37	04/21/18 19:10	7429-90-5	P6
Barium	**134**	mg/kg	0.73	1	04/18/18 09:37	04/21/18 19:10	7440-39-3	M1
Boron	**802**	mg/kg	10.9	1	04/18/18 09:37	04/21/18 19:10	7440-42-8	P6
Copper	**20.2**	mg/kg	0.73	1	04/18/18 09:37	04/21/18 19:10	7440-50-8	
Iron	**34200**	mg/kg	18.2	5	04/18/18 09:37	04/23/18 18:02	7439-89-6	
Manganese	**185**	mg/kg	0.36	1	04/18/18 09:37	04/21/18 19:10	7439-96-5	
Nickel	**22.5**	mg/kg	1.5	1	04/18/18 09:37	04/21/18 19:10	7440-02-0	M1
Silver	ND	mg/kg	0.73	1	04/18/18 09:37	04/21/18 19:10	7440-22-4	
Tin	ND	mg/kg	5.5	1	04/18/18 09:37	04/21/18 19:10	7440-31-5	M1
Titanium	**589**	mg/kg	1.8	1	04/18/18 09:37	04/21/18 19:10	7440-32-6	P6
Zinc	**180**	mg/kg	1.5	1	04/18/18 09:37	04/21/18 19:10	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**53.4**	mg/kg	1.3	5	04/20/18 09:20	04/21/18 01:16	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**2.1**	mg/kg	0.70	20	04/16/18 08:41	04/16/18 16:23	7440-36-0	
Arsenic	**22.5**	mg/kg	0.70	20	04/16/18 08:41	04/16/18 16:23	7440-38-2	
Beryllium	**3.2**	mg/kg	0.28	20	04/16/18 08:41	04/16/18 16:23	7440-41-7	
Cadmium	**2.4**	mg/kg	0.11	20	04/16/18 08:41	04/16/18 16:23	7440-43-9	
Cobalt	**6.9**	mg/kg	0.70	20	04/16/18 08:41	04/16/18 16:23	7440-48-4	
Lead	**30.4**	mg/kg	0.14	20	04/16/18 08:41	04/16/18 16:23	7439-92-1	
Lithium	**10.2**	mg/kg	0.70	20	04/16/18 08:41	04/16/18 16:23	7439-93-2	
Selenium	**5.7**	mg/kg	0.70	20	04/16/18 08:41	04/16/18 16:23	7782-49-2	
Strontium	**71.4**	mg/kg	0.70	20	04/16/18 08:41	04/16/18 16:23	7440-24-6	
Vanadium	**117**	mg/kg	1.4	20	04/16/18 08:41	04/16/18 16:23	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.075**	mg/kg	0.029	1	04/18/18 09:38	04/19/18 18:17	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**32.6**	%	0.10	1		04/19/18 14:07		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	83-32-9	
Acenaphthylene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-SB-F1 (10-14.5 S) **Lab ID: 10427291001** Collected: 04/12/18 10:15 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	120-12-7	
Benzo(a)anthracene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	56-55-3	
Benzo(a)pyrene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	101-55-3	
Butylbenzylphthalate	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	85-68-7	
Carbazole	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	59-50-7	
4-Chloroaniline	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	108-60-1	
2-Chloronaphthalene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	91-58-7	
2-Chlorophenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	7005-72-3	
Chrysene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	53-70-3	
Dibenzofuran	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	120-83-2	
Diethylphthalate	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	105-67-9	
Dimethylphthalate	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	131-11-3	
Di-n-butylphthalate	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	4660	1	04/20/18 12:55	04/24/18 15:29	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	606-20-2	
Di-n-octylphthalate	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	117-81-7	
Fluoranthene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	206-44-0	
Fluorene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	87-68-3	
Hexachlorobenzene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	118-74-1	
Hexachloroethane	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	193-39-5	
Isophorone	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	78-59-1	
1-Methylnaphthalene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	90-12-0	
2-Methylnaphthalene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	95-48-7	

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-SB-F1 (10-14.5 S) **Lab ID: 10427291001** Collected: 04/12/18 10:15 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1810	1	04/20/18 12:55	04/24/18 15:29		
Naphthalene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	91-20-3	
2-Nitroaniline	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	88-74-4	
3-Nitroaniline	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	99-09-2	
4-Nitroaniline	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	100-01-6	
Nitrobenzene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	98-95-3	
2-Nitrophenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	88-75-5	
4-Nitrophenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	86-30-6	
Pentachlorophenol	ND	ug/kg	1830	1	04/20/18 12:55	04/24/18 15:29	87-86-5	
Phenanthrene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	85-01-8	
Phenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	108-95-2	
Pyrene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	904	1	04/20/18 12:55	04/24/18 15:29	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	58	%.	43-125	1	04/20/18 12:55	04/24/18 15:29	4165-60-0	
2-Fluorobiphenyl (S)	61	%.	30-132	1	04/20/18 12:55	04/24/18 15:29	321-60-8	
p-Terphenyl-d14 (S)	82	%.	62-125	1	04/20/18 12:55	04/24/18 15:29	1718-51-0	
Phenol-d6 (S)	66	%.	48-125	1	04/20/18 12:55	04/24/18 15:29	13127-88-3	
2-Fluorophenol (S)	65	%.	40-125	1	04/20/18 12:55	04/24/18 15:29	367-12-4	
2,4,6-Tribromophenol (S)	70	%.	60-125	1	04/20/18 12:55	04/24/18 15:29	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	83-32-9	
Acenaphthylene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	208-96-8	
Anthracene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	120-12-7	
Benzo(a)anthracene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	56-55-3	
Benzo(a)pyrene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	207-08-9	
Chrysene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	53-70-3	
Fluoranthene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	206-44-0	
Fluorene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	193-39-5	
Naphthalene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	91-20-3	
Phenanthrene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	85-01-8	
Pyrene	ND	ug/kg	14.8	1	04/18/18 17:23	04/20/18 02:20	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	66	%.	42-125	1	04/18/18 17:23	04/20/18 02:20	321-60-8	
p-Terphenyl-d14 (S)	99	%.	57-125	1	04/18/18 17:23	04/20/18 02:20	1718-51-0	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-SB-F1 (10-14.5 S) **Lab ID: 10427291001** Collected: 04/12/18 10:15 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1520	1	04/24/18 10:23	04/24/18 18:50	67-64-1	
Allyl chloride	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	107-05-1	
Benzene	ND	ug/kg	30.4	1	04/24/18 10:23	04/24/18 18:50	71-43-2	
Bromobenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	108-86-1	
Bromochloromethane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	74-97-5	
Bromodichloromethane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	75-27-4	
Bromoform	ND	ug/kg	761	1	04/24/18 10:23	04/24/18 18:50	75-25-2	
Bromomethane	ND	ug/kg	761	1	04/24/18 10:23	04/24/18 18:50	74-83-9	
2-Butanone (MEK)	ND	ug/kg	380	1	04/24/18 10:23	04/24/18 18:50	78-93-3	
n-Butylbenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	104-51-8	
sec-Butylbenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	135-98-8	
tert-Butylbenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	98-06-6	
Carbon tetrachloride	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	56-23-5	
Chlorobenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	108-90-7	
Chloroethane	ND	ug/kg	761	1	04/24/18 10:23	04/24/18 18:50	75-00-3	
Chloroform	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	67-66-3	
Chloromethane	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	74-87-3	
2-Chlorotoluene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	95-49-8	
4-Chlorotoluene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	761	1	04/24/18 10:23	04/24/18 18:50	96-12-8	
Dibromochloromethane	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	106-93-4	
Dibromomethane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	75-71-8	
1,1-Dichloroethane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	75-34-3	
1,2-Dichloroethane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	107-06-2	
1,1-Dichloroethene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	156-60-5	
Dichlorofluoromethane	ND	ug/kg	761	1	04/24/18 10:23	04/24/18 18:50	75-43-4	
1,2-Dichloropropane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	78-87-5	
1,3-Dichloropropane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	142-28-9	
2,2-Dichloropropane	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	594-20-7	
1,1-Dichloropropene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	60-29-7	
Ethylbenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	380	1	04/24/18 10:23	04/24/18 18:50	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	98-82-8	
p-Isopropyltoluene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	99-87-6	
Methylene Chloride	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	380	1	04/24/18 10:23	04/24/18 18:50	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-SB-F1 (10-14.5 S) **Lab ID: 10427291001** Collected: 04/12/18 10:15 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	1634-04-4	
Naphthalene	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	91-20-3	
n-Propylbenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	103-65-1	
Styrene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	79-34-5	
Tetrachloroethene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	127-18-4	
Tetrahydrofuran	ND	ug/kg	3040	1	04/24/18 10:23	04/24/18 18:50	109-99-9	
Toluene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	79-00-5	
Trichloroethene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	79-01-6	
Trichlorofluoromethane	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	304	1	04/24/18 10:23	04/24/18 18:50	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	76.1	1	04/24/18 10:23	04/24/18 18:50	108-67-8	
Vinyl chloride	ND	ug/kg	30.4	1	04/24/18 10:23	04/24/18 18:50	75-01-4	
Xylene (Total)	ND	ug/kg	228	1	04/24/18 10:23	04/24/18 18:50	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/24/18 10:23	04/24/18 18:50	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	04/24/18 10:23	04/24/18 18:50	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	04/24/18 10:23	04/24/18 18:50	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	14.5	5	04/23/18 11:09	04/24/18 13:02	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**53.4**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.57	1	04/20/18 10:25	04/20/18 13:58	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**4.1**	mg/kg	0.99	1	04/18/18 14:45	04/19/18 21:46	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FB-SB-G1 (5-10 S) **Lab ID: 10427291002** Collected: 04/12/18 10:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.0	1	04/25/18 10:56	04/27/18 16:14	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	309-00-2	
alpha-BHC	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	319-84-6	
beta-BHC	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	319-85-7	
delta-BHC	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	58-89-9	
Chlordane (Technical)	ND	ug/kg	372	20	04/16/18 10:57	04/19/18 23:48	57-74-9	
alpha-Chlordane	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	5103-71-9	M6
gamma-Chlordane	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	5103-74-2	M6
4,4'-DDD	**212**	ug/kg	74.2	20	04/16/18 10:57	04/19/18 23:48	72-54-8	M6,R1
4,4'-DDE	**87.8**	ug/kg	74.2	20	04/16/18 10:57	04/19/18 23:48	72-55-9	M6
4,4'-DDT	ND	ug/kg	74.2	20	04/16/18 10:57	04/19/18 23:48	50-29-3	M6
Dieldrin	ND	ug/kg	74.2	20	04/16/18 10:57	04/19/18 23:48	60-57-1	
Endosulfan I	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	959-98-8	
Endosulfan II	ND	ug/kg	74.2	20	04/16/18 10:57	04/19/18 23:48	33213-65-9	
Endosulfan sulfate	ND	ug/kg	74.2	20	04/16/18 10:57	04/19/18 23:48	1031-07-8	
Endrin	ND	ug/kg	74.2	20	04/16/18 10:57	04/19/18 23:48	72-20-8	
Endrin aldehyde	ND	ug/kg	74.2	20	04/16/18 10:57	04/19/18 23:48	7421-93-4	
Endrin ketone	ND	ug/kg	74.2	20	04/16/18 10:57	04/19/18 23:48	53494-70-5	
Heptachlor	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	76-44-8	
Heptachlor epoxide	ND	ug/kg	37.2	20	04/16/18 10:57	04/19/18 23:48	1024-57-3	M6
Methoxychlor	ND	ug/kg	372	20	04/16/18 10:57	04/19/18 23:48	72-43-5	
Toxaphene	ND	ug/kg	1110	20	04/16/18 10:57	04/19/18 23:48	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	04/16/18 10:57	04/19/18 23:48	877-09-8	2M,D4, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	04/16/18 10:57	04/19/18 23:48	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	11100-14-4	
PCB, Total	ND	ug/kg	36.7	1	04/13/18 19:35	04/16/18 21:01	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	85	%.	48-125	1	04/13/18 19:35	04/16/18 21:01	877-09-8	
Decachlorobiphenyl (S)	80	%.	30-134	1	04/13/18 19:35	04/16/18 21:01	2051-24-3	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FB-SB-G1 (5-10 S) **Lab ID: 10427291002** Collected: 04/12/18 10:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**68.1**	mg/kg	48.2	5	04/16/18 14:24	04/19/18 18:41		T6
Surrogates								
n-Triacontane (S)	100	%.	50-150	5	04/16/18 14:24	04/19/18 18:41	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.5	1	04/24/18 13:27	04/25/18 00:45		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/24/18 13:27	04/25/18 00:45	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**4200**	mg/kg	10.8	1	04/18/18 09:37	04/21/18 19:38	7429-90-5	
Barium	**60.3**	mg/kg	0.54	1	04/18/18 09:37	04/21/18 19:38	7440-39-3	
Boron	**11.6**	mg/kg	8.1	1	04/18/18 09:37	04/21/18 19:38	7440-42-8	
Copper	**8.0**	mg/kg	0.54	1	04/18/18 09:37	04/21/18 19:38	7440-50-8	
Iron	**8290**	mg/kg	2.7	1	04/18/18 09:37	04/21/18 19:38	7439-89-6	
Manganese	**323**	mg/kg	0.27	1	04/18/18 09:37	04/21/18 19:38	7439-96-5	
Nickel	**10.2**	mg/kg	1.1	1	04/18/18 09:37	04/21/18 19:38	7440-02-0	
Silver	ND	mg/kg	0.54	1	04/18/18 09:37	04/21/18 19:38	7440-22-4	
Tin	ND	mg/kg	4.0	1	04/18/18 09:37	04/21/18 19:38	7440-31-5	
Titanium	**147**	mg/kg	1.3	1	04/18/18 09:37	04/21/18 19:38	7440-32-6	
Zinc	**33.1**	mg/kg	1.1	1	04/18/18 09:37	04/21/18 19:38	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**11.4**	mg/kg	1.0	5	04/20/18 09:20	04/21/18 01:48	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.53	20	04/16/18 08:41	04/16/18 16:26	7440-36-0	
Arsenic	**13.3**	mg/kg	0.53	20	04/16/18 08:41	04/16/18 16:26	7440-38-2	
Beryllium	**0.30**	mg/kg	0.21	20	04/16/18 08:41	04/16/18 16:26	7440-41-7	
Cadmium	**0.18**	mg/kg	0.084	20	04/16/18 08:41	04/16/18 16:26	7440-43-9	
Cobalt	**5.2**	mg/kg	0.53	20	04/16/18 08:41	04/16/18 16:26	7440-48-4	
Lead	**19.2**	mg/kg	0.11	20	04/16/18 08:41	04/16/18 16:26	7439-92-1	
Lithium	**3.6**	mg/kg	0.53	20	04/16/18 08:41	04/16/18 16:26	7439-93-2	
Selenium	ND	mg/kg	0.53	20	04/16/18 08:41	04/16/18 16:26	7782-49-2	
Strontium	**15.7**	mg/kg	0.53	20	04/16/18 08:41	04/16/18 16:26	7440-24-6	
Vanadium	**17.6**	mg/kg	1.1	20	04/16/18 08:41	04/16/18 16:26	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.042**	mg/kg	0.020	1	04/18/18 09:38	04/19/18 18:19	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**10.6**	%	0.10	1		04/19/18 14:07		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FB-SB-G1 (5-10 S) **Lab ID: 10427291002** Collected: 04/12/18 10:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	208-96-8	
Anthracene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	120-12-7	
Benzo(a)anthracene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	56-55-3	
Benzo(a)pyrene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	101-55-3	
Butylbenzylphthalate	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	85-68-7	
Carbazole	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	59-50-7	
4-Chloroaniline	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	108-60-1	
2-Chloronaphthalene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	91-58-7	
2-Chlorophenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	7005-72-3	
Chrysene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	53-70-3	
Dibenzofuran	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	120-83-2	
Diethylphthalate	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	105-67-9	
Dimethylphthalate	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	131-11-3	
Di-n-butylphthalate	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	1900	1	04/13/18 17:55	04/19/18 21:36	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	606-20-2	
Di-n-octylphthalate	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	117-81-7	
Fluoranthene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	206-44-0	
Fluorene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	87-68-3	
Hexachlorobenzene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	118-74-1	
Hexachloroethane	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	193-39-5	
Isophorone	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	78-59-1	
1-Methylnaphthalene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	90-12-0	
2-Methylnaphthalene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FB-SB-G1 (5-10 S) **Lab ID: 10427291002** Collected: 04/12/18 10:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	737	1	04/13/18 17:55	04/19/18 21:36		
Naphthalene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	91-20-3	
2-Nitroaniline	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	88-74-4	
3-Nitroaniline	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	99-09-2	
4-Nitroaniline	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	100-01-6	
Nitrobenzene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	98-95-3	
2-Nitrophenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	88-75-5	
4-Nitrophenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	86-30-6	
Pentachlorophenol	ND	ug/kg	748	1	04/13/18 17:55	04/19/18 21:36	87-86-5	
Phenanthrene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	85-01-8	
Phenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	108-95-2	
Pyrene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	369	1	04/13/18 17:55	04/19/18 21:36	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	62	%.	43-125	1	04/13/18 17:55	04/19/18 21:36	4165-60-0	
2-Fluorobiphenyl (S)	70	%.	30-132	1	04/13/18 17:55	04/19/18 21:36	321-60-8	
p-Terphenyl-d14 (S)	83	%.	62-125	1	04/13/18 17:55	04/19/18 21:36	1718-51-0	
Phenol-d6 (S)	65	%.	48-125	1	04/13/18 17:55	04/19/18 21:36	13127-88-3	
2-Fluorophenol (S)	63	%.	40-125	1	04/13/18 17:55	04/19/18 21:36	367-12-4	
2,4,6-Tribromophenol (S)	73	%.	60-125	1	04/13/18 17:55	04/19/18 21:36	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	83-32-9	
Acenaphthylene	ND	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	208-96-8	
Anthracene	ND	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	120-12-7	
Benzo(a)anthracene	**84.8**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	56-55-3	
Benzo(a)pyrene	**107**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	50-32-8	
Benzo(b)fluoranthene	**147**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	205-99-2	
Benzo(g,h,i)perylene	**79.7**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	191-24-2	
Benzo(k)fluoranthene	**58.5**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	207-08-9	
Chrysene	**131**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	218-01-9	
Dibenz(a,h)anthracene	**29.8**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	53-70-3	
Fluoranthene	**183**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	206-44-0	
Fluorene	ND	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	86-73-7	
Indeno(1,2,3-cd)pyrene	**66.7**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	193-39-5	
Naphthalene	ND	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	91-20-3	
Phenanthrene	**69.4**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	85-01-8	
Pyrene	**183**	ug/kg	22.3	2	04/13/18 17:54	04/17/18 15:39	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	91	%.	42-125	2	04/13/18 17:54	04/17/18 15:39	321-60-8	D3

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FB-SB-G1 (5-10 S) **Lab ID: 10427291002** Collected: 04/12/18 10:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	100	%.	57-125	2	04/13/18 17:54	04/17/18 15:39	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1080	1	04/24/18 10:23	04/24/18 19:07	67-64-1	
Allyl chloride	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	107-05-1	
Benzene	ND	ug/kg	21.6	1	04/24/18 10:23	04/24/18 19:07	71-43-2	
Bromobenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	108-86-1	
Bromochloromethane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	74-97-5	
Bromodichloromethane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	75-27-4	
Bromoform	ND	ug/kg	540	1	04/24/18 10:23	04/24/18 19:07	75-25-2	
Bromomethane	ND	ug/kg	540	1	04/24/18 10:23	04/24/18 19:07	74-83-9	
2-Butanone (MEK)	ND	ug/kg	270	1	04/24/18 10:23	04/24/18 19:07	78-93-3	
n-Butylbenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	104-51-8	
sec-Butylbenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	135-98-8	
tert-Butylbenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	98-06-6	
Carbon tetrachloride	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	56-23-5	
Chlorobenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	108-90-7	
Chloroethane	ND	ug/kg	540	1	04/24/18 10:23	04/24/18 19:07	75-00-3	
Chloroform	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	67-66-3	
Chloromethane	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	74-87-3	
2-Chlorotoluene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	95-49-8	
4-Chlorotoluene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	540	1	04/24/18 10:23	04/24/18 19:07	96-12-8	
Dibromochloromethane	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	106-93-4	
Dibromomethane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	75-71-8	
1,1-Dichloroethane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	75-34-3	
1,2-Dichloroethane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	107-06-2	
1,1-Dichloroethene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	156-60-5	
Dichlorofluoromethane	ND	ug/kg	540	1	04/24/18 10:23	04/24/18 19:07	75-43-4	
1,2-Dichloropropane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	78-87-5	
1,3-Dichloropropane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	142-28-9	
2,2-Dichloropropane	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	594-20-7	
1,1-Dichloropropene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	60-29-7	
Ethylbenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	270	1	04/24/18 10:23	04/24/18 19:07	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FB-SB-G1 (5-10 S) **Lab ID: 10427291002** Collected: 04/12/18 10:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	98-82-8	
p-Isopropyltoluene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	99-87-6	
Methylene Chloride	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	270	1	04/24/18 10:23	04/24/18 19:07	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	1634-04-4	
Naphthalene	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	91-20-3	
n-Propylbenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	103-65-1	
Styrene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	79-34-5	
Tetrachloroethene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	127-18-4	
Tetrahydrofuran	ND	ug/kg	2160	1	04/24/18 10:23	04/24/18 19:07	109-99-9	
Toluene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	79-00-5	
Trichloroethene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	79-01-6	
Trichlorofluoromethane	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:07	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	54.0	1	04/24/18 10:23	04/24/18 19:07	108-67-8	
Vinyl chloride	ND	ug/kg	21.6	1	04/24/18 10:23	04/24/18 19:07	75-01-4	
Xylene (Total)	ND	ug/kg	162	1	04/24/18 10:23	04/24/18 19:07	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1	04/24/18 10:23	04/24/18 19:07	17060-07-0	
Toluene-d8 (S)	95	%.	75-125	1	04/24/18 10:23	04/24/18 19:07	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	04/24/18 10:23	04/24/18 19:07	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	44.9	20	04/23/18 11:09	04/24/18 13:02	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**11.4**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.39	1	04/20/18 10:25	04/20/18 13:58	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.8**	mg/kg	0.99	1	04/18/18 14:45	04/19/18 22:45	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-05 (4-9 WM) **Lab ID: 10427291003** Collected: 04/12/18 09:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	12.2	1	04/25/18 10:56	04/27/18 16:07	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	309-00-2	
alpha-BHC	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	319-84-6	
beta-BHC	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	319-85-7	
delta-BHC	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	58-89-9	
Chlordane (Technical)	ND	ug/kg	116	5	04/16/18 10:57	04/20/18 04:23	57-74-9	
alpha-Chlordane	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	5103-71-9	
gamma-Chlordane	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	5103-74-2	
4,4'-DDD	ND	ug/kg	23.1	5	04/16/18 10:57	04/20/18 04:23	72-54-8	
4,4'-DDE	ND	ug/kg	23.1	5	04/16/18 10:57	04/20/18 04:23	72-55-9	
4,4'-DDT	ND	ug/kg	23.1	5	04/16/18 10:57	04/20/18 04:23	50-29-3	
Dieldrin	ND	ug/kg	23.1	5	04/16/18 10:57	04/20/18 04:23	60-57-1	
Endosulfan I	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	959-98-8	
Endosulfan II	ND	ug/kg	23.1	5	04/16/18 10:57	04/20/18 04:23	33213-65-9	
Endosulfan sulfate	ND	ug/kg	23.1	5	04/16/18 10:57	04/20/18 04:23	1031-07-8	
Endrin	ND	ug/kg	23.1	5	04/16/18 10:57	04/20/18 04:23	72-20-8	
Endrin aldehyde	ND	ug/kg	23.1	5	04/16/18 10:57	04/20/18 04:23	7421-93-4	
Endrin ketone	ND	ug/kg	23.1	5	04/16/18 10:57	04/20/18 04:23	53494-70-5	
Heptachlor	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	76-44-8	
Heptachlor epoxide	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:23	1024-57-3	
Methoxychlor	ND	ug/kg	116	5	04/16/18 10:57	04/20/18 04:23	72-43-5	
Toxaphene	ND	ug/kg	347	5	04/16/18 10:57	04/20/18 04:23	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	94	%.	30-150	5	04/16/18 10:57	04/20/18 04:23	877-09-8	4M,D3
Decachlorobiphenyl (S)	92	%.	30-150	5	04/16/18 10:57	04/20/18 04:23	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	11100-14-4	
PCB, Total	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 21:17	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	83	%.	48-125	1	04/13/18 19:35	04/16/18 21:17	877-09-8	
Decachlorobiphenyl (S)	74	%.	30-134	1	04/13/18 19:35	04/16/18 21:17	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**33.7**	mg/kg	23.6	2	04/16/18 14:24	04/20/18 09:13		T6

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-05 (4-9 WM) **Lab ID: 10427291003** Collected: 04/12/18 09:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	94	%.	50-150	2	04/16/18 14:24	04/20/18 09:13	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	15.4	1	04/24/18 13:27	04/25/18 01:09		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/24/18 13:27	04/25/18 01:09	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**7800**	mg/kg	13.5	1	04/18/18 09:37	04/21/18 19:41	7429-90-5	
Barium	**129**	mg/kg	0.67	1	04/18/18 09:37	04/21/18 19:41	7440-39-3	
Boron	**106**	mg/kg	10.1	1	04/18/18 09:37	04/21/18 19:41	7440-42-8	
Copper	**16.9**	mg/kg	0.67	1	04/18/18 09:37	04/21/18 19:41	7440-50-8	
Iron	**26400**	mg/kg	16.8	5	04/18/18 09:37	04/24/18 18:42	7439-89-6	
Manganese	**365**	mg/kg	0.34	1	04/18/18 09:37	04/21/18 19:41	7439-96-5	
Nickel	**18.4**	mg/kg	1.3	1	04/18/18 09:37	04/21/18 19:41	7440-02-0	
Silver	ND	mg/kg	0.67	1	04/18/18 09:37	04/21/18 19:41	7440-22-4	
Tin	ND	mg/kg	5.1	1	04/18/18 09:37	04/21/18 19:41	7440-31-5	
Titanium	**432**	mg/kg	1.7	1	04/18/18 09:37	04/21/18 19:41	7440-32-6	
Zinc	**117**	mg/kg	1.3	1	04/18/18 09:37	04/21/18 19:41	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**42.6**	mg/kg	1.3	5	04/20/18 09:20	04/21/18 01:53	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.0**	mg/kg	0.68	20	04/16/18 08:41	04/16/18 16:29	7440-36-0	
Arsenic	**14.8**	mg/kg	0.68	20	04/16/18 08:41	04/16/18 16:29	7440-38-2	
Beryllium	**1.8**	mg/kg	0.27	20	04/16/18 08:41	04/16/18 16:29	7440-41-7	
Cadmium	**1.4**	mg/kg	0.11	20	04/16/18 08:41	04/16/18 16:29	7440-43-9	
Cobalt	**5.2**	mg/kg	0.68	20	04/16/18 08:41	04/16/18 16:29	7440-48-4	
Lead	**18.2**	mg/kg	0.14	20	04/16/18 08:41	04/16/18 16:29	7439-92-1	
Lithium	**8.6**	mg/kg	0.68	20	04/16/18 08:41	04/16/18 16:29	7439-93-2	
Selenium	**2.0**	mg/kg	0.68	20	04/16/18 08:41	04/16/18 16:29	7782-49-2	
Strontium	**49.0**	mg/kg	0.68	20	04/16/18 08:41	04/16/18 16:29	7440-24-6	
Vanadium	**76.5**	mg/kg	1.4	20	04/16/18 08:41	04/16/18 16:29	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.057**	mg/kg	0.026	1	04/18/18 09:38	04/19/18 18:21	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**28.0**	%	0.10	1		04/19/18 15:12		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	83-32-9	
Acenaphthylene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-05 (4-9 WM) **Lab ID: 10427291003** Collected: 04/12/18 09:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	120-12-7	
Benzo(a)anthracene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	56-55-3	
Benzo(a)pyrene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	101-55-3	
Butylbenzylphthalate	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	85-68-7	
Carbazole	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	59-50-7	
4-Chloroaniline	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	108-60-1	
2-Chloronaphthalene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	91-58-7	
2-Chlorophenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	7005-72-3	
Chrysene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	53-70-3	
Dibenzofuran	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	120-83-2	
Diethylphthalate	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	105-67-9	
Dimethylphthalate	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	131-11-3	
Di-n-butylphthalate	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2350	1	04/13/18 17:55	04/19/18 17:49	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	606-20-2	
Di-n-octylphthalate	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	117-81-7	
Fluoranthene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	206-44-0	
Fluorene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	87-68-3	
Hexachlorobenzene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	118-74-1	
Hexachloroethane	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	193-39-5	
Isophorone	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	78-59-1	
1-Methylnaphthalene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	90-12-0	
2-Methylnaphthalene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	95-48-7	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-05 (4-9 WM) **Lab ID: 10427291003** Collected: 04/12/18 09:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	914	1	04/13/18 17:55	04/19/18 17:49		
Naphthalene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	91-20-3	
2-Nitroaniline	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	88-74-4	
3-Nitroaniline	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	99-09-2	
4-Nitroaniline	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	100-01-6	
Nitrobenzene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	98-95-3	
2-Nitrophenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	88-75-5	
4-Nitrophenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	86-30-6	
Pentachlorophenol	ND	ug/kg	928	1	04/13/18 17:55	04/19/18 17:49	87-86-5	
Phenanthrene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	85-01-8	
Phenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	108-95-2	
Pyrene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	457	1	04/13/18 17:55	04/19/18 17:49	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	68	%.	43-125	1	04/13/18 17:55	04/19/18 17:49	4165-60-0	
2-Fluorobiphenyl (S)	70	%.	30-132	1	04/13/18 17:55	04/19/18 17:49	321-60-8	
p-Terphenyl-d14 (S)	83	%.	62-125	1	04/13/18 17:55	04/19/18 17:49	1718-51-0	
Phenol-d6 (S)	70	%.	48-125	1	04/13/18 17:55	04/19/18 17:49	13127-88-3	
2-Fluorophenol (S)	68	%.	40-125	1	04/13/18 17:55	04/19/18 17:49	367-12-4	
2,4,6-Tribromophenol (S)	70	%.	60-125	1	04/13/18 17:55	04/19/18 17:49	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	83-32-9	
Acenaphthylene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	208-96-8	
Anthracene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	120-12-7	
Benzo(a)anthracene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	56-55-3	
Benzo(a)pyrene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	50-32-8	
Benzo(b)fluoranthene	**16.7**	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	207-08-9	
Chrysene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	53-70-3	
Fluoranthene	**19.2**	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	206-44-0	
Fluorene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	193-39-5	
Naphthalene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	91-20-3	
Phenanthrene	ND	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	85-01-8	
Pyrene	**16.7**	ug/kg	13.8	1	04/13/18 17:54	04/17/18 14:58	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	71	%.	42-125	1	04/13/18 17:54	04/17/18 14:58	321-60-8	
p-Terphenyl-d14 (S)	77	%.	57-125	1	04/13/18 17:54	04/17/18 14:58	1718-51-0	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-05 (4-9 WM) **Lab ID: 10427291003** Collected: 04/12/18 09:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1440	1	04/24/18 10:23	04/24/18 19:24	67-64-1	
Allyl chloride	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	107-05-1	
Benzene	ND	ug/kg	28.7	1	04/24/18 10:23	04/24/18 19:24	71-43-2	
Bromobenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	108-86-1	
Bromochloromethane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	74-97-5	
Bromodichloromethane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	75-27-4	
Bromoform	ND	ug/kg	718	1	04/24/18 10:23	04/24/18 19:24	75-25-2	
Bromomethane	ND	ug/kg	718	1	04/24/18 10:23	04/24/18 19:24	74-83-9	
2-Butanone (MEK)	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:24	78-93-3	
n-Butylbenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	104-51-8	
sec-Butylbenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	135-98-8	
tert-Butylbenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	98-06-6	
Carbon tetrachloride	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	56-23-5	
Chlorobenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	108-90-7	
Chloroethane	ND	ug/kg	718	1	04/24/18 10:23	04/24/18 19:24	75-00-3	
Chloroform	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	67-66-3	
Chloromethane	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	74-87-3	
2-Chlorotoluene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	95-49-8	
4-Chlorotoluene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	718	1	04/24/18 10:23	04/24/18 19:24	96-12-8	
Dibromochloromethane	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	106-93-4	
Dibromomethane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	75-71-8	
1,1-Dichloroethane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	75-34-3	
1,2-Dichloroethane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	107-06-2	
1,1-Dichloroethene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	156-60-5	
Dichlorofluoromethane	ND	ug/kg	718	1	04/24/18 10:23	04/24/18 19:24	75-43-4	
1,2-Dichloropropane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	78-87-5	
1,3-Dichloropropane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	142-28-9	
2,2-Dichloropropane	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	594-20-7	
1,1-Dichloropropene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	60-29-7	
Ethylbenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:24	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	98-82-8	
p-Isopropyltoluene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	99-87-6	
Methylene Chloride	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:24	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-05 (4-9 WM) **Lab ID: 10427291003** Collected: 04/12/18 09:45 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	1634-04-4	
Naphthalene	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	91-20-3	
n-Propylbenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	103-65-1	
Styrene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	79-34-5	
Tetrachloroethene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	127-18-4	
Tetrahydrofuran	ND	ug/kg	2870	1	04/24/18 10:23	04/24/18 19:24	109-99-9	
Toluene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	79-00-5	
Trichloroethene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	79-01-6	
Trichlorofluoromethane	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 19:24	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	71.8	1	04/24/18 10:23	04/24/18 19:24	108-67-8	
Vinyl chloride	ND	ug/kg	28.7	1	04/24/18 10:23	04/24/18 19:24	75-01-4	
Xylene (Total)	ND	ug/kg	216	1	04/24/18 10:23	04/24/18 19:24	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/24/18 10:23	04/24/18 19:24	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	04/24/18 10:23	04/24/18 19:24	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	04/24/18 10:23	04/24/18 19:24	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	14.0	5	04/23/18 11:09	04/24/18 13:02	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**42.6**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.47	1	04/20/18 10:25	04/20/18 14:01	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**4.3**	mg/kg	0.98	1	04/18/18 14:45	04/19/18 23:44	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-06 (2-5 WM) **Lab ID: 10427291004** Collected: 04/12/18 11:40 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	14.6	1	04/25/18 10:56	04/27/18 16:34	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	309-00-2	
alpha-BHC	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	319-84-6	
beta-BHC	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	319-85-7	
delta-BHC	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	58-89-9	
Chlordane (Technical)	ND	ug/kg	27.6	1	04/16/18 10:57	04/20/18 02:33	57-74-9	
alpha-Chlordane	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	5103-71-9	
gamma-Chlordane	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	5103-74-2	
4,4'-DDD	ND	ug/kg	5.5	1	04/16/18 10:57	04/20/18 02:33	72-54-8	
4,4'-DDE	ND	ug/kg	5.5	1	04/16/18 10:57	04/20/18 02:33	72-55-9	
4,4'-DDT	ND	ug/kg	5.5	1	04/16/18 10:57	04/20/18 02:33	50-29-3	
Dieldrin	ND	ug/kg	5.5	1	04/16/18 10:57	04/20/18 02:33	60-57-1	
Endosulfan I	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	959-98-8	
Endosulfan II	ND	ug/kg	5.5	1	04/16/18 10:57	04/20/18 02:33	33213-65-9	
Endosulfan sulfate	ND	ug/kg	5.5	1	04/16/18 10:57	04/20/18 02:33	1031-07-8	
Endrin	ND	ug/kg	5.5	1	04/16/18 10:57	04/20/18 02:33	72-20-8	
Endrin aldehyde	ND	ug/kg	5.5	1	04/16/18 10:57	04/20/18 02:33	7421-93-4	
Endrin ketone	ND	ug/kg	5.5	1	04/16/18 10:57	04/20/18 02:33	53494-70-5	
Heptachlor	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	76-44-8	
Heptachlor epoxide	ND	ug/kg	2.8	1	04/16/18 10:57	04/20/18 02:33	1024-57-3	
Methoxychlor	ND	ug/kg	27.6	1	04/16/18 10:57	04/20/18 02:33	72-43-5	
Toxaphene	ND	ug/kg	82.7	1	04/16/18 10:57	04/20/18 02:33	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	96	%.	30-150	1	04/16/18 10:57	04/20/18 02:33	877-09-8	
Decachlorobiphenyl (S)	86	%.	30-150	1	04/16/18 10:57	04/20/18 02:33	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	11097-69-1	
PCB-1260 (Aroclor 1260)	**118**	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	11100-14-4	
PCB, Total	**118**	ug/kg	54.6	1	04/13/18 19:35	04/16/18 21:33	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	83	%.	48-125	1	04/13/18 19:35	04/16/18 21:33	877-09-8	
Decachlorobiphenyl (S)	76	%.	30-134	1	04/13/18 19:35	04/16/18 21:33	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**119**	mg/kg	14.2	1	04/16/18 14:24	04/19/18 18:48		T6

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-06 (2-5 WM) **Lab ID: 10427291004** Collected: 04/12/18 11:40 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	94	%.	50-150	1	04/16/18 14:24	04/19/18 18:48	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	17.4	1	04/24/18 13:27	04/25/18 01:33		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/24/18 13:27	04/25/18 01:33	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**29600**	mg/kg	16.3	1	04/18/18 09:37	04/21/18 19:45	7429-90-5	
Barium	**138**	mg/kg	0.81	1	04/18/18 09:37	04/21/18 19:45	7440-39-3	
Boron	**192**	mg/kg	12.2	1	04/18/18 09:37	04/21/18 19:45	7440-42-8	
Copper	**1660**	mg/kg	0.81	1	04/18/18 09:37	04/21/18 19:45	7440-50-8	
Iron	**31800**	mg/kg	20.3	5	04/18/18 09:37	04/24/18 18:44	7439-89-6	
Manganese	**251**	mg/kg	0.41	1	04/18/18 09:37	04/21/18 19:45	7439-96-5	
Nickel	**489**	mg/kg	1.6	1	04/18/18 09:37	04/21/18 19:45	7440-02-0	
Silver	ND	mg/kg	0.81	1	04/18/18 09:37	04/21/18 19:45	7440-22-4	
Tin	**29.9**	mg/kg	6.1	1	04/18/18 09:37	04/21/18 19:45	7440-31-5	
Titanium	**405**	mg/kg	2.0	1	04/18/18 09:37	04/21/18 19:45	7440-32-6	
Zinc	**320**	mg/kg	1.6	1	04/18/18 09:37	04/21/18 19:45	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**38.5**	mg/kg	1.5	5	04/20/18 09:20	04/21/18 01:57	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**0.99**	mg/kg	0.81	20	04/16/18 08:41	04/16/18 15:41	7440-36-0	
Arsenic	**18.3**	mg/kg	0.81	20	04/16/18 08:41	04/16/18 15:41	7440-38-2	
Beryllium	**2.4**	mg/kg	0.33	20	04/16/18 08:41	04/16/18 15:41	7440-41-7	
Cadmium	**2.1**	mg/kg	0.13	20	04/16/18 08:41	04/16/18 15:41	7440-43-9	
Cobalt	**7.2**	mg/kg	0.81	20	04/16/18 08:41	04/16/18 15:41	7440-48-4	
Lead	**75.8**	mg/kg	0.16	20	04/16/18 08:41	04/16/18 15:41	7439-92-1	
Lithium	**9.9**	mg/kg	0.81	20	04/16/18 08:41	04/16/18 15:41	7439-93-2	
Selenium	**3.7**	mg/kg	0.81	20	04/16/18 08:41	04/16/18 15:41	7782-49-2	
Strontium	**51.0**	mg/kg	0.81	20	04/16/18 08:41	04/16/18 15:41	7440-24-6	
Vanadium	**69.5**	mg/kg	1.6	20	04/16/18 08:41	04/16/18 15:41	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**1.7**	mg/kg	0.062	2	04/18/18 09:38	04/19/18 18:42	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**39.7**	%	0.10	1		04/19/18 15:12		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	83-32-9	
Acenaphthylene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-06 (2-5 WM) **Lab ID: 10427291004** Collected: 04/12/18 11:40 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	120-12-7	
Benzo(a)anthracene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	56-55-3	
Benzo(a)pyrene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	101-55-3	
Butylbenzylphthalate	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	85-68-7	
Carbazole	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	59-50-7	
4-Chloroaniline	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	108-60-1	
2-Chloronaphthalene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	91-58-7	
2-Chlorophenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	7005-72-3	
Chrysene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	53-70-3	
Dibenzofuran	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	120-83-2	
Diethylphthalate	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	105-67-9	
Dimethylphthalate	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	131-11-3	
Di-n-butylphthalate	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2810	1	04/20/18 12:55	04/24/18 15:57	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	606-20-2	
Di-n-octylphthalate	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	117-81-7	
Fluoranthene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	206-44-0	
Fluorene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	87-68-3	
Hexachlorobenzene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	118-74-1	
Hexachloroethane	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	193-39-5	
Isophorone	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	78-59-1	
1-Methylnaphthalene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	90-12-0	
2-Methylnaphthalene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-06 (2-5 WM) **Lab ID: 10427291004** Collected: 04/12/18 11:40 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1090	1	04/20/18 12:55	04/24/18 15:57		
Naphthalene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	91-20-3	
2-Nitroaniline	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	88-74-4	
3-Nitroaniline	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	99-09-2	
4-Nitroaniline	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	100-01-6	
Nitrobenzene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	98-95-3	
2-Nitrophenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	88-75-5	
4-Nitrophenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	86-30-6	
Pentachlorophenol	ND	ug/kg	1110	1	04/20/18 12:55	04/24/18 15:57	87-86-5	
Phenanthrene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	85-01-8	
Phenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	108-95-2	
Pyrene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	546	1	04/20/18 12:55	04/24/18 15:57	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	51	%.	43-125	1	04/20/18 12:55	04/24/18 15:57	4165-60-0	
2-Fluorobiphenyl (S)	61	%.	30-132	1	04/20/18 12:55	04/24/18 15:57	321-60-8	
p-Terphenyl-d14 (S)	90	%.	62-125	1	04/20/18 12:55	04/24/18 15:57	1718-51-0	
Phenol-d6 (S)	54	%.	48-125	1	04/20/18 12:55	04/24/18 15:57	13127-88-3	
2-Fluorophenol (S)	52	%.	40-125	1	04/20/18 12:55	04/24/18 15:57	367-12-4	
2,4,6-Tribromophenol (S)	81	%.	60-125	1	04/20/18 12:55	04/24/18 15:57	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	83-32-9	
Acenaphthylene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	208-96-8	
Anthracene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	120-12-7	
Benzo(a)anthracene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	56-55-3	
Benzo(a)pyrene	**17.9**	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	50-32-8	
Benzo(b)fluoranthene	**23.1**	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	207-08-9	
Chrysene	**21.9**	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	53-70-3	
Fluoranthene	**18.6**	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	206-44-0	
Fluorene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	193-39-5	
Naphthalene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	91-20-3	
Phenanthrene	ND	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	85-01-8	
Pyrene	**23.8**	ug/kg	16.5	1	04/13/18 17:54	04/16/18 20:27	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	72	%.	42-125	1	04/13/18 17:54	04/16/18 20:27	321-60-8	
p-Terphenyl-d14 (S)	79	%.	57-125	1	04/13/18 17:54	04/16/18 20:27	1718-51-0	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-06 (2-5 WM) **Lab ID: 10427291004** Collected: 04/12/18 11:40 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1800	1	04/24/18 10:23	04/24/18 19:41	67-64-1	
Allyl chloride	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	107-05-1	
Benzene	ND	ug/kg	35.9	1	04/24/18 10:23	04/24/18 19:41	71-43-2	
Bromobenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	108-86-1	
Bromochloromethane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	74-97-5	
Bromodichloromethane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	75-27-4	
Bromoform	ND	ug/kg	898	1	04/24/18 10:23	04/24/18 19:41	75-25-2	
Bromomethane	ND	ug/kg	898	1	04/24/18 10:23	04/24/18 19:41	74-83-9	
2-Butanone (MEK)	ND	ug/kg	449	1	04/24/18 10:23	04/24/18 19:41	78-93-3	
n-Butylbenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	104-51-8	
sec-Butylbenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	135-98-8	
tert-Butylbenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	98-06-6	
Carbon tetrachloride	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	56-23-5	
Chlorobenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	108-90-7	
Chloroethane	ND	ug/kg	898	1	04/24/18 10:23	04/24/18 19:41	75-00-3	
Chloroform	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	67-66-3	
Chloromethane	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	74-87-3	
2-Chlorotoluene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	95-49-8	
4-Chlorotoluene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	898	1	04/24/18 10:23	04/24/18 19:41	96-12-8	
Dibromochloromethane	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	106-93-4	
Dibromomethane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	75-71-8	
1,1-Dichloroethane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	75-34-3	
1,2-Dichloroethane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	107-06-2	
1,1-Dichloroethene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	156-60-5	
Dichlorofluoromethane	ND	ug/kg	898	1	04/24/18 10:23	04/24/18 19:41	75-43-4	
1,2-Dichloropropane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	78-87-5	
1,3-Dichloropropane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	142-28-9	
2,2-Dichloropropane	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	594-20-7	
1,1-Dichloropropene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	60-29-7	
Ethylbenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	449	1	04/24/18 10:23	04/24/18 19:41	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	98-82-8	
p-Isopropyltoluene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	99-87-6	
Methylene Chloride	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	449	1	04/24/18 10:23	04/24/18 19:41	108-10-1	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-06 (2-5 WM) **Lab ID: 10427291004** Collected: 04/12/18 11:40 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	1634-04-4	
Naphthalene	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	91-20-3	
n-Propylbenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	103-65-1	
Styrene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	79-34-5	
Tetrachloroethene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	127-18-4	
Tetrahydrofuran	ND	ug/kg	3590	1	04/24/18 10:23	04/24/18 19:41	109-99-9	
Toluene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	79-00-5	
Trichloroethene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	79-01-6	
Trichlorofluoromethane	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	359	1	04/24/18 10:23	04/24/18 19:41	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	89.8	1	04/24/18 10:23	04/24/18 19:41	108-67-8	
Vinyl chloride	ND	ug/kg	35.9	1	04/24/18 10:23	04/24/18 19:41	75-01-4	
Xylene (Total)	ND	ug/kg	269	1	04/24/18 10:23	04/24/18 19:41	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1	04/24/18 10:23	04/24/18 19:41	17060-07-0	
Toluene-d8 (S)	95	%.	75-125	1	04/24/18 10:23	04/24/18 19:41	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	04/24/18 10:23	04/24/18 19:41	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	66.9	20	04/23/18 11:09	04/24/18 13:02	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**38.5**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.67**	mg/kg	0.52	1	04/20/18 10:25	04/20/18 14:01	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.4**	mg/kg	1.0	1	04/18/18 14:45	04/19/18 16:34	16984-48-8	M1

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-07 (6-11 WM) **Lab ID: 10427291005** Collected: 04/12/18 13:00 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	14.2	1	04/25/18 10:56	04/27/18 16:54	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	309-00-2	
alpha-BHC	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	319-84-6	
beta-BHC	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	319-85-7	
delta-BHC	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	58-89-9	
Chlordane (Technical)	ND	ug/kg	116	5	04/16/18 10:57	04/20/18 04:41	57-74-9	
alpha-Chlordane	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	5103-71-9	
gamma-Chlordane	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	5103-74-2	
4,4'-DDD	ND	ug/kg	23.0	5	04/16/18 10:57	04/20/18 04:41	72-54-8	
4,4'-DDE	ND	ug/kg	23.0	5	04/16/18 10:57	04/20/18 04:41	72-55-9	
4,4'-DDT	ND	ug/kg	23.0	5	04/16/18 10:57	04/20/18 04:41	50-29-3	
Dieldrin	ND	ug/kg	23.0	5	04/16/18 10:57	04/20/18 04:41	60-57-1	
Endosulfan I	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	959-98-8	
Endosulfan II	ND	ug/kg	23.0	5	04/16/18 10:57	04/20/18 04:41	33213-65-9	
Endosulfan sulfate	ND	ug/kg	23.0	5	04/16/18 10:57	04/20/18 04:41	1031-07-8	
Endrin	ND	ug/kg	23.0	5	04/16/18 10:57	04/20/18 04:41	72-20-8	
Endrin aldehyde	ND	ug/kg	23.0	5	04/16/18 10:57	04/20/18 04:41	7421-93-4	
Endrin ketone	ND	ug/kg	23.0	5	04/16/18 10:57	04/20/18 04:41	53494-70-5	
Heptachlor	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	76-44-8	
Heptachlor epoxide	ND	ug/kg	11.6	5	04/16/18 10:57	04/20/18 04:41	1024-57-3	
Methoxychlor	ND	ug/kg	116	5	04/16/18 10:57	04/20/18 04:41	72-43-5	
Toxaphene	ND	ug/kg	346	5	04/16/18 10:57	04/20/18 04:41	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	96	%.	30-150	5	04/16/18 10:57	04/20/18 04:41	877-09-8	4M,D3
Decachlorobiphenyl (S)	100	%.	30-150	5	04/16/18 10:57	04/20/18 04:41	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 19:42	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 19:42	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 19:42	11141-16-5	
PCB-1242 (Aroclor 1242)	**3430**	ug/kg	229	5	04/13/18 19:35	04/17/18 09:17	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 19:42	12672-29-6	
PCB-1254 (Aroclor 1254)	**355**	ug/kg	45.8	1	04/13/18 19:35	04/16/18 19:42	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 19:42	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 19:42	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	45.8	1	04/13/18 19:35	04/16/18 19:42	11100-14-4	
PCB, Total	**3780**	ug/kg	229	5	04/13/18 19:35	04/17/18 09:17	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	79	%.	48-125	1	04/13/18 19:35	04/16/18 19:42	877-09-8	
Decachlorobiphenyl (S)	71	%.	30-134	1	04/13/18 19:35	04/16/18 19:42	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**497**	mg/kg	54.9	5	04/16/18 14:24	04/20/18 09:20		T6

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-07 (6-11 WM) **Lab ID: 10427291005** Collected: 04/12/18 13:00 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	160	%.	50-150	5	04/16/18 14:24	04/20/18 09:20	638-68-6	S5
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	14.3	1	04/24/18 13:27	04/25/18 01:57		
Surrogates								
a,a,a-Trifluorotoluene (S)	97	%.	80-150	1	04/24/18 13:27	04/25/18 01:57	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**7160**	mg/kg	13.0	1	04/18/18 09:37	04/21/18 19:49	7429-90-5	
Barium	**144**	mg/kg	0.65	1	04/18/18 09:37	04/21/18 19:49	7440-39-3	
Boron	**95.1**	mg/kg	9.7	1	04/18/18 09:37	04/21/18 19:49	7440-42-8	
Copper	**507**	mg/kg	0.65	1	04/18/18 09:37	04/21/18 19:49	7440-50-8	
Iron	**61000**	mg/kg	32.4	10	04/18/18 09:37	04/24/18 18:47	7439-89-6	
Manganese	**447**	mg/kg	0.32	1	04/18/18 09:37	04/21/18 19:49	7439-96-5	
Nickel	**45.5**	mg/kg	1.3	1	04/18/18 09:37	04/21/18 19:49	7440-02-0	
Silver	**1.0**	mg/kg	0.65	1	04/18/18 09:37	04/21/18 19:49	7440-22-4	
Tin	**83.4**	mg/kg	4.9	1	04/18/18 09:37	04/21/18 19:49	7440-31-5	
Titanium	**312**	mg/kg	1.6	1	04/18/18 09:37	04/21/18 19:49	7440-32-6	
Zinc	**553**	mg/kg	1.3	1	04/18/18 09:37	04/21/18 19:49	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**54.4**	mg/kg	1.3	5	04/20/18 09:20	04/21/18 02:02	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**3.9**	mg/kg	0.66	20	04/16/18 08:41	04/16/18 15:53	7440-36-0	
Arsenic	**12.6**	mg/kg	0.66	20	04/16/18 08:41	04/16/18 15:53	7440-38-2	
Beryllium	**1.3**	mg/kg	0.26	20	04/16/18 08:41	04/16/18 15:53	7440-41-7	
Cadmium	**2.7**	mg/kg	0.11	20	04/16/18 08:41	04/16/18 15:53	7440-43-9	
Cobalt	**8.4**	mg/kg	0.66	20	04/16/18 08:41	04/16/18 15:53	7440-48-4	
Lead	**338**	mg/kg	0.13	20	04/16/18 08:41	04/16/18 15:53	7439-92-1	
Lithium	**9.4**	mg/kg	0.66	20	04/16/18 08:41	04/16/18 15:53	7439-93-2	
Selenium	**2.4**	mg/kg	0.66	20	04/16/18 08:41	04/16/18 15:53	7782-49-2	
Strontium	**124**	mg/kg	0.66	20	04/16/18 08:41	04/16/18 15:53	7440-24-6	
Vanadium	**41.4**	mg/kg	1.3	20	04/16/18 08:41	04/16/18 15:53	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**1.0**	mg/kg	0.024	1	04/18/18 09:38	04/19/18 18:29	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**28.0**	%	0.10	1		04/19/18 15:13		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	83-32-9	
Acenaphthylene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-07 (6-11 WM) **Lab ID: 10427291005** Collected: 04/12/18 13:00 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	120-12-7	
Benzo(a)anthracene	**667**	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	56-55-3	
Benzo(a)pyrene	**667**	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	50-32-8	
Benzo(b)fluoranthene	**895**	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	205-99-2	
Benzo(g,h,i)perylene	**459**	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	101-55-3	
Butylbenzylphthalate	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	85-68-7	
Carbazole	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	59-50-7	
4-Chloroaniline	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	108-60-1	
2-Chloronaphthalene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	91-58-7	
2-Chlorophenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	7005-72-3	
Chrysene	**715**	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	53-70-3	
Dibenzofuran	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	120-83-2	
Diethylphthalate	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	105-67-9	
Dimethylphthalate	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	131-11-3	
Di-n-butylphthalate	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2360	1	04/13/18 17:55	04/19/18 22:04	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	606-20-2	
Di-n-octylphthalate	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	122-66-7	
bis(2-Ethylhexyl)phthalate	**5580**	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	117-81-7	
Fluoranthene	**996**	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	206-44-0	
Fluorene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	87-68-3	
Hexachlorobenzene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	118-74-1	
Hexachloroethane	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	193-39-5	
Isophorone	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	78-59-1	
1-Methylnaphthalene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	90-12-0	
2-Methylnaphthalene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	95-48-7	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-07 (6-11 WM) **Lab ID: 10427291005** Collected: 04/12/18 13:00 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	916	1	04/13/18 17:55	04/19/18 22:04		
Naphthalene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	91-20-3	
2-Nitroaniline	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	88-74-4	
3-Nitroaniline	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	99-09-2	
4-Nitroaniline	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	100-01-6	
Nitrobenzene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	98-95-3	
2-Nitrophenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	88-75-5	
4-Nitrophenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	86-30-6	
Pentachlorophenol	ND	ug/kg	930	1	04/13/18 17:55	04/19/18 22:04	87-86-5	
Phenanthrene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	85-01-8	
Phenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	108-95-2	
Pyrene	**955**	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	458	1	04/13/18 17:55	04/19/18 22:04	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	58	%.	43-125	1	04/13/18 17:55	04/19/18 22:04	4165-60-0	
2-Fluorobiphenyl (S)	63	%.	30-132	1	04/13/18 17:55	04/19/18 22:04	321-60-8	
p-Terphenyl-d14 (S)	78	%.	62-125	1	04/13/18 17:55	04/19/18 22:04	1718-51-0	
Phenol-d6 (S)	61	%.	48-125	1	04/13/18 17:55	04/19/18 22:04	13127-88-3	
2-Fluorophenol (S)	60	%.	40-125	1	04/13/18 17:55	04/19/18 22:04	367-12-4	
2,4,6-Tribromophenol (S)	66	%.	60-125	1	04/13/18 17:55	04/19/18 22:04	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**55.3**	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	83-32-9	
Acenaphthylene	ND	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	208-96-8	
Anthracene	**274**	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	120-12-7	
Benzo(a)anthracene	**1150**	ug/kg	139	10	04/13/18 17:54	04/18/18 13:15	56-55-3	
Benzo(a)pyrene	**1150**	ug/kg	139	10	04/13/18 17:54	04/18/18 13:15	50-32-8	
Benzo(b)fluoranthene	**1540**	ug/kg	139	10	04/13/18 17:54	04/18/18 13:15	205-99-2	
Benzo(g,h,i)perylene	**561**	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	191-24-2	
Benzo(k)fluoranthene	**602**	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	207-08-9	
Chrysene	**1150**	ug/kg	139	10	04/13/18 17:54	04/18/18 13:15	218-01-9	
Dibenz(a,h)anthracene	**200**	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	53-70-3	
Fluoranthene	**2240**	ug/kg	139	10	04/13/18 17:54	04/18/18 13:15	206-44-0	
Fluorene	**65.4**	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	86-73-7	
Indeno(1,2,3-cd)pyrene	**620**	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	193-39-5	
Naphthalene	ND	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	91-20-3	
Phenanthrene	**790**	ug/kg	27.7	2	04/13/18 17:54	04/17/18 15:59	85-01-8	
Pyrene	**1810**	ug/kg	139	10	04/13/18 17:54	04/18/18 13:15	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	87	%.	42-125	2	04/13/18 17:54	04/17/18 15:59	321-60-8	D3
p-Terphenyl-d14 (S)	96	%.	57-125	2	04/13/18 17:54	04/17/18 15:59	1718-51-0	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-07 (6-11 WM) **Lab ID: 10427291005** Collected: 04/12/18 13:00 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1750	1	04/24/18 10:23	04/24/18 19:58	67-64-1	
Allyl chloride	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	107-05-1	
Benzene	ND	ug/kg	35.0	1	04/24/18 10:23	04/24/18 19:58	71-43-2	
Bromobenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	108-86-1	
Bromochloromethane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	74-97-5	
Bromodichloromethane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	75-27-4	
Bromoform	ND	ug/kg	874	1	04/24/18 10:23	04/24/18 19:58	75-25-2	
Bromomethane	ND	ug/kg	874	1	04/24/18 10:23	04/24/18 19:58	74-83-9	
2-Butanone (MEK)	ND	ug/kg	437	1	04/24/18 10:23	04/24/18 19:58	78-93-3	
n-Butylbenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	104-51-8	
sec-Butylbenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	135-98-8	
tert-Butylbenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	98-06-6	
Carbon tetrachloride	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	56-23-5	
Chlorobenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	108-90-7	
Chloroethane	ND	ug/kg	874	1	04/24/18 10:23	04/24/18 19:58	75-00-3	
Chloroform	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	67-66-3	
Chloromethane	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	74-87-3	
2-Chlorotoluene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	95-49-8	
4-Chlorotoluene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	874	1	04/24/18 10:23	04/24/18 19:58	96-12-8	
Dibromochloromethane	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	106-93-4	
Dibromomethane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	75-71-8	
1,1-Dichloroethane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	75-34-3	
1,2-Dichloroethane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	107-06-2	
1,1-Dichloroethene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	156-60-5	
Dichlorofluoromethane	ND	ug/kg	874	1	04/24/18 10:23	04/24/18 19:58	75-43-4	
1,2-Dichloropropane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	78-87-5	
1,3-Dichloropropane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	142-28-9	
2,2-Dichloropropane	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	594-20-7	
1,1-Dichloropropene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	60-29-7	
Ethylbenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	437	1	04/24/18 10:23	04/24/18 19:58	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	98-82-8	
p-Isopropyltoluene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	99-87-6	
Methylene Chloride	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	437	1	04/24/18 10:23	04/24/18 19:58	108-10-1	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-07 (6-11 WM) **Lab ID: 10427291005** Collected: 04/12/18 13:00 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	1634-04-4	
Naphthalene	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	91-20-3	
n-Propylbenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	103-65-1	
Styrene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	79-34-5	
Tetrachloroethene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	127-18-4	
Tetrahydrofuran	ND	ug/kg	3500	1	04/24/18 10:23	04/24/18 19:58	109-99-9	
Toluene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	79-00-5	
Trichloroethene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	79-01-6	
Trichlorofluoromethane	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	350	1	04/24/18 10:23	04/24/18 19:58	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	87.4	1	04/24/18 10:23	04/24/18 19:58	108-67-8	
Vinyl chloride	ND	ug/kg	35.0	1	04/24/18 10:23	04/24/18 19:58	75-01-4	
Xylene (Total)	ND	ug/kg	262	1	04/24/18 10:23	04/24/18 19:58	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/24/18 10:23	04/24/18 19:58	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/24/18 10:23	04/24/18 19:58	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1	04/24/18 10:23	04/24/18 19:58	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	54.0	20	04/23/18 11:09	04/24/18 13:03	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**54.4**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.85**	mg/kg	0.45	1	04/25/18 11:00	04/25/18 13:19	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	04/18/18 14:45	04/19/18 22:26	16984-48-8	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-08 (5-12 WM) **Lab ID: 10427291006** Collected: 04/12/18 14:30 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.5	1	04/25/18 10:56	04/27/18 17:00	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	309-00-2	
alpha-BHC	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	319-84-6	
beta-BHC	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	319-85-7	
delta-BHC	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	58-89-9	
Chlordane (Technical)	ND	ug/kg	107	5	04/16/18 10:57	04/20/18 04:59	57-74-9	
alpha-Chlordane	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	5103-71-9	
gamma-Chlordane	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	5103-74-2	
4,4'-DDD	ND	ug/kg	21.3	5	04/16/18 10:57	04/20/18 04:59	72-54-8	
4,4'-DDE	ND	ug/kg	21.3	5	04/16/18 10:57	04/20/18 04:59	72-55-9	
4,4'-DDT	**22.9**	ug/kg	21.3	5	04/16/18 10:57	04/20/18 04:59	50-29-3	
Dieldrin	**29.7**	ug/kg	21.3	5	04/16/18 10:57	04/20/18 04:59	60-57-1	
Endosulfan I	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	959-98-8	
Endosulfan II	ND	ug/kg	21.3	5	04/16/18 10:57	04/20/18 04:59	33213-65-9	
Endosulfan sulfate	ND	ug/kg	21.3	5	04/16/18 10:57	04/20/18 04:59	1031-07-8	
Endrin	ND	ug/kg	21.3	5	04/16/18 10:57	04/20/18 04:59	72-20-8	
Endrin aldehyde	ND	ug/kg	21.3	5	04/16/18 10:57	04/20/18 04:59	7421-93-4	
Endrin ketone	ND	ug/kg	21.3	5	04/16/18 10:57	04/20/18 04:59	53494-70-5	
Heptachlor	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	76-44-8	
Heptachlor epoxide	ND	ug/kg	10.7	5	04/16/18 10:57	04/20/18 04:59	1024-57-3	
Methoxychlor	ND	ug/kg	107	5	04/16/18 10:57	04/20/18 04:59	72-43-5	
Toxaphene	ND	ug/kg	319	5	04/16/18 10:57	04/20/18 04:59	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	89	%.	30-150	5	04/16/18 10:57	04/20/18 04:59	877-09-8	4M,D4
Decachlorobiphenyl (S)	84	%.	30-150	5	04/16/18 10:57	04/20/18 04:59	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	42.2	1	04/13/18 19:35	04/16/18 19:58	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	42.2	1	04/13/18 19:35	04/16/18 19:58	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	42.2	1	04/13/18 19:35	04/16/18 19:58	11141-16-5	
PCB-1242 (Aroclor 1242)	**2380**	ug/kg	84.4	2	04/13/18 19:35	04/17/18 09:32	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	42.2	1	04/13/18 19:35	04/16/18 19:58	12672-29-6	
PCB-1254 (Aroclor 1254)	**504**	ug/kg	42.2	1	04/13/18 19:35	04/16/18 19:58	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	42.2	1	04/13/18 19:35	04/16/18 19:58	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	42.2	1	04/13/18 19:35	04/16/18 19:58	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	42.2	1	04/13/18 19:35	04/16/18 19:58	11100-14-4	
PCB, Total	**2880**	ug/kg	84.4	2	04/13/18 19:35	04/17/18 09:32	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	74	%.	48-125	1	04/13/18 19:35	04/16/18 19:58	877-09-8	
Decachlorobiphenyl (S)	74	%.	30-134	1	04/13/18 19:35	04/16/18 19:58	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**825**	mg/kg	136	10	04/16/18 14:24	04/20/18 09:27		T6

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-08 (5-12 WM) **Lab ID: 10427291006** Collected: 04/12/18 14:30 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/16/18 14:24	04/20/18 09:27	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	15.6	1	04/24/18 13:27	04/25/18 02:21		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/24/18 13:27	04/25/18 02:21	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**9940**	mg/kg	12.4	1	04/18/18 09:37	04/21/18 19:53	7429-90-5	
Barium	**156**	mg/kg	0.62	1	04/18/18 09:37	04/21/18 19:53	7440-39-3	
Boron	**138**	mg/kg	9.3	1	04/18/18 09:37	04/21/18 19:53	7440-42-8	
Copper	**193**	mg/kg	0.62	1	04/18/18 09:37	04/21/18 19:53	7440-50-8	
Iron	**53400**	mg/kg	31.0	10	04/18/18 09:37	04/24/18 18:50	7439-89-6	
Manganese	**382**	mg/kg	0.31	1	04/18/18 09:37	04/21/18 19:53	7439-96-5	
Nickel	**41.1**	mg/kg	1.2	1	04/18/18 09:37	04/21/18 19:53	7440-02-0	
Silver	ND	mg/kg	0.62	1	04/18/18 09:37	04/21/18 19:53	7440-22-4	
Tin	**50.1**	mg/kg	4.7	1	04/18/18 09:37	04/21/18 19:53	7440-31-5	
Titanium	**327**	mg/kg	1.6	1	04/18/18 09:37	04/21/18 19:53	7440-32-6	
Zinc	**365**	mg/kg	1.2	1	04/18/18 09:37	04/21/18 19:53	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**109**	mg/kg	1.3	5	04/20/18 09:20	04/21/18 02:07	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**3.6**	mg/kg	0.61	20	04/16/18 08:41	04/16/18 15:46	7440-36-0	
Arsenic	**37.0**	mg/kg	0.61	20	04/16/18 08:41	04/16/18 15:46	7440-38-2	
Beryllium	**1.6**	mg/kg	0.24	20	04/16/18 08:41	04/16/18 15:46	7440-41-7	
Cadmium	**13.7**	mg/kg	0.097	20	04/16/18 08:41	04/16/18 15:46	7440-43-9	
Cobalt	**8.5**	mg/kg	0.61	20	04/16/18 08:41	04/16/18 15:46	7440-48-4	
Lead	**558**	mg/kg	0.61	100	04/16/18 08:41	04/17/18 12:38	7439-92-1	
Lithium	**7.8**	mg/kg	0.61	20	04/16/18 08:41	04/16/18 15:46	7439-93-2	
Selenium	**4.5**	mg/kg	0.61	20	04/16/18 08:41	04/16/18 15:46	7782-49-2	
Strontium	**69.9**	mg/kg	0.61	20	04/16/18 08:41	04/16/18 15:46	7440-24-6	
Vanadium	**96.5**	mg/kg	1.2	20	04/16/18 08:41	04/16/18 15:46	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.26**	mg/kg	0.024	1	04/18/18 09:38	04/19/18 18:31	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**21.8**	%	0.10	1		04/19/18 15:13		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	83-32-9	
Acenaphthylene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	208-96-8	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-08 (5-12 WM) **Lab ID: 10427291006** Collected: 04/12/18 14:30 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	120-12-7	
Benzo(a)anthracene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	56-55-3	
Benzo(a)pyrene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	101-55-3	
Butylbenzylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	85-68-7	
Carbazole	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	59-50-7	
4-Chloroaniline	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	108-60-1	
2-Chloronaphthalene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	91-58-7	
2-Chlorophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	7005-72-3	
Chrysene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	53-70-3	
Dibenzofuran	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	120-83-2	
Diethylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	105-67-9	
Dimethylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	131-11-3	
Di-n-butylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2170	1	04/13/18 17:55	04/19/18 18:46	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	606-20-2	
Di-n-octylphthalate	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	122-66-7	
bis(2-Ethylhexyl)phthalate	**1020**	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	117-81-7	
Fluoranthene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	206-44-0	
Fluorene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	87-68-3	
Hexachlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	118-74-1	
Hexachloroethane	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	193-39-5	
Isophorone	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	78-59-1	
1-Methylnaphthalene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	90-12-0	
2-Methylnaphthalene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-08 (5-12 WM) **Lab ID: 10427291006** Collected: 04/12/18 14:30 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	841	1	04/13/18 17:55	04/19/18 18:46		
Naphthalene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	91-20-3	
2-Nitroaniline	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	88-74-4	
3-Nitroaniline	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	99-09-2	
4-Nitroaniline	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	100-01-6	
Nitrobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	98-95-3	
2-Nitrophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	88-75-5	
4-Nitrophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	86-30-6	
Pentachlorophenol	ND	ug/kg	853	1	04/13/18 17:55	04/19/18 18:46	87-86-5	
Phenanthrene	**479**	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	85-01-8	
Phenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	108-95-2	
Pyrene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	420	1	04/13/18 17:55	04/19/18 18:46	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	56	%.	43-125	1	04/13/18 17:55	04/19/18 18:46	4165-60-0	
2-Fluorobiphenyl (S)	74	%.	30-132	1	04/13/18 17:55	04/19/18 18:46	321-60-8	
p-Terphenyl-d14 (S)	85	%.	62-125	1	04/13/18 17:55	04/19/18 18:46	1718-51-0	
Phenol-d6 (S)	64	%.	48-125	1	04/13/18 17:55	04/19/18 18:46	13127-88-3	
2-Fluorophenol (S)	54	%.	40-125	1	04/13/18 17:55	04/19/18 18:46	367-12-4	
2,4,6-Tribromophenol (S)	83	%.	60-125	1	04/13/18 17:55	04/19/18 18:46	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	83-32-9	
Acenaphthylene	ND	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	208-96-8	
Anthracene	**65.2**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	120-12-7	
Benzo(a)anthracene	**220**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	56-55-3	
Benzo(a)pyrene	**185**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	50-32-8	
Benzo(b)fluoranthene	**297**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	205-99-2	
Benzo(g,h,i)perylene	**123**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	191-24-2	
Benzo(k)fluoranthene	**98.6**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	207-08-9	
Chrysene	**352**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	53-70-3	
Fluoranthene	**365**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	206-44-0	
Fluorene	**118**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	86-73-7	
Indeno(1,2,3-cd)pyrene	**89.4**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	193-39-5	
Naphthalene	**76.3**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	91-20-3	
Phenanthrene	**506**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	85-01-8	
Pyrene	**399**	ug/kg	63.8	5	04/18/18 17:23	04/20/18 15:23	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	84	%.	42-125	5	04/18/18 17:23	04/20/18 15:23	321-60-8	
p-Terphenyl-d14 (S)	100	%.	57-125	5	04/18/18 17:23	04/20/18 15:23	1718-51-0	

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1700 Elm Street - Suite 200
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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-08 (5-12 WM) **Lab ID: 10427291006** Collected: 04/12/18 14:30 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1730	1	04/24/18 10:23	04/24/18 20:15	67-64-1	
Allyl chloride	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	107-05-1	
Benzene	**818**	ug/kg	34.5	1	04/24/18 10:23	04/24/18 20:15	71-43-2	
Bromobenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	108-86-1	
Bromochloromethane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	74-97-5	
Bromodichloromethane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	75-27-4	
Bromoform	ND	ug/kg	863	1	04/24/18 10:23	04/24/18 20:15	75-25-2	
Bromomethane	ND	ug/kg	863	1	04/24/18 10:23	04/24/18 20:15	74-83-9	
2-Butanone (MEK)	ND	ug/kg	432	1	04/24/18 10:23	04/24/18 20:15	78-93-3	
n-Butylbenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	104-51-8	
sec-Butylbenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	135-98-8	
tert-Butylbenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	98-06-6	
Carbon tetrachloride	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	56-23-5	
Chlorobenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	108-90-7	
Chloroethane	ND	ug/kg	863	1	04/24/18 10:23	04/24/18 20:15	75-00-3	
Chloroform	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	67-66-3	
Chloromethane	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	74-87-3	
2-Chlorotoluene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	95-49-8	
4-Chlorotoluene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	863	1	04/24/18 10:23	04/24/18 20:15	96-12-8	
Dibromochloromethane	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	106-93-4	
Dibromomethane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	75-71-8	
1,1-Dichloroethane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	75-34-3	
1,2-Dichloroethane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	107-06-2	
1,1-Dichloroethene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	156-60-5	
Dichlorofluoromethane	ND	ug/kg	863	1	04/24/18 10:23	04/24/18 20:15	75-43-4	
1,2-Dichloropropane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	78-87-5	
1,3-Dichloropropane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	142-28-9	
2,2-Dichloropropane	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	594-20-7	
1,1-Dichloropropene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	60-29-7	
Ethylbenzene	**510**	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	432	1	04/24/18 10:23	04/24/18 20:15	87-68-3	
Isopropylbenzene (Cumene)	**114**	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	98-82-8	
p-Isopropyltoluene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	99-87-6	
Methylene Chloride	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	432	1	04/24/18 10:23	04/24/18 20:15	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: FD-TT-08 (5-12 WM) **Lab ID: 10427291006** Collected: 04/12/18 14:30 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	1634-04-4	
Naphthalene	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	91-20-3	
n-Propylbenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	103-65-1	
Styrene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	79-34-5	
Tetrachloroethene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	127-18-4	
Tetrahydrofuran	ND	ug/kg	3450	1	04/24/18 10:23	04/24/18 20:15	109-99-9	
Toluene	**717**	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	79-00-5	
Trichloroethene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	79-01-6	
Trichlorofluoromethane	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	345	1	04/24/18 10:23	04/24/18 20:15	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	86.3	1	04/24/18 10:23	04/24/18 20:15	108-67-8	
Vinyl chloride	ND	ug/kg	34.5	1	04/24/18 10:23	04/24/18 20:15	75-01-4	
Xylene (Total)	**386**	ug/kg	259	1	04/24/18 10:23	04/24/18 20:15	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	04/24/18 10:23	04/24/18 20:15	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	04/24/18 10:23	04/24/18 20:15	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	04/24/18 10:23	04/24/18 20:15	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	50.4	20	04/23/18 11:09	04/24/18 13:03	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**109**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.39	1	04/25/18 11:00	04/25/18 13:20	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.3**	mg/kg	1.0	1	04/18/18 14:45	04/19/18 21:27	16984-48-8	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-01 (5-8 WM) **Lab ID: 10427291007** Collected: 04/12/18 17:20 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.6	1	04/25/18 10:56	04/27/18 17:07	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	309-00-2	
alpha-BHC	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	319-84-6	
beta-BHC	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	319-85-7	
delta-BHC	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	58-89-9	
Chlordane (Technical)	ND	ug/kg	1860	100	04/16/18 10:57	04/20/18 09:52	57-74-9	
alpha-Chlordane	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	5103-71-9	
gamma-Chlordane	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	5103-74-2	
4,4'-DDD	ND	ug/kg	371	100	04/16/18 10:57	04/20/18 09:52	72-54-8	
4,4'-DDE	ND	ug/kg	371	100	04/16/18 10:57	04/20/18 09:52	72-55-9	
4,4'-DDT	ND	ug/kg	371	100	04/16/18 10:57	04/20/18 09:52	50-29-3	
Dieldrin	ND	ug/kg	371	100	04/16/18 10:57	04/20/18 09:52	60-57-1	
Endosulfan I	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	959-98-8	
Endosulfan II	ND	ug/kg	371	100	04/16/18 10:57	04/20/18 09:52	33213-65-9	
Endosulfan sulfate	ND	ug/kg	371	100	04/16/18 10:57	04/20/18 09:52	1031-07-8	
Endrin	ND	ug/kg	371	100	04/16/18 10:57	04/20/18 09:52	72-20-8	
Endrin aldehyde	ND	ug/kg	371	100	04/16/18 10:57	04/20/18 09:52	7421-93-4	
Endrin ketone	ND	ug/kg	371	100	04/16/18 10:57	04/20/18 09:52	53494-70-5	
Heptachlor	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	76-44-8	
Heptachlor epoxide	ND	ug/kg	186	100	04/16/18 10:57	04/20/18 09:52	1024-57-3	
Methoxychlor	ND	ug/kg	1860	100	04/16/18 10:57	04/20/18 09:52	72-43-5	
Toxaphene	ND	ug/kg	5570	100	04/16/18 10:57	04/20/18 09:52	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	100	04/16/18 10:57	04/20/18 09:52	877-09-8	1M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	100	04/16/18 10:57	04/20/18 09:52	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	11100-14-4	
PCB, Total	ND	ug/kg	36.8	1	04/13/18 19:35	04/16/18 20:14	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	67	%.	48-125	1	04/13/18 19:35	04/16/18 20:14	877-09-8	
Decachlorobiphenyl (S)	67	%.	30-134	1	04/13/18 19:35	04/16/18 20:14	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-01 (5-8 WM) **Lab ID: 10427291007** Collected: 04/12/18 17:20 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**1480**	mg/kg	930	20	04/16/18 14:24	04/19/18 17:51		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	04/16/18 14:24	04/19/18 17:51	638-68-6	P3,S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**53.6**	mg/kg	13.0	1	04/24/18 13:27	04/25/18 02:45		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/24/18 13:27	04/25/18 02:45	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**3840**	mg/kg	10.6	1	04/18/18 09:37	04/21/18 19:57	7429-90-5	
Barium	**75.4**	mg/kg	0.53	1	04/18/18 09:37	04/21/18 19:57	7440-39-3	
Boron	**12.2**	mg/kg	8.0	1	04/18/18 09:37	04/21/18 19:57	7440-42-8	
Copper	**11.3**	mg/kg	0.53	1	04/18/18 09:37	04/21/18 19:57	7440-50-8	
Iron	**12500**	mg/kg	13.3	5	04/18/18 09:37	04/24/18 18:53	7439-89-6	
Manganese	**455**	mg/kg	0.27	1	04/18/18 09:37	04/21/18 19:57	7439-96-5	
Nickel	**10.8**	mg/kg	1.1	1	04/18/18 09:37	04/21/18 19:57	7440-02-0	
Silver	ND	mg/kg	0.53	1	04/18/18 09:37	04/21/18 19:57	7440-22-4	
Tin	ND	mg/kg	4.0	1	04/18/18 09:37	04/21/18 19:57	7440-31-5	
Titanium	**186**	mg/kg	1.3	1	04/18/18 09:37	04/21/18 19:57	7440-32-6	
Zinc	**65.9**	mg/kg	1.1	1	04/18/18 09:37	04/21/18 19:57	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**14.0**	mg/kg	1.0	5	04/20/18 09:20	04/21/18 02:20	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.52	20	04/16/18 08:41	04/16/18 15:50	7440-36-0	
Arsenic	**2.7**	mg/kg	0.52	20	04/16/18 08:41	04/16/18 15:50	7440-38-2	
Beryllium	**0.25**	mg/kg	0.21	20	04/16/18 08:41	04/16/18 15:50	7440-41-7	
Cadmium	**0.26**	mg/kg	0.083	20	04/16/18 08:41	04/16/18 15:50	7440-43-9	
Cobalt	**4.3**	mg/kg	0.52	20	04/16/18 08:41	04/16/18 15:50	7440-48-4	
Lead	**43.4**	mg/kg	0.10	20	04/16/18 08:41	04/16/18 15:50	7439-92-1	
Lithium	**4.4**	mg/kg	0.52	20	04/16/18 08:41	04/16/18 15:50	7439-93-2	
Selenium	ND	mg/kg	0.52	20	04/16/18 08:41	04/16/18 15:50	7782-49-2	
Strontium	**19.8**	mg/kg	0.52	20	04/16/18 08:41	04/16/18 15:50	7440-24-6	
Vanadium	**19.1**	mg/kg	1.0	20	04/16/18 08:41	04/16/18 15:50	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.044**	mg/kg	0.020	1	04/18/18 09:38	04/19/18 18:35	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**10.4**	%	0.10	1		04/19/18 15:13		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	83-32-9	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-01 (5-8 WM) **Lab ID: 10427291007** Collected: 04/12/18 17:20 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	208-96-8	
Anthracene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	120-12-7	
Benzo(a)anthracene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	56-55-3	
Benzo(a)pyrene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	101-55-3	
Butylbenzylphthalate	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	85-68-7	
Carbazole	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	59-50-7	
4-Chloroaniline	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	108-60-1	
2-Chloronaphthalene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	91-58-7	
2-Chlorophenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	7005-72-3	
Chrysene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	53-70-3	
Dibenzofuran	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	120-83-2	
Diethylphthalate	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	105-67-9	
Dimethylphthalate	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	131-11-3	
Di-n-butylphthalate	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	18900	1	04/13/18 17:55	04/19/18 22:32	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	606-20-2	
Di-n-octylphthalate	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	117-81-7	
Fluoranthene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	206-44-0	
Fluorene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	87-68-3	
Hexachlorobenzene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	118-74-1	
Hexachloroethane	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	193-39-5	
Isophorone	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	78-59-1	
1-Methylnaphthalene	**5860**	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	90-12-0	
2-Methylnaphthalene	**8050**	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	91-57-6	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-01 (5-8 WM) **Lab ID: 10427291007** Collected: 04/12/18 17:20 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	7340	1	04/13/18 17:55	04/19/18 22:32		
Naphthalene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	91-20-3	
2-Nitroaniline	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	88-74-4	
3-Nitroaniline	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	99-09-2	
4-Nitroaniline	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	100-01-6	
Nitrobenzene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	98-95-3	
2-Nitrophenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	88-75-5	
4-Nitrophenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	86-30-6	
Pentachlorophenol	ND	ug/kg	7450	1	04/13/18 17:55	04/19/18 22:32	87-86-5	
Phenanthrene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	85-01-8	
Phenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	108-95-2	
Pyrene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	3670	1	04/13/18 17:55	04/19/18 22:32	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	1	04/13/18 17:55	04/19/18 22:32	4165-60-0	P3,S5
2-Fluorobiphenyl (S)	0	%.	30-132	1	04/13/18 17:55	04/19/18 22:32	321-60-8	S5
p-Terphenyl-d14 (S)	0	%.	62-125	1	04/13/18 17:55	04/19/18 22:32	1718-51-0	S5
Phenol-d6 (S)	0	%.	48-125	1	04/13/18 17:55	04/19/18 22:32	13127-88-3	S5
2-Fluorophenol (S)	0	%.	40-125	1	04/13/18 17:55	04/19/18 22:32	367-12-4	S5
2,4,6-Tribromophenol (S)	0	%.	60-125	1	04/13/18 17:55	04/19/18 22:32	118-79-6	S5
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	83-32-9	
Acenaphthylene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	208-96-8	
Anthracene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	120-12-7	
Benzo(a)anthracene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	56-55-3	
Benzo(a)pyrene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	207-08-9	
Chrysene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	53-70-3	
Fluoranthene	**714**	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	206-44-0	
Fluorene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	193-39-5	
Naphthalene	ND	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	91-20-3	
Phenanthrene	**1340**	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	85-01-8	
Pyrene	**1310**	ug/kg	558	5	04/13/18 17:54	04/16/18 23:00	129-00-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-01 (5-8 WM) **Lab ID: 10427291007** Collected: 04/12/18 17:20 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	5	04/13/18 17:54	04/16/18 23:00	321-60-8	D3,P3, S4
p-Terphenyl-d14 (S)	0	%.	57-125	5	04/13/18 17:54	04/16/18 23:00	1718-51-0	S4
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1150	1	04/24/18 10:23	04/24/18 20:32	67-64-1	
Allyl chloride	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	107-05-1	
Benzene	ND	ug/kg	22.9	1	04/24/18 10:23	04/24/18 20:32	71-43-2	
Bromobenzene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	108-86-1	
Bromochloromethane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	74-97-5	
Bromodichloromethane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	75-27-4	
Bromoform	ND	ug/kg	573	1	04/24/18 10:23	04/24/18 20:32	75-25-2	
Bromomethane	ND	ug/kg	573	1	04/24/18 10:23	04/24/18 20:32	74-83-9	
2-Butanone (MEK)	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 20:32	78-93-3	
n-Butylbenzene	**76.6**	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	104-51-8	
sec-Butylbenzene	**60.0**	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	135-98-8	
tert-Butylbenzene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	98-06-6	
Carbon tetrachloride	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	56-23-5	
Chlorobenzene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	108-90-7	
Chloroethane	ND	ug/kg	573	1	04/24/18 10:23	04/24/18 20:32	75-00-3	
Chloroform	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	67-66-3	
Chloromethane	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	74-87-3	
2-Chlorotoluene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	95-49-8	
4-Chlorotoluene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	573	1	04/24/18 10:23	04/24/18 20:32	96-12-8	
Dibromochloromethane	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	106-93-4	
Dibromomethane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	75-71-8	
1,1-Dichloroethane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	75-34-3	
1,2-Dichloroethane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	107-06-2	
1,1-Dichloroethene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	156-60-5	
Dichlorofluoromethane	ND	ug/kg	573	1	04/24/18 10:23	04/24/18 20:32	75-43-4	
1,2-Dichloropropane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	78-87-5	
1,3-Dichloropropane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	142-28-9	
2,2-Dichloropropane	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	594-20-7	
1,1-Dichloropropene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	60-29-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-01 (5-8 WM) **Lab ID: 10427291007** Collected: 04/12/18 17:20 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Ethylbenzene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 20:32	87-68-3	
Isopropylbenzene (Cumene)	**72.1**	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	98-82-8	
p-Isopropyltoluene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	99-87-6	
Methylene Chloride	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	287	1	04/24/18 10:23	04/24/18 20:32	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	1634-04-4	
Naphthalene	**1320**	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	91-20-3	
n-Propylbenzene	**134**	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	103-65-1	
Styrene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	79-34-5	
Tetrachloroethene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	127-18-4	
Tetrahydrofuran	ND	ug/kg	2290	1	04/24/18 10:23	04/24/18 20:32	109-99-9	
Toluene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	79-00-5	
Trichloroethene	ND	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	79-01-6	
Trichlorofluoromethane	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	229	1	04/24/18 10:23	04/24/18 20:32	76-13-1	
1,2,4-Trimethylbenzene	**327**	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	95-63-6	
1,3,5-Trimethylbenzene	**137**	ug/kg	57.3	1	04/24/18 10:23	04/24/18 20:32	108-67-8	
Vinyl chloride	ND	ug/kg	22.9	1	04/24/18 10:23	04/24/18 20:32	75-01-4	
Xylene (Total)	**208**	ug/kg	172	1	04/24/18 10:23	04/24/18 20:32	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/24/18 10:23	04/24/18 20:32	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/24/18 10:23	04/24/18 20:32	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	04/24/18 10:23	04/24/18 20:32	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	44.5	20	04/23/18 11:09	04/24/18 13:03	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**14.0**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.24	1	04/25/18 11:00	04/25/18 13:21	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.1**	mg/kg	1.0	1	04/18/18 14:45	04/19/18 18:50	16984-48-8	

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-02 (5-10 S) **Lab ID: 10427291008** Collected: 04/12/18 19:10 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	8.81	1	04/25/18 10:56	04/27/18 17:14	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	309-00-2	
alpha-BHC	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	319-84-6	
beta-BHC	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	319-85-7	
delta-BHC	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	58-89-9	
Chlordane (Technical)	ND	ug/kg	36.0	2	04/16/18 10:57	04/20/18 01:38	57-74-9	
alpha-Chlordane	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	5103-71-9	
gamma-Chlordane	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	5103-74-2	
4,4'-DDD	ND	ug/kg	7.2	2	04/16/18 10:57	04/20/18 01:38	72-54-8	
4,4'-DDE	ND	ug/kg	7.2	2	04/16/18 10:57	04/20/18 01:38	72-55-9	
4,4'-DDT	ND	ug/kg	7.2	2	04/16/18 10:57	04/20/18 01:38	50-29-3	
Dieldrin	ND	ug/kg	7.2	2	04/16/18 10:57	04/20/18 01:38	60-57-1	
Endosulfan I	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	959-98-8	
Endosulfan II	ND	ug/kg	7.2	2	04/16/18 10:57	04/20/18 01:38	33213-65-9	
Endosulfan sulfate	ND	ug/kg	7.2	2	04/16/18 10:57	04/20/18 01:38	1031-07-8	
Endrin	ND	ug/kg	7.2	2	04/16/18 10:57	04/20/18 01:38	72-20-8	
Endrin aldehyde	ND	ug/kg	7.2	2	04/16/18 10:57	04/20/18 01:38	7421-93-4	
Endrin ketone	ND	ug/kg	7.2	2	04/16/18 10:57	04/20/18 01:38	53494-70-5	
Heptachlor	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	76-44-8	
Heptachlor epoxide	ND	ug/kg	3.6	2	04/16/18 10:57	04/20/18 01:38	1024-57-3	
Methoxychlor	ND	ug/kg	36.0	2	04/16/18 10:57	04/20/18 01:38	72-43-5	
Toxaphene	ND	ug/kg	108	2	04/16/18 10:57	04/20/18 01:38	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	87	%.	30-150	2	04/16/18 10:57	04/20/18 01:38	877-09-8	5M,D3
Decachlorobiphenyl (S)	85	%.	30-150	2	04/16/18 10:57	04/20/18 01:38	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	11100-14-4	
PCB, Total	ND	ug/kg	35.7	1	04/13/18 19:35	04/16/18 20:30	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	91	%.	48-125	1	04/13/18 19:35	04/16/18 20:30	877-09-8	
Decachlorobiphenyl (S)	79	%.	30-134	1	04/13/18 19:35	04/16/18 20:30	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**12.4**	mg/kg	9.3	1	04/16/18 14:24	04/19/18 19:38		T6

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-02 (5-10 S) **Lab ID: 10427291008** Collected: 04/12/18 19:10 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	87	%.	50-150	1	04/16/18 14:24	04/19/18 19:38	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.9	1	04/24/18 13:27	04/25/18 03:08		
Surrogates								
a,a,a-Trifluorotoluene (S)	100	%.	80-150	1	04/24/18 13:27	04/25/18 03:08	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**2940**	mg/kg	10.7	1	04/18/18 09:37	04/21/18 20:01	7429-90-5	
Barium	**49.5**	mg/kg	0.54	1	04/18/18 09:37	04/21/18 20:01	7440-39-3	
Boron	ND	mg/kg	8.0	1	04/18/18 09:37	04/21/18 20:01	7440-42-8	
Copper	**6.5**	mg/kg	0.54	1	04/18/18 09:37	04/21/18 20:01	7440-50-8	
Iron	**7500**	mg/kg	2.7	1	04/18/18 09:37	04/21/18 20:01	7439-89-6	
Manganese	**258**	mg/kg	0.27	1	04/18/18 09:37	04/21/18 20:01	7439-96-5	
Nickel	**8.7**	mg/kg	1.1	1	04/18/18 09:37	04/21/18 20:01	7440-02-0	
Silver	ND	mg/kg	0.54	1	04/18/18 09:37	04/21/18 20:01	7440-22-4	
Tin	ND	mg/kg	4.0	1	04/18/18 09:37	04/21/18 20:01	7440-31-5	
Titanium	**204**	mg/kg	1.3	1	04/18/18 09:37	04/21/18 20:01	7440-32-6	
Zinc	**26.9**	mg/kg	1.1	1	04/18/18 09:37	04/21/18 20:01	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**8.8**	mg/kg	0.98	5	04/20/18 09:20	04/21/18 02:25	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.54	20	04/16/18 08:41	04/16/18 14:33	7440-36-0	
Arsenic	**2.9**	mg/kg	0.54	20	04/16/18 08:41	04/16/18 14:33	7440-38-2	
Beryllium	ND	mg/kg	0.21	20	04/16/18 08:41	04/16/18 14:33	7440-41-7	
Cadmium	**0.10**	mg/kg	0.086	20	04/16/18 08:41	04/16/18 14:33	7440-43-9	
Cobalt	**3.3**	mg/kg	0.54	20	04/16/18 08:41	04/16/18 14:33	7440-48-4	
Lead	**4.5**	mg/kg	0.11	20	04/16/18 08:41	04/16/18 14:33	7439-92-1	
Lithium	**4.4**	mg/kg	0.54	20	04/16/18 08:41	04/16/18 14:33	7439-93-2	
Selenium	ND	mg/kg	0.54	20	04/16/18 08:41	04/16/18 14:33	7782-49-2	
Strontium	**25.0**	mg/kg	0.54	20	04/16/18 08:41	04/16/18 14:33	7440-24-6	
Vanadium	**16.3**	mg/kg	1.1	20	04/16/18 08:41	04/16/18 14:33	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.021	1	04/18/18 09:38	04/19/18 18:38	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**7.6**	%	0.10	1		04/19/18 15:14		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	83-32-9	
Acenaphthylene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-02 (5-10 S) **Lab ID: 10427291008** Collected: 04/12/18 19:10 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	120-12-7	
Benzo(a)anthracene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	56-55-3	
Benzo(a)pyrene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	101-55-3	
Butylbenzylphthalate	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	85-68-7	
Carbazole	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	59-50-7	
4-Chloroaniline	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	108-60-1	
2-Chloronaphthalene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	91-58-7	
2-Chlorophenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	7005-72-3	
Chrysene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	53-70-3	
Dibenzofuran	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	120-83-2	
Diethylphthalate	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	105-67-9	
Dimethylphthalate	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	131-11-3	
Di-n-butylphthalate	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	1840	1	04/20/18 12:55	04/24/18 16:26	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	606-20-2	
Di-n-octylphthalate	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	117-81-7	
Fluoranthene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	206-44-0	
Fluorene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	87-68-3	
Hexachlorobenzene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	118-74-1	
Hexachloroethane	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	193-39-5	
Isophorone	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	78-59-1	
1-Methylnaphthalene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	90-12-0	
2-Methylnaphthalene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-02 (5-10 S) **Lab ID: 10427291008** Collected: 04/12/18 19:10 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	714	1	04/20/18 12:55	04/24/18 16:26		
Naphthalene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	91-20-3	
2-Nitroaniline	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	88-74-4	
3-Nitroaniline	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	99-09-2	
4-Nitroaniline	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	100-01-6	
Nitrobenzene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	98-95-3	
2-Nitrophenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	88-75-5	
4-Nitrophenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	86-30-6	
Pentachlorophenol	ND	ug/kg	725	1	04/20/18 12:55	04/24/18 16:26	87-86-5	
Phenanthrene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	85-01-8	
Phenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	108-95-2	
Pyrene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	357	1	04/20/18 12:55	04/24/18 16:26	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	49	%.	43-125	1	04/20/18 12:55	04/24/18 16:26	4165-60-0	
2-Fluorobiphenyl (S)	63	%.	30-132	1	04/20/18 12:55	04/24/18 16:26	321-60-8	
p-Terphenyl-d14 (S)	89	%.	62-125	1	04/20/18 12:55	04/24/18 16:26	1718-51-0	
Phenol-d6 (S)	53	%.	48-125	1	04/20/18 12:55	04/24/18 16:26	13127-88-3	
2-Fluorophenol (S)	50	%.	40-125	1	04/20/18 12:55	04/24/18 16:26	367-12-4	
2,4,6-Tribromophenol (S)	78	%.	60-125	1	04/20/18 12:55	04/24/18 16:26	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**11.9**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	83-32-9	
Acenaphthylene	ND	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	208-96-8	
Anthracene	**17.8**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	120-12-7	
Benzo(a)anthracene	**37.9**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	56-55-3	
Benzo(a)pyrene	**36.5**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	50-32-8	
Benzo(b)fluoranthene	**46.4**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	205-99-2	
Benzo(g,h,i)perylene	**19.0**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	191-24-2	
Benzo(k)fluoranthene	**20.5**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	207-08-9	
Chrysene	**40.1**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	53-70-3	
Fluoranthene	**86.0**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	206-44-0	
Fluorene	ND	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	86-73-7	
Indeno(1,2,3-cd)pyrene	**14.7**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	193-39-5	
Naphthalene	ND	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	91-20-3	
Phenanthrene	**58.1**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	85-01-8	
Pyrene	**67.7**	ug/kg	10.8	1	04/13/18 17:54	04/16/18 20:49	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	54	%.	42-125	1	04/13/18 17:54	04/16/18 20:49	321-60-8	
p-Terphenyl-d14 (S)	71	%.	57-125	1	04/13/18 17:54	04/16/18 20:49	1718-51-0	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-02 (5-10 S) **Lab ID: 10427291008** Collected: 04/12/18 19:10 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1130	1	04/24/18 10:23	04/24/18 20:49	67-64-1	
Allyl chloride	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	107-05-1	
Benzene	ND	ug/kg	22.5	1	04/24/18 10:23	04/24/18 20:49	71-43-2	
Bromobenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	108-86-1	
Bromochloromethane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	74-97-5	
Bromodichloromethane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	75-27-4	
Bromoform	ND	ug/kg	563	1	04/24/18 10:23	04/24/18 20:49	75-25-2	
Bromomethane	ND	ug/kg	563	1	04/24/18 10:23	04/24/18 20:49	74-83-9	
2-Butanone (MEK)	ND	ug/kg	281	1	04/24/18 10:23	04/24/18 20:49	78-93-3	
n-Butylbenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	104-51-8	
sec-Butylbenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	135-98-8	
tert-Butylbenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	98-06-6	
Carbon tetrachloride	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	56-23-5	
Chlorobenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	108-90-7	
Chloroethane	ND	ug/kg	563	1	04/24/18 10:23	04/24/18 20:49	75-00-3	
Chloroform	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	67-66-3	
Chloromethane	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	74-87-3	
2-Chlorotoluene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	95-49-8	
4-Chlorotoluene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	563	1	04/24/18 10:23	04/24/18 20:49	96-12-8	
Dibromochloromethane	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	106-93-4	
Dibromomethane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	75-71-8	
1,1-Dichloroethane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	75-34-3	
1,2-Dichloroethane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	107-06-2	
1,1-Dichloroethene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	156-60-5	
Dichlorofluoromethane	ND	ug/kg	563	1	04/24/18 10:23	04/24/18 20:49	75-43-4	
1,2-Dichloropropane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	78-87-5	
1,3-Dichloropropane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	142-28-9	
2,2-Dichloropropane	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	594-20-7	
1,1-Dichloropropene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	60-29-7	
Ethylbenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	281	1	04/24/18 10:23	04/24/18 20:49	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	98-82-8	
p-Isopropyltoluene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	99-87-6	
Methylene Chloride	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	281	1	04/24/18 10:23	04/24/18 20:49	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-02 (5-10 S) **Lab ID: 10427291008** Collected: 04/12/18 19:10 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	1634-04-4	
Naphthalene	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	91-20-3	
n-Propylbenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	103-65-1	
Styrene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	79-34-5	
Tetrachloroethene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	127-18-4	
Tetrahydrofuran	ND	ug/kg	2250	1	04/24/18 10:23	04/24/18 20:49	109-99-9	
Toluene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	79-00-5	
Trichloroethene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	79-01-6	
Trichlorofluoromethane	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	225	1	04/24/18 10:23	04/24/18 20:49	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	56.3	1	04/24/18 10:23	04/24/18 20:49	108-67-8	
Vinyl chloride	ND	ug/kg	22.5	1	04/24/18 10:23	04/24/18 20:49	75-01-4	
Xylene (Total)	ND	ug/kg	169	1	04/24/18 10:23	04/24/18 20:49	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/24/18 10:23	04/24/18 20:49	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/24/18 10:23	04/24/18 20:49	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	04/24/18 10:23	04/24/18 20:49	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	10.6	5	04/23/18 11:09	04/24/18 13:03	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**8.8**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.37	1	04/25/18 11:00	04/25/18 13:25	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	04/18/18 14:45	04/19/18 20:28	16984-48-8	M1

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-03 (1.5-3.0 S) **Lab ID: 10427291009** Collected: 04/12/18 19:55 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	9.41	1	04/25/18 10:56	04/27/18 17:20	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	309-00-2	
alpha-BHC	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	319-84-6	
beta-BHC	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	319-85-7	
delta-BHC	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	58-89-9	
Chlordane (Technical)	ND	ug/kg	190	10	04/16/18 10:57	04/20/18 04:04	57-74-9	
alpha-Chlordane	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	5103-71-9	
gamma-Chlordane	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	5103-74-2	
4,4'-DDD	ND	ug/kg	37.8	10	04/16/18 10:57	04/20/18 04:04	72-54-8	
4,4'-DDE	ND	ug/kg	37.8	10	04/16/18 10:57	04/20/18 04:04	72-55-9	
4,4'-DDT	ND	ug/kg	37.8	10	04/16/18 10:57	04/20/18 04:04	50-29-3	
Dieldrin	ND	ug/kg	37.8	10	04/16/18 10:57	04/20/18 04:04	60-57-1	
Endosulfan I	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	959-98-8	
Endosulfan II	ND	ug/kg	37.8	10	04/16/18 10:57	04/20/18 04:04	33213-65-9	
Endosulfan sulfate	ND	ug/kg	37.8	10	04/16/18 10:57	04/20/18 04:04	1031-07-8	
Endrin	ND	ug/kg	37.8	10	04/16/18 10:57	04/20/18 04:04	72-20-8	
Endrin aldehyde	ND	ug/kg	37.8	10	04/16/18 10:57	04/20/18 04:04	7421-93-4	
Endrin ketone	ND	ug/kg	37.8	10	04/16/18 10:57	04/20/18 04:04	53494-70-5	
Heptachlor	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	76-44-8	
Heptachlor epoxide	ND	ug/kg	19.0	10	04/16/18 10:57	04/20/18 04:04	1024-57-3	
Methoxychlor	ND	ug/kg	190	10	04/16/18 10:57	04/20/18 04:04	72-43-5	
Toxaphene	ND	ug/kg	568	10	04/16/18 10:57	04/20/18 04:04	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	10	04/16/18 10:57	04/20/18 04:04	877-09-8	3M, D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	10	04/16/18 10:57	04/20/18 04:04	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	53469-21-9	
PCB-1248 (Aroclor 1248)	**56.3**	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	11100-14-4	
PCB, Total	**56.3**	ug/kg	37.5	1	04/13/18 19:35	04/16/18 20:45	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	73	%.	48-125	1	04/13/18 19:35	04/16/18 20:45	877-09-8	
Decachlorobiphenyl (S)	77	%.	30-134	1	04/13/18 19:35	04/16/18 20:45	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-03 (1.5-3.0 S) **Lab ID: 10427291009** Collected: 04/12/18 19:55 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**674**	mg/kg	95.8	10	04/16/18 14:24	04/19/18 18:12		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/16/18 14:24	04/19/18 18:12	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.7	1	04/24/18 13:27	04/25/18 03:32		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/24/18 13:27	04/25/18 03:32	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**3290**	mg/kg	10.5	1	04/18/18 09:37	04/21/18 20:05	7429-90-5	
Barium	**47.1**	mg/kg	0.53	1	04/18/18 09:37	04/21/18 20:05	7440-39-3	
Boron	ND	mg/kg	7.9	1	04/18/18 09:37	04/21/18 20:05	7440-42-8	
Copper	**9.1**	mg/kg	0.53	1	04/18/18 09:37	04/21/18 20:05	7440-50-8	
Iron	**7440**	mg/kg	2.6	1	04/18/18 09:37	04/21/18 20:05	7439-89-6	
Manganese	**282**	mg/kg	0.26	1	04/18/18 09:37	04/21/18 20:05	7439-96-5	
Nickel	**9.0**	mg/kg	1.1	1	04/18/18 09:37	04/21/18 20:05	7440-02-0	
Silver	ND	mg/kg	0.53	1	04/18/18 09:37	04/21/18 20:05	7440-22-4	
Tin	ND	mg/kg	3.9	1	04/18/18 09:37	04/21/18 20:05	7440-31-5	
Titanium	**148**	mg/kg	1.3	1	04/18/18 09:37	04/21/18 20:05	7440-32-6	
Zinc	**38.6**	mg/kg	1.1	1	04/18/18 09:37	04/21/18 20:05	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**9.4**	mg/kg	1.1	5	04/20/18 09:20	04/21/18 02:29	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.55	20	04/16/18 08:41	04/16/18 14:36	7440-36-0	
Arsenic	**2.3**	mg/kg	0.55	20	04/16/18 08:41	04/16/18 14:36	7440-38-2	
Beryllium	**0.28**	mg/kg	0.22	20	04/16/18 08:41	04/16/18 14:36	7440-41-7	
Cadmium	**0.21**	mg/kg	0.087	20	04/16/18 08:41	04/16/18 14:36	7440-43-9	
Cobalt	**3.7**	mg/kg	0.55	20	04/16/18 08:41	04/16/18 14:36	7440-48-4	
Lead	**199**	mg/kg	0.11	20	04/16/18 08:41	04/16/18 14:36	7439-92-1	
Lithium	**5.0**	mg/kg	0.55	20	04/16/18 08:41	04/16/18 14:36	7439-93-2	
Selenium	ND	mg/kg	0.55	20	04/16/18 08:41	04/16/18 14:36	7782-49-2	
Strontium	**22.7**	mg/kg	0.55	20	04/16/18 08:41	04/16/18 14:36	7440-24-6	
Vanadium	**18.3**	mg/kg	1.1	20	04/16/18 08:41	04/16/18 14:36	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.034**	mg/kg	0.022	1	04/18/18 09:38	04/19/18 18:40	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**12.1**	%	0.10	1		04/19/18 15:14		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	**1010**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	83-32-9	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-03 (1.5-3.0 S) **Lab ID: 10427291009** Collected: 04/12/18 19:55 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	208-96-8	
Anthracene	**2220**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	120-12-7	
Benzo(a)anthracene	**2580**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	56-55-3	
Benzo(a)pyrene	**2040**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	50-32-8	
Benzo(b)fluoranthene	**2440**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	205-99-2	
Benzo(g,h,i)perylene	**1160**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	191-24-2	
Benzo(k)fluoranthene	**1240**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	101-55-3	
Butylbenzylphthalate	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	85-68-7	
Carbazole	**550**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	59-50-7	
4-Chloroaniline	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	108-60-1	
2-Chloronaphthalene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	91-58-7	
2-Chlorophenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	7005-72-3	
Chrysene	**2430**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	53-70-3	
Dibenzofuran	**1300**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	120-83-2	
Diethylphthalate	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	105-67-9	
Dimethylphthalate	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	131-11-3	
Di-n-butylphthalate	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	1930	1	04/13/18 17:55	04/19/18 23:01	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	606-20-2	
Di-n-octylphthalate	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	117-81-7	
Fluoranthene	**5120**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	206-44-0	
Fluorene	**2040**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	87-68-3	
Hexachlorobenzene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	118-74-1	
Hexachloroethane	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	67-72-1	
Indeno(1,2,3-cd)pyrene	**1040**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	193-39-5	
Isophorone	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	78-59-1	
1-Methylnaphthalene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	90-12-0	
2-Methylnaphthalene	**427**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-03 (1.5-3.0 S) **Lab ID: 10427291009** Collected: 04/12/18 19:55 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	749	1	04/13/18 17:55	04/19/18 23:01		
Naphthalene	**632**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	91-20-3	
2-Nitroaniline	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	88-74-4	
3-Nitroaniline	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	99-09-2	
4-Nitroaniline	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	100-01-6	
Nitrobenzene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	98-95-3	
2-Nitrophenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	88-75-5	
4-Nitrophenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	86-30-6	
Pentachlorophenol	ND	ug/kg	760	1	04/13/18 17:55	04/19/18 23:01	87-86-5	
Phenanthrene	**4900**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	85-01-8	
Phenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	108-95-2	
Pyrene	**4820**	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	374	1	04/13/18 17:55	04/19/18 23:01	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	56	%.	43-125	1	04/13/18 17:55	04/19/18 23:01	4165-60-0	
2-Fluorobiphenyl (S)	59	%.	30-132	1	04/13/18 17:55	04/19/18 23:01	321-60-8	
p-Terphenyl-d14 (S)	70	%.	62-125	1	04/13/18 17:55	04/19/18 23:01	1718-51-0	
Phenol-d6 (S)	56	%.	48-125	1	04/13/18 17:55	04/19/18 23:01	13127-88-3	
2-Fluorophenol (S)	57	%.	40-125	1	04/13/18 17:55	04/19/18 23:01	367-12-4	
2,4,6-Tribromophenol (S)	59	%.	60-125	1	04/13/18 17:55	04/19/18 23:01	118-79-6	S5
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**1030**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	83-32-9	
Acenaphthylene	ND	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	208-96-8	
Anthracene	**2200**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	120-12-7	
Benzo(a)anthracene	**2360**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	56-55-3	
Benzo(a)pyrene	**2040**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	50-32-8	
Benzo(b)fluoranthene	**2540**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	205-99-2	
Benzo(g,h,i)perylene	**963**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	191-24-2	
Benzo(k)fluoranthene	**950**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	207-08-9	
Chrysene	**2040**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	218-01-9	
Dibenz(a,h)anthracene	**357**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	53-70-3	
Fluoranthene	**5260**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	206-44-0	
Fluorene	**2030**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	86-73-7	
Indeno(1,2,3-cd)pyrene	**1020**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	193-39-5	
Naphthalene	**735**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	91-20-3	
Phenanthrene	**5160**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	85-01-8	
Pyrene	**4170**	ug/kg	283	25	04/13/18 17:54	04/17/18 16:40	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	0	%.	42-125	25	04/13/18 17:54	04/17/18 16:40	321-60-8	D4,S4

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-03 (1.5-3.0 S) **Lab ID: 10427291009** Collected: 04/12/18 19:55 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	0	%.	57-125	25	04/13/18 17:54	04/17/18 16:40	1718-51-0	S4
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1170	1	04/24/18 10:23	04/24/18 21:05	67-64-1	
Allyl chloride	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	107-05-1	
Benzene	ND	ug/kg	23.4	1	04/24/18 10:23	04/24/18 21:05	71-43-2	
Bromobenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	108-86-1	
Bromochloromethane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	74-97-5	
Bromodichloromethane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	75-27-4	
Bromoform	ND	ug/kg	584	1	04/24/18 10:23	04/24/18 21:05	75-25-2	
Bromomethane	ND	ug/kg	584	1	04/24/18 10:23	04/24/18 21:05	74-83-9	
2-Butanone (MEK)	ND	ug/kg	292	1	04/24/18 10:23	04/24/18 21:05	78-93-3	
n-Butylbenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	104-51-8	
sec-Butylbenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	135-98-8	
tert-Butylbenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	98-06-6	
Carbon tetrachloride	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	56-23-5	
Chlorobenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	108-90-7	
Chloroethane	ND	ug/kg	584	1	04/24/18 10:23	04/24/18 21:05	75-00-3	
Chloroform	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	67-66-3	
Chloromethane	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	74-87-3	
2-Chlorotoluene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	95-49-8	
4-Chlorotoluene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	584	1	04/24/18 10:23	04/24/18 21:05	96-12-8	
Dibromochloromethane	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	106-93-4	
Dibromomethane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	75-71-8	
1,1-Dichloroethane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	75-34-3	
1,2-Dichloroethane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	107-06-2	
1,1-Dichloroethene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	156-60-5	
Dichlorofluoromethane	ND	ug/kg	584	1	04/24/18 10:23	04/24/18 21:05	75-43-4	
1,2-Dichloropropane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	78-87-5	
1,3-Dichloropropane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	142-28-9	
2,2-Dichloropropane	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	594-20-7	
1,1-Dichloropropene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	60-29-7	
Ethylbenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	292	1	04/24/18 10:23	04/24/18 21:05	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Sample: TS-SB-03 (1.5-3.0 S) **Lab ID: 10427291009** Collected: 04/12/18 19:55 Received: 04/13/18 08:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	98-82-8	
p-Isopropyltoluene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	99-87-6	
Methylene Chloride	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	292	1	04/24/18 10:23	04/24/18 21:05	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	1634-04-4	
Naphthalene	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	91-20-3	
n-Propylbenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	103-65-1	
Styrene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	79-34-5	
Tetrachloroethene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	127-18-4	
Tetrahydrofuran	ND	ug/kg	2340	1	04/24/18 10:23	04/24/18 21:05	109-99-9	
Toluene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	79-00-5	
Trichloroethene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	79-01-6	
Trichlorofluoromethane	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	234	1	04/24/18 10:23	04/24/18 21:05	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	58.4	1	04/24/18 10:23	04/24/18 21:05	108-67-8	
Vinyl chloride	ND	ug/kg	23.4	1	04/24/18 10:23	04/24/18 21:05	75-01-4	
Xylene (Total)	ND	ug/kg	175	1	04/24/18 10:23	04/24/18 21:05	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1	04/24/18 10:23	04/24/18 21:05	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/24/18 10:23	04/24/18 21:05	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	04/24/18 10:23	04/24/18 21:05	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	11.3	5	04/23/18 11:09	04/24/18 13:26	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**9.4**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.42	1	04/25/18 11:00	04/25/18 13:25	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**6.1**	mg/kg	0.97	1	04/18/18 14:45	04/19/18 20:09	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 141622 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 559956 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.16	04/27/18 14:14	N3

METHOD BLANK: 559957 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.05	04/27/18 14:20	N3

METHOD BLANK: 559958 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.14	04/27/18 14:27	N3

LABORATORY CONTROL SAMPLE: 559959

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	99.7	116	117	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559960 559961

Parameter	Units	10427018004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	374	387	412	449	110	116	65-135	9	35	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559962 559963

Parameter	Units	10427291002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	344	356	391	403	114	113	65-135	3	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 533955 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2900195 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	04/24/18 16:15	
a,a,a-Trifluorotoluene (S)	%.	98	80-150	04/24/18 16:15	

LABORATORY CONTROL SAMPLE & LCSD: 2900196 2900197

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	43.1	43.6	86	87	80-120	1	20	
a,a,a-Trifluorotoluene (S)	%.				99	99	80-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2901282 2901283

Parameter	Units	10428008010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	54.1	53.3	51.3	51.0	95	96	80-120	1	20	
a,a,a-Trifluorotoluene (S)	%.						98	99	80-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 532422 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2891608 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	04/19/18 18:07	

LABORATORY CONTROL SAMPLE: 2891609

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.48	0.52	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891610 2891611

Parameter	Units	10427084001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.60	.65	.62	1.2	1.5	100	137	80-120	16	20	E,M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 532423 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2891612 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	9.9	04/21/18 19:02	
Barium	mg/kg	ND	0.50	04/21/18 19:02	
Boron	mg/kg	ND	7.4	04/21/18 19:02	
Copper	mg/kg	ND	0.50	04/21/18 19:02	
Iron	mg/kg	ND	2.5	04/21/18 19:02	
Manganese	mg/kg	ND	0.25	04/21/18 19:02	
Nickel	mg/kg	ND	0.99	04/21/18 19:02	
Silver	mg/kg	ND	0.50	04/21/18 19:02	
Tin	mg/kg	ND	3.7	04/21/18 19:02	
Titanium	mg/kg	ND	1.2	04/21/18 19:02	
Zinc	mg/kg	ND	0.99	04/21/18 19:02	

LABORATORY CONTROL SAMPLE: 2891613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	952	864	91	80-120	
Barium	mg/kg	47.6	47.5	100	80-120	
Boron	mg/kg	47.6	43.8	92	80-120	
Copper	mg/kg	47.6	45.2	95	80-120	
Iron	mg/kg	952	927	97	80-120	
Manganese	mg/kg	47.6	47.9	101	80-120	
Nickel	mg/kg	47.6	46.5	98	80-120	
Silver	mg/kg	23.8	21.5	90	80-120	
Tin	mg/kg	47.6	44.9	94	80-120	
Titanium	mg/kg	47.6	45.8	96	80-120	
Zinc	mg/kg	47.6	45.2	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891614 2891615

Parameter	Units	10427291001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	10700	1400	1370	12800	12900	148	161	75-125	1	20	P6
Barium	mg/kg	134	70	68.7	183	185	70	75	75-125	1	20	M1
Boron	mg/kg	802	70	68.7	962	1030	228	335	75-125	7	20	P6
Copper	mg/kg	20.2	70	68.7	74.2	73.4	77	77	75-125	1	20	
Iron	mg/kg	34200	1400	1370	35600	35400	99	89	75-125	0	20	
Manganese	mg/kg	185	70	68.7	241	239	79	78	75-125	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891614 2891615

Parameter	Units	10427291001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nickel	mg/kg	22.5	70	68.7	74.6	73.8	74	75	75-125	1	20	M1
Silver	mg/kg	ND	35	34.3	26.2	25.8	75	75	75-125	2	20	
Tin	mg/kg	ND	70	68.7	49.7	49.0	67	67	75-125	1	20	M1
Titanium	mg/kg	589	70	68.7	624	626	50	55	75-125	0	20	P6
Zinc	mg/kg	180	70	68.7	240	238	85	85	75-125	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 437531 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2021107 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.18	04/21/18 01:07	N2

LABORATORY CONTROL SAMPLE: 2021108

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.8	3.7	99	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2021109 2021110

Parameter	Units	10427291001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	53.4	5.64	5.49	61.8	58.5	152	94	75-125	6	20	N2,P6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 532416 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2891584 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.50	04/16/18 16:04	
Arsenic	mg/kg	ND	0.50	04/16/18 16:04	
Beryllium	mg/kg	ND	0.20	04/16/18 16:04	
Cadmium	mg/kg	ND	0.080	04/16/18 16:04	
Cobalt	mg/kg	ND	0.50	04/16/18 16:04	
Lead	mg/kg	ND	0.10	04/16/18 16:04	
Lithium	mg/kg	ND	0.50	04/16/18 16:04	
Selenium	mg/kg	ND	0.50	04/16/18 16:04	
Strontium	mg/kg	ND	0.50	04/16/18 16:04	
Vanadium	mg/kg	ND	1.0	04/16/18 16:04	

LABORATORY CONTROL SAMPLE: 2891585

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	49	48.4	99	80-120	
Arsenic	mg/kg	49	47.0	96	80-120	
Beryllium	mg/kg	49	46.7	95	80-120	
Cadmium	mg/kg	49	47.9	98	80-120	
Cobalt	mg/kg	49	48.1	98	80-120	
Lead	mg/kg	49	48.5	99	80-120	
Lithium	mg/kg	49	47.0	96	80-120	
Selenium	mg/kg	49	46.8	96	80-120	
Strontium	mg/kg	49	47.3	96	80-120	
Vanadium	mg/kg	49	47.7	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891586 2891587

Parameter	Units	10427286001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	ND	50.9	50.9	36.3	36.1	71	71	75-125	0	20	M6
Arsenic	mg/kg	1.5	50.9	50.9	46.8	47.2	89	90	75-125	1	20	
Beryllium	mg/kg	ND	50.9	50.9	46.4	49.9	91	98	75-125	7	20	
Cadmium	mg/kg	0.18	50.9	50.9	46.7	47.0	91	92	75-125	0	20	
Cobalt	mg/kg	2.7	50.9	50.9	48.1	48.6	89	90	75-125	1	20	
Lead	mg/kg	1.7	50.9	50.9	48.3	48.2	92	91	75-125	0	20	
Lithium	mg/kg	3.0	50.9	50.9	48.7	52.0	90	96	75-125	6	20	
Selenium	mg/kg	ND	50.9	50.9	46.6	48.7	91	96	75-125	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891586 2891587

Parameter	Units	10427286001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	mg/kg	11.5	50.9	50.9	56.2	57.0	88	90	75-125	1	20	
Vanadium	mg/kg	12.9	50.9	50.9	60.9	60.4	94	93	75-125	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 533208 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10427291001, 10427291002

SAMPLE DUPLICATE: 2897020

Parameter	Units	10427291002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.6	11.4	8	30	

SAMPLE DUPLICATE: 2897108

Parameter	Units	10427829003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.5	6.7	2	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 533359 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

SAMPLE DUPLICATE: 2897274

Parameter	Units	10427291006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.8	21.5	1	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 533981 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2900460 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	04/24/18 14:55	
1,1,1-Trichloroethane	ug/kg	ND	50.0	04/24/18 14:55	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	04/24/18 14:55	
1,1,2-Trichloroethane	ug/kg	ND	50.0	04/24/18 14:55	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	04/24/18 14:55	
1,1-Dichloroethane	ug/kg	ND	50.0	04/24/18 14:55	
1,1-Dichloroethene	ug/kg	ND	50.0	04/24/18 14:55	
1,1-Dichloropropene	ug/kg	ND	50.0	04/24/18 14:55	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	04/24/18 14:55	
1,2,3-Trichloropropane	ug/kg	ND	200	04/24/18 14:55	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	04/24/18 14:55	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	04/24/18 14:55	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	04/24/18 14:55	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	04/24/18 14:55	
1,2-Dichlorobenzene	ug/kg	ND	50.0	04/24/18 14:55	
1,2-Dichloroethane	ug/kg	ND	50.0	04/24/18 14:55	
1,2-Dichloropropane	ug/kg	ND	50.0	04/24/18 14:55	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	04/24/18 14:55	
1,3-Dichlorobenzene	ug/kg	ND	50.0	04/24/18 14:55	
1,3-Dichloropropane	ug/kg	ND	50.0	04/24/18 14:55	
1,4-Dichlorobenzene	ug/kg	ND	50.0	04/24/18 14:55	
2,2-Dichloropropane	ug/kg	ND	200	04/24/18 14:55	
2-Butanone (MEK)	ug/kg	ND	250	04/24/18 14:55	
2-Chlorotoluene	ug/kg	ND	50.0	04/24/18 14:55	
4-Chlorotoluene	ug/kg	ND	50.0	04/24/18 14:55	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	04/24/18 14:55	
Acetone	ug/kg	ND	1000	04/24/18 14:55	
Allyl chloride	ug/kg	ND	200	04/24/18 14:55	
Benzene	ug/kg	ND	20.0	04/24/18 14:55	
Bromobenzene	ug/kg	ND	50.0	04/24/18 14:55	
Bromochloromethane	ug/kg	ND	50.0	04/24/18 14:55	
Bromodichloromethane	ug/kg	ND	50.0	04/24/18 14:55	
Bromoform	ug/kg	ND	500	04/24/18 14:55	MN
Bromomethane	ug/kg	ND	500	04/24/18 14:55	
Carbon tetrachloride	ug/kg	ND	50.0	04/24/18 14:55	
Chlorobenzene	ug/kg	ND	50.0	04/24/18 14:55	
Chloroethane	ug/kg	ND	500	04/24/18 14:55	
Chloroform	ug/kg	ND	50.0	04/24/18 14:55	
Chloromethane	ug/kg	ND	200	04/24/18 14:55	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	04/24/18 14:55	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

METHOD BLANK: 2900460 Matrix: Solid

Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
cis-1,3-Dichloropropene	ug/kg	ND	50.0	04/24/18 14:55	
Dibromochloromethane	ug/kg	ND	200	04/24/18 14:55	
Dibromomethane	ug/kg	ND	50.0	04/24/18 14:55	
Dichlorodifluoromethane	ug/kg	ND	200	04/24/18 14:55	
Dichlorofluoromethane	ug/kg	ND	500	04/24/18 14:55	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	04/24/18 14:55	
Ethylbenzene	ug/kg	ND	50.0	04/24/18 14:55	
Hexachloro-1,3-butadiene	ug/kg	ND	250	04/24/18 14:55	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	04/24/18 14:55	
Methyl-tert-butyl ether	ug/kg	ND	50.0	04/24/18 14:55	
Methylene Chloride	ug/kg	ND	200	04/24/18 14:55	
n-Butylbenzene	ug/kg	ND	50.0	04/24/18 14:55	
n-Propylbenzene	ug/kg	ND	50.0	04/24/18 14:55	
Naphthalene	ug/kg	ND	200	04/24/18 14:55	
p-Isopropyltoluene	ug/kg	ND	50.0	04/24/18 14:55	
sec-Butylbenzene	ug/kg	ND	50.0	04/24/18 14:55	
Styrene	ug/kg	ND	50.0	04/24/18 14:55	
tert-Butylbenzene	ug/kg	ND	50.0	04/24/18 14:55	
Tetrachloroethene	ug/kg	ND	50.0	04/24/18 14:55	
Tetrahydrofuran	ug/kg	ND	2000	04/24/18 14:55	
Toluene	ug/kg	ND	50.0	04/24/18 14:55	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	04/24/18 14:55	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	04/24/18 14:55	
Trichloroethene	ug/kg	ND	50.0	04/24/18 14:55	
Trichlorofluoromethane	ug/kg	ND	200	04/24/18 14:55	
Vinyl chloride	ug/kg	ND	20.0	04/24/18 14:55	
Xylene (Total)	ug/kg	ND	150	04/24/18 14:55	
1,2-Dichloroethane-d4 (S)	%.	96	75-125	04/24/18 14:55	
4-Bromofluorobenzene (S)	%.	99	75-125	04/24/18 14:55	
Toluene-d8 (S)	%.	96	75-125	04/24/18 14:55	

LABORATORY CONTROL SAMPLE & LCSD: 2900461 2900462

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	873	843	87	84	59-125	3	20	
1,1,1-Trichloroethane	ug/kg	1000	981	967	98	97	59-125	1	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	854	774	85	77	58-125	10	20	
1,1,2-Trichloroethane	ug/kg	1000	824	795	82	79	64-125	4	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	833	853	83	85	65-125	2	20	
1,1-Dichloroethane	ug/kg	1000	864	866	86	87	63-125	0	20	
1,1-Dichloroethene	ug/kg	1000	862	857	86	86	59-125	1	20	
1,1-Dichloropropene	ug/kg	1000	984	952	98	95	64-125	3	20	
1,2,3-Trichlorobenzene	ug/kg	1000	841	801	84	80	55-126	5	20	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

LABORATORY CONTROL SAMPLE & LCSD: 2900461 2900462

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,3-Trichloropropane	ug/kg	1000	821	781	82	78	62-125	5	20	
1,2,4-Trichlorobenzene	ug/kg	1000	866	799	87	80	62-125	8	20	
1,2,4-Trimethylbenzene	ug/kg	1000	857	780	86	78	59-125	9	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2120	1960	85	78	54-125	8	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	885	829	89	83	64-125	6	20	
1,2-Dichlorobenzene	ug/kg	1000	838	807	84	81	63-125	4	20	
1,2-Dichloroethane	ug/kg	1000	786	759	79	76	57-125	3	20	
1,2-Dichloropropane	ug/kg	1000	813	790	81	79	67-125	3	20	
1,3,5-Trimethylbenzene	ug/kg	1000	852	801	85	80	59-125	6	20	
1,3-Dichlorobenzene	ug/kg	1000	851	790	85	79	64-125	7	20	
1,3-Dichloropropane	ug/kg	1000	809	768	81	77	64-125	5	20	
1,4-Dichlorobenzene	ug/kg	1000	772	743	77	74	63-125	4	20	
2,2-Dichloropropane	ug/kg	1000	926	889	93	89	37-126	4	20	
2-Butanone (MEK)	ug/kg	5000	4220	4240	84	85	48-125	0	20	
2-Chlorotoluene	ug/kg	1000	853	794	85	79	62-125	7	20	
4-Chlorotoluene	ug/kg	1000	831	789	83	79	63-125	5	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4010	3890	80	78	52-135	3	20	
Acetone	ug/kg	5000	5120	4760	102	95	65-125	7	20	
Allyl chloride	ug/kg	1000	834	837	83	84	52-125	0	20	
Benzene	ug/kg	1000	842	832	84	83	61-125	1	20	
Bromobenzene	ug/kg	1000	880	827	88	83	64-125	6	20	
Bromochloromethane	ug/kg	1000	932	869	93	87	65-125	7	20	
Bromodichloromethane	ug/kg	1000	886	831	89	83	57-125	6	20	
Bromoform	ug/kg	1000	827	788	83	79	57-125	5	20	
Bromomethane	ug/kg	1000	831	750	83	75	60-125	10	20	
Carbon tetrachloride	ug/kg	1000	1010	963	101	96	58-125	5	20	
Chlorobenzene	ug/kg	1000	801	787	80	79	66-125	2	20	
Chloroethane	ug/kg	1000	901	853	90	85	62-125	5	20	
Chloroform	ug/kg	1000	872	837	87	84	59-125	4	20	
Chloromethane	ug/kg	1000	826	748	83	75	50-125	10	20	
cis-1,2-Dichloroethene	ug/kg	1000	913	880	91	88	61-125	4	20	
cis-1,3-Dichloropropene	ug/kg	1000	879	848	88	85	61-125	3	20	
Dibromochloromethane	ug/kg	1000	812	762	81	76	60-125	6	20	
Dibromomethane	ug/kg	1000	860	816	86	82	69-125	5	20	
Dichlorodifluoromethane	ug/kg	1000	786	715	79	72	38-125	9	20	
Dichlorofluoromethane	ug/kg	1000	951	846	95	85	67-125	12	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1640	1750	164	175	60-125	7	20	L3,SS
Ethylbenzene	ug/kg	1000	861	829	86	83	62-125	4	20	
Hexachloro-1,3-butadiene	ug/kg	1000	862	789	86	79	56-125	9	20	
Isopropylbenzene (Cumene)	ug/kg	1000	882	856	88	86	65-125	3	20	
Methyl-tert-butyl ether	ug/kg	1000	788	793	79	79	59-125	1	20	
Methylene Chloride	ug/kg	1000	782	787	78	79	64-125	1	20	
n-Butylbenzene	ug/kg	1000	891	848	89	85	59-125	5	20	
n-Propylbenzene	ug/kg	1000	897	795	90	80	61-125	12	20	
Naphthalene	ug/kg	1000	871	803	87	80	53-125	8	20	
p-Isopropyltoluene	ug/kg	1000	883	840	88	84	63-125	5	20	
sec-Butylbenzene	ug/kg	1000	830	821	83	82	62-125	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

LABORATORY CONTROL SAMPLE & LCSD: 2900461 2900462

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Styrene	ug/kg	1000	826	796	83	80	66-125	4	20	
tert-Butylbenzene	ug/kg	1000	865	807	87	81	64-125	7	20	
Tetrachloroethene	ug/kg	1000	907	867	91	87	67-125	5	20	
Tetrahydrofuran	ug/kg	10000	9540	8450	95	84	62-125	12	20	
Toluene	ug/kg	1000	792	766	79	77	61-125	3	20	
trans-1,2-Dichloroethene	ug/kg	1000	872	879	87	88	64-125	1	20	
trans-1,3-Dichloropropene	ug/kg	1000	872	830	87	83	56-125	5	20	
Trichloroethene	ug/kg	1000	878	815	88	81	67-125	7	20	
Trichlorofluoromethane	ug/kg	1000	985	917	99	92	65-125	7	20	
Vinyl chloride	ug/kg	1000	916	820	92	82	57-125	11	20	
Xylene (Total)	ug/kg	3000	2470	2420	82	81	62-125	2	20	
1,2-Dichloroethane-d4 (S)	%.				95	99	75-125			
4-Bromofluorobenzene (S)	%.				100	99	75-125			
Toluene-d8 (S)	%.				99	100	75-125			

MATRIX SPIKE SAMPLE: 2900463

Parameter	Units	10428008001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	1080	1190	110	64-146	
1,1,1-Trichloroethane	ug/kg	ND	1080	1220	113	56-148	
1,1,2,2-Tetrachloroethane	ug/kg	ND	1080	1140	105	36-150	
1,1,2-Trichloroethane	ug/kg	ND	1080	1130	104	67-148	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	1080	1140	105	60-142	
1,1-Dichloroethane	ug/kg	ND	1080	1170	108	57-140	
1,1-Dichloroethene	ug/kg	ND	1080	1140	105	59-139	
1,1-Dichloropropene	ug/kg	ND	1080	1230	113	61-142	
1,2,3-Trichlorobenzene	ug/kg	ND	1080	1100	101	69-150	
1,2,3-Trichloropropane	ug/kg	ND	1080	1140	105	64-150	
1,2,4-Trichlorobenzene	ug/kg	ND	1080	1120	103	71-149	
1,2,4-Trimethylbenzene	ug/kg	ND	1080	1100	101	67-149	
1,2-Dibromo-3-chloropropane	ug/kg	ND	2710	2890	107	61-150	
1,2-Dibromoethane (EDB)	ug/kg	ND	1080	1220	113	67-147	
1,2-Dichlorobenzene	ug/kg	ND	1080	1130	104	70-142	
1,2-Dichloroethane	ug/kg	ND	1080	1080	99	58-132	
1,2-Dichloropropane	ug/kg	ND	1080	1120	104	64-144	
1,3,5-Trimethylbenzene	ug/kg	ND	1080	1140	105	71-146	
1,3-Dichlorobenzene	ug/kg	ND	1080	1100	102	71-142	
1,3-Dichloropropane	ug/kg	ND	1080	1130	104	68-140	
1,4-Dichlorobenzene	ug/kg	ND	1080	1070	99	68-142	
2,2-Dichloropropane	ug/kg	ND	1080	1150	107	34-150	
2-Butanone (MEK)	ug/kg	ND	5420	5620	104	51-150	
2-Chlorotoluene	ug/kg	ND	1080	1090	100	66-144	
4-Chlorotoluene	ug/kg	ND	1080	1110	102	66-140	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	5420	5480	101	63-150	
Acetone	ug/kg	ND	5420	6520	120	54-150	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

MATRIX SPIKE SAMPLE: 2900463

Parameter	Units	10428008001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Allyl chloride	ug/kg	ND	1080	1170	108	53-135	
Benzene	ug/kg	ND	1080	1150	107	65-135	
Bromobenzene	ug/kg	ND	1080	1150	106	71-141	
Bromochloromethane	ug/kg	ND	1080	1130	104	62-145	
Bromodichloromethane	ug/kg	ND	1080	1170	108	59-148	
Bromoform	ug/kg	ND	1080	1160	108	57-145	
Bromomethane	ug/kg	ND	1080	1040	96	51-129	
Carbon tetrachloride	ug/kg	ND	1080	1240	114	55-144	
Chlorobenzene	ug/kg	ND	1080	1110	102	70-142	
Chloroethane	ug/kg	ND	1080	1090	101	61-135	
Chloroform	ug/kg	ND	1080	1080	99	58-135	
Chloromethane	ug/kg	ND	1080	971	90	37-125	
cis-1,2-Dichloroethene	ug/kg	ND	1080	1130	105	60-138	
cis-1,3-Dichloropropene	ug/kg	ND	1080	1210	112	62-142	
Dibromochloromethane	ug/kg	ND	1080	1100	102	65-141	
Dibromomethane	ug/kg	ND	1080	1190	110	72-150	
Dichlorodifluoromethane	ug/kg	ND	1080	862	80	30-125	
Dichlorofluoromethane	ug/kg	ND	1080	1090	101	62-148	
Diethyl ether (Ethyl ether)	ug/kg	ND	1080	2460	227	62-135	M0,SS
Ethylbenzene	ug/kg	ND	1080	1140	105	72-138	
Hexachloro-1,3-butadiene	ug/kg	ND	1080	1150	106	38-150	
Isopropylbenzene (Cumene)	ug/kg	ND	1080	1210	111	75-148	
Methyl-tert-butyl ether	ug/kg	ND	1080	1070	99	63-139	
Methylene Chloride	ug/kg	ND	1080	1070	98	58-135	
n-Butylbenzene	ug/kg	ND	1080	1140	105	63-150	
n-Propylbenzene	ug/kg	ND	1080	1130	103	70-146	
Naphthalene	ug/kg	ND	1080	1100	101	63-150	
p-Isopropyltoluene	ug/kg	ND	1080	1130	104	72-150	
sec-Butylbenzene	ug/kg	ND	1080	1130	104	66-150	
Styrene	ug/kg	ND	1080	1160	107	72-146	
tert-Butylbenzene	ug/kg	ND	1080	1110	102	71-148	
Tetrachloroethene	ug/kg	ND	1080	1230	114	70-150	
Tetrahydrofuran	ug/kg	ND	10800	11500	106	62-150	
Toluene	ug/kg	ND	1080	1070	99	65-142	
trans-1,2-Dichloroethene	ug/kg	ND	1080	1210	112	55-141	
trans-1,3-Dichloropropene	ug/kg	ND	1080	1150	107	57-147	
Trichloroethene	ug/kg	ND	1080	1170	108	62-150	
Trichlorofluoromethane	ug/kg	ND	1080	1190	110	51-150	
Vinyl chloride	ug/kg	ND	1080	1060	98	45-132	
Xylene (Total)	ug/kg	ND	3250	3330	103	75-140	
1,2-Dichloroethane-d4 (S)	%.				97	75-125	
4-Bromofluorobenzene (S)	%.				98	75-125	
Toluene-d8 (S)	%.				98	75-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

SAMPLE DUPLICATE: 2900464

Parameter	Units	10428008002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	ND		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	ND		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

SAMPLE DUPLICATE: 2900464

Parameter	Units	10428008002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	ND		30	
n-Propylbenzene	ug/kg	ND	ND		30	
Naphthalene	ug/kg	ND	ND		30	
p-Isopropyltoluene	ug/kg	ND	ND		30	
sec-Butylbenzene	ug/kg	ND	ND		30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	97	95	5		
4-Bromofluorobenzene (S)	%.	93	100	14		
Toluene-d8 (S)	%.	97	99	10		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 532516 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2891965 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/19/18 23:12	
4,4'-DDE	ug/kg	ND	3.3	04/19/18 23:12	
4,4'-DDT	ug/kg	ND	3.3	04/19/18 23:12	
Aldrin	ug/kg	ND	1.7	04/19/18 23:12	
alpha-BHC	ug/kg	ND	1.7	04/19/18 23:12	
alpha-Chlordane	ug/kg	ND	1.7	04/19/18 23:12	
beta-BHC	ug/kg	ND	1.7	04/19/18 23:12	
Chlordane (Technical)	ug/kg	ND	16.7	04/19/18 23:12	
delta-BHC	ug/kg	ND	1.7	04/19/18 23:12	
Dieldrin	ug/kg	ND	3.3	04/19/18 23:12	
Endosulfan I	ug/kg	ND	1.7	04/19/18 23:12	
Endosulfan II	ug/kg	ND	3.3	04/19/18 23:12	
Endosulfan sulfate	ug/kg	ND	3.3	04/19/18 23:12	
Endrin	ug/kg	ND	3.3	04/19/18 23:12	
Endrin aldehyde	ug/kg	ND	3.3	04/19/18 23:12	
Endrin ketone	ug/kg	ND	3.3	04/19/18 23:12	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/19/18 23:12	
gamma-Chlordane	ug/kg	ND	1.7	04/19/18 23:12	
Heptachlor	ug/kg	ND	1.7	04/19/18 23:12	
Heptachlor epoxide	ug/kg	ND	1.7	04/19/18 23:12	
Methoxychlor	ug/kg	ND	16.7	04/19/18 23:12	
Toxaphene	ug/kg	ND	50.0	04/19/18 23:12	
Decachlorobiphenyl (S)	%.	93	30-150	04/19/18 23:12	
Tetrachloro-m-xylene (S)	%.	98	30-150	04/19/18 23:12	

LABORATORY CONTROL SAMPLE: 2891966

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	32.6	98	62-127	
4,4'-DDE	ug/kg	33.3	31.8	95	66-125	
4,4'-DDT	ug/kg	33.3	31.9	96	67-128	
Aldrin	ug/kg	16.7	15.0	90	66-125	
alpha-BHC	ug/kg	16.7	16.0	96	64-125	
alpha-Chlordane	ug/kg	16.7	15.5	93	68-125	
beta-BHC	ug/kg	16.7	15.8	95	69-125	
delta-BHC	ug/kg	16.7	13.2	79	42-133	
Dieldrin	ug/kg	33.3	34.3	103	69-126	
Endosulfan I	ug/kg	16.7	14.8	89	63-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

LABORATORY CONTROL SAMPLE: 2891966

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endosulfan II	ug/kg	33.3	33.3	100	69-125	
Endosulfan sulfate	ug/kg	33.3	29.6	89	56-137	
Endrin	ug/kg	33.3	31.7	95	69-125	
Endrin aldehyde	ug/kg	33.3	31.6	95	65-125	
Endrin ketone	ug/kg	33.3	33.9	102	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	16.0	96	67-125	
gamma-Chlordane	ug/kg	16.7	14.1	85	63-125	
Heptachlor	ug/kg	16.7	16.5	99	69-125	
Heptachlor epoxide	ug/kg	16.7	15.7	94	68-125	
Methoxychlor	ug/kg	167	163	98	65-134	
Decachlorobiphenyl (S)	%.			91	30-150	
Tetrachloro-m-xylene (S)	%.			94	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891992 2891993

Parameter	Units	10427291002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	212	37.2	37.1	174	220	-103	21	56-125	23	20	M6,R1
4,4'-DDE	ug/kg	87.8	37.2	37.1	89.4	109	4	58	32-150	20	20	M6
4,4'-DDT	ug/kg	ND	37.2	37.1	63.9J	63.3J	172	170	60-132		20	M6
Aldrin	ug/kg	ND	18.7	18.6	18.6J	17.7J	100	95	56-125		20	
alpha-BHC	ug/kg	ND	18.7	18.6	16.8J	18.5J	90	99	54-136		20	
alpha-Chlordane	ug/kg	ND	18.7	18.6	35.2J	41.6	189	224	54-133		20	M6
beta-BHC	ug/kg	ND	18.7	18.6	20.2J	21.1J	109	113	30-150		20	
delta-BHC	ug/kg	ND	18.7	18.6	14.3J	14.6J	77	78	45-145		20	
Dieldrin	ug/kg	ND	37.2	37.1	38.3J	39.4J	103	106	47-150		20	
Endosulfan I	ug/kg	ND	18.7	18.6	18.9J	19.1J	101	103	35-145		20	
Endosulfan II	ug/kg	ND	37.2	37.1	38.6J	39.6J	104	107	50-147		20	
Endosulfan sulfate	ug/kg	ND	37.2	37.1	35.5J	35.6J	95	96	54-132		20	
Endrin	ug/kg	ND	37.2	37.1	34.7J	35.4J	93	95	62-125		20	
Endrin aldehyde	ug/kg	ND	37.2	37.1	38.9J	39.6J	105	106	33-150		20	
Endrin ketone	ug/kg	ND	37.2	37.1	37.7J	37.9J	101	102	56-144		20	
gamma-BHC (Lindane)	ug/kg	ND	18.7	18.6	17.1J	18J	92	97	63-125		20	
gamma-Chlordane	ug/kg	ND	18.7	18.6	26.5J	30.4J	143	164	45-132		20	M6
Heptachlor	ug/kg	ND	18.7	18.6	18.9J	19.3J	101	104	51-142		20	
Heptachlor epoxide	ug/kg	ND	18.7	18.6	24.4J	27.6J	131	148	50-142		20	M6
Methoxychlor	ug/kg	ND	187	186	155J	168J	83	90	58-139		20	
Decachlorobiphenyl (S)	%.						0	0	30-150			S4
Tetrachloro-m-xylene (S)	%.						0	0	30-150			2M,D4,S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 532316 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2890749 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/16/18 15:30	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/16/18 15:30	
Decachlorobiphenyl (S)	%.	90	30-134	04/16/18 15:30	
Tetrachloro-m-xylene (S)	%.	89	48-125	04/16/18 15:30	

LABORATORY CONTROL SAMPLE: 2890750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	578	87	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	588	88	62-125	
Decachlorobiphenyl (S)	%.			97	30-134	
Tetrachloro-m-xylene (S)	%.			97	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890820 2890821

Parameter	Units	10427018004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	779	782	625	654	80	84	30-150	5	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	779	782	650	643	83	82	30-138	1	30	
Decachlorobiphenyl (S)	%.						80	76	30-134			
Tetrachloro-m-xylene (S)	%.						80	80	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 532275 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10427291002, 10427291003, 10427291005, 10427291006, 10427291007, 10427291009

METHOD BLANK: 2890574 Matrix: Solid
Associated Lab Samples: 10427291002, 10427291003, 10427291005, 10427291006, 10427291007, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/18/18 16:57	
1,2-Dichlorobenzene	ug/kg	ND	330	04/18/18 16:57	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/18/18 16:57	
1,3-Dichlorobenzene	ug/kg	ND	330	04/18/18 16:57	
1,4-Dichlorobenzene	ug/kg	ND	330	04/18/18 16:57	
1-Methylnaphthalene	ug/kg	ND	330	04/18/18 16:57	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/18/18 16:57	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/18/18 16:57	
2,4-Dichlorophenol	ug/kg	ND	330	04/18/18 16:57	
2,4-Dimethylphenol	ug/kg	ND	330	04/18/18 16:57	
2,4-Dinitrophenol	ug/kg	ND	330	04/18/18 16:57	
2,4-Dinitrotoluene	ug/kg	ND	330	04/18/18 16:57	
2,6-Dinitrotoluene	ug/kg	ND	330	04/18/18 16:57	
2-Chloronaphthalene	ug/kg	ND	330	04/18/18 16:57	
2-Chlorophenol	ug/kg	ND	330	04/18/18 16:57	
2-Methylnaphthalene	ug/kg	ND	330	04/18/18 16:57	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/18/18 16:57	
2-Nitroaniline	ug/kg	ND	330	04/18/18 16:57	
2-Nitrophenol	ug/kg	ND	330	04/18/18 16:57	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/18/18 16:57	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/18/18 16:57	
3-Nitroaniline	ug/kg	ND	330	04/18/18 16:57	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/18/18 16:57	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/18/18 16:57	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/18/18 16:57	
4-Chloroaniline	ug/kg	ND	330	04/18/18 16:57	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/18/18 16:57	
4-Nitroaniline	ug/kg	ND	330	04/18/18 16:57	
4-Nitrophenol	ug/kg	ND	330	04/18/18 16:57	
Acenaphthene	ug/kg	ND	330	04/18/18 16:57	
Acenaphthylene	ug/kg	ND	330	04/18/18 16:57	
Anthracene	ug/kg	ND	330	04/18/18 16:57	
Benzo(a)anthracene	ug/kg	ND	330	04/18/18 16:57	
Benzo(a)pyrene	ug/kg	ND	330	04/18/18 16:57	
Benzo(b)fluoranthene	ug/kg	ND	330	04/18/18 16:57	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/18/18 16:57	
Benzo(k)fluoranthene	ug/kg	ND	330	04/18/18 16:57	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/18/18 16:57	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/18/18 16:57	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/18/18 16:57	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/18/18 16:57	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

METHOD BLANK: 2890574 Matrix: Solid
Associated Lab Samples: 10427291002, 10427291003, 10427291005, 10427291006, 10427291007, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/18/18 16:57	
Carbazole	ug/kg	ND	330	04/18/18 16:57	
Chrysene	ug/kg	ND	330	04/18/18 16:57	
Di-n-butylphthalate	ug/kg	ND	330	04/18/18 16:57	
Di-n-octylphthalate	ug/kg	ND	330	04/18/18 16:57	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/18/18 16:57	
Dibenzofuran	ug/kg	ND	330	04/18/18 16:57	
Diethylphthalate	ug/kg	ND	330	04/18/18 16:57	
Dimethylphthalate	ug/kg	ND	330	04/18/18 16:57	
Fluoranthene	ug/kg	ND	330	04/18/18 16:57	
Fluorene	ug/kg	ND	330	04/18/18 16:57	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/18/18 16:57	
Hexachlorobenzene	ug/kg	ND	330	04/18/18 16:57	
Hexachloroethane	ug/kg	ND	330	04/18/18 16:57	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/18/18 16:57	
Isophorone	ug/kg	ND	330	04/18/18 16:57	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/18/18 16:57	
N-Nitrosodimethylamine	ug/kg	ND	330	04/18/18 16:57	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/18/18 16:57	
Naphthalene	ug/kg	ND	330	04/18/18 16:57	
Nitrobenzene	ug/kg	ND	330	04/18/18 16:57	
Pentachlorophenol	ug/kg	ND	670	04/18/18 16:57	
Phenanthrene	ug/kg	ND	330	04/18/18 16:57	
Phenol	ug/kg	ND	330	04/18/18 16:57	
Pyrene	ug/kg	ND	330	04/18/18 16:57	
2,4,6-Tribromophenol (S)	%.	77	60-125	04/18/18 16:57	
2-Fluorobiphenyl (S)	%.	79	30-132	04/18/18 16:57	
2-Fluorophenol (S)	%.	72	40-125	04/18/18 16:57	
Nitrobenzene-d5 (S)	%.	71	43-125	04/18/18 16:57	
p-Terphenyl-d14 (S)	%.	86	62-125	04/18/18 16:57	
Phenol-d6 (S)	%.	72	48-125	04/18/18 16:57	

LABORATORY CONTROL SAMPLE: 2890575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	983	59	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1010	61	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1320	79	63-125	
1,3-Dichlorobenzene	ug/kg	1670	980	59	38-125	
1,4-Dichlorobenzene	ug/kg	1670	984	59	39-125	
1-Methylnaphthalene	ug/kg	1670	1190	72	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1340	81	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1340	80	61-125	
2,4-Dichlorophenol	ug/kg	1670	1230	74	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

LABORATORY CONTROL SAMPLE: 2890575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1140	69	51-125	
2,4-Dinitrophenol	ug/kg	1670	1290	78	30-132	6M
2,4-Dinitrotoluene	ug/kg	1670	1580	95	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1490	89	63-125	
2-Chloronaphthalene	ug/kg	1670	1310	79	61-125	
2-Chlorophenol	ug/kg	1670	987	59	46-125	
2-Methylnaphthalene	ug/kg	1670	1160	70	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1070	64	50-125	
2-Nitroaniline	ug/kg	1670	1330	80	61-125	
2-Nitrophenol	ug/kg	1670	1110	66	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1150	69	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1260	75	47-125	
3-Nitroaniline	ug/kg	1670	1270	76	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1540J	93	30-141	6M
4-Bromophenylphenyl ether	ug/kg	1670	1380	83	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1360	82	64-125	
4-Chloroaniline	ug/kg	1670	853	51	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1390	83	64-125	
4-Nitroaniline	ug/kg	1670	1290	77	59-125	
4-Nitrophenol	ug/kg	1670	1300	78	54-125	
Acenaphthene	ug/kg	1670	1320	79	62-125	
Acenaphthylene	ug/kg	1670	1320	79	61-125	
Anthracene	ug/kg	1670	1360	81	66-125	
Benzo(a)anthracene	ug/kg	1670	1410	84	69-125	
Benzo(a)pyrene	ug/kg	1670	1410	85	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1410	85	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1470	88	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1440	87	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1070	64	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	914	55	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	773	46	37-125	6M
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1530	92	69-131	
Butylbenzylphthalate	ug/kg	1670	1500	90	69-129	
Carbazole	ug/kg	1670	1430	86	66-125	
Chrysene	ug/kg	1670	1430	86	68-125	
Di-n-butylphthalate	ug/kg	1670	1510	90	69-125	
Di-n-octylphthalate	ug/kg	1670	1580	95	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1510	91	64-125	
Dibenzofuran	ug/kg	1670	1410	84	65-125	
Diethylphthalate	ug/kg	1670	1450	87	67-125	
Dimethylphthalate	ug/kg	1670	1440	86	67-125	
Fluoranthene	ug/kg	1670	1430	86	66-125	
Fluorene	ug/kg	1670	1390	83	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	951	57	40-125	
Hexachlorobenzene	ug/kg	1670	1400	84	62-125	
Hexachloroethane	ug/kg	1670	939	56	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1490	90	64-125	

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

LABORATORY CONTROL SAMPLE: 2890575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1170	70	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1090	65	50-125	
N-Nitrosodimethylamine	ug/kg	1670	956	57	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1390	84	65-125	
Naphthalene	ug/kg	1670	1040	62	48-125	
Nitrobenzene	ug/kg	1670	984	59	48-125	
Pentachlorophenol	ug/kg	1670	1300	78	41-125	
Phenanthrene	ug/kg	1670	1350	81	66-125	
Phenol	ug/kg	1670	1000	60	46-125	
Pyrene	ug/kg	1670	1420	85	69-125	
2,4,6-Tribromophenol (S)	%.			84	60-125	
2-Fluorobiphenyl (S)	%.			69	30-132	
2-Fluorophenol (S)	%.			52	40-125	
Nitrobenzene-d5 (S)	%.			53	43-125	
p-Terphenyl-d14 (S)	%.			85	62-125	
Phenol-d6 (S)	%.			57	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890607 2890608

Parameter	Units	10427018008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	1940	1950	1400J	1390J	73	71	30-127		30	
1,2-Dichlorobenzene	ug/kg	ND	1940	1950	1330J	1150J	69	59	30-125		30	
1,2-Diphenylhydrazine	ug/kg	ND	1940	1950	1410J	1360J	73	70	30-150		30	
1,3-Dichlorobenzene	ug/kg	ND	1940	1950	1270J	1060J	66	54	30-125		30	
1,4-Dichlorobenzene	ug/kg	ND	1940	1950	1280J	1100J	66	57	30-125		30	
1-Methylnaphthalene	ug/kg	ND	1940	1950	1560J	1520J	79	76	42-125		30	
2,4,5-Trichlorophenol	ug/kg	ND	1940	1950	1400J	1400J	73	72	30-150		30	
2,4,6-Trichlorophenol	ug/kg	ND	1940	1950	1450J	1420J	75	73	30-150		30	
2,4-Dichlorophenol	ug/kg	ND	1940	1950	1490J	1420J	77	73	30-135		30	
2,4-Dimethylphenol	ug/kg	ND	1940	1950	1540J	1470J	79	76	30-148		30	
2,4-Dinitrophenol	ug/kg	ND	1940	1950	ND	ND	0	0	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	ND	1940	1950	1030J	818J	53	42	30-150		30	
2,6-Dinitrotoluene	ug/kg	ND	1940	1950	1150J	1010J	60	52	30-150		30	
2-Chloronaphthalene	ug/kg	ND	1940	1950	1460J	1430J	76	74	30-138		30	
2-Chlorophenol	ug/kg	ND	1940	1950	1480J	1380J	76	71	30-130		30	
2-Methylnaphthalene	ug/kg	ND	1940	1950	1570J	1510J	79	76	46-125		30	
2-Methylphenol(o-Cresol)	ug/kg	ND	1940	1950	1440J	1440J	75	74	30-133		30	
2-Nitroaniline	ug/kg	ND	1940	1950	1610J	1580J	83	81	30-150		30	
2-Nitrophenol	ug/kg	ND	1940	1950	813J	ND	42	31	30-134		30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	1940	1950	1460J	1380J	75	71	30-138		30	
3,3'-Dichlorobenzidine	ug/kg	ND	1940	1950	ND	ND	32	41	30-149		30	
3-Nitroaniline	ug/kg	ND	1940	1950	1780J	1750J	92	90	30-150		30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1940	1950	ND	ND	0	0	30-133		30	M1

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890607 2890608

Parameter	Units	10427018008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	1940	1950	1520J	1460J	79	75	44-125		30	
4-Chloro-3-methylphenol	ug/kg	ND	1940	1950	1490J	1440J	77	74	30-150		30	
4-Chloroaniline	ug/kg	ND	1940	1950	ND	ND	49	46	30-125		30	
4-Chlorophenylphenyl ether	ug/kg	ND	1940	1950	1530J	1440J	79	74	44-125		30	
4-Nitroaniline	ug/kg	ND	1940	1950	1670J	1750J	86	90	30-150		30	
4-Nitrophenol	ug/kg	ND	1940	1950	ND	1280J	47	66	30-150		30	
Acenaphthene	ug/kg	ND	1940	1950	1540J	1790J	80	92	40-125		30	
Acenaphthylene	ug/kg	ND	1940	1950	1560J	1460J	81	75	30-150		30	
Anthracene	ug/kg	ND	1940	1950	1650J	2080J	77	99	30-150		30	
Benzo(a)anthracene	ug/kg	ND	1940	1950	1910J	3050J	78	136	30-150		30	
Benzo(a)pyrene	ug/kg	ND	1940	1950	1810J	2600J	94	134	30-150		30	
Benzo(b)fluoranthene	ug/kg	ND	1940	1950	1910J	2960J	99	152	30-150		30	M1
Benzo(g,h,i)perylene	ug/kg	ND	1940	1950	1930J	2310J	99	119	30-150		30	
Benzo(k)fluoranthene	ug/kg	ND	1940	1950	1630J	2200J	84	113	30-150		30	
bis(2-Chloroethoxy)methane	ug/kg	ND	1940	1950	1420J	1370J	73	70	30-134		30	
bis(2-Chloroethyl) ether	ug/kg	ND	1940	1950	1210J	1180J	62	61	30-125		30	
bis(2-Chloroisopropyl) ether	ug/kg	ND	1940	1950	1150J	1050J	59	54	30-125		30	6M
bis(2-Ethylhexyl)phthalate	ug/kg	ND	1940	1950	3800J	2960J	76	33	30-150		30	
Butylbenzylphthalate	ug/kg	ND	1940	1950	1790J	1760J	93	91	30-150		30	
Carbazole	ug/kg	ND	1940	1950	1650J	1960J	82	98	41-125		30	
Chrysene	ug/kg	ND	1940	1950	2000J	3120J	82	139	30-150		30	
Di-n-butylphthalate	ug/kg	ND	1940	1950	2730J	1930J	141	99	30-150		30	
Di-n-octylphthalate	ug/kg	ND	1940	1950	1870J	1770J	96	91	30-150		30	
Dibenz(a,h)anthracene	ug/kg	ND	1940	1950	1570J	1660J	81	85	30-150		30	
Dibenzofuran	ug/kg	ND	1940	1950	1620J	1590J	84	82	45-125		30	
Diethylphthalate	ug/kg	ND	1940	1950	1530J	1530J	79	79	30-150		30	
Dimethylphthalate	ug/kg	ND	1940	1950	1600J	1500J	82	77	30-150		30	
Fluoranthene	ug/kg	ND	1940	1950	2260J	5090	76	221	30-150		30	M1
Fluorene	ug/kg	ND	1940	1950	1660J	1740J	77	81	30-150		30	
Hexachloro-1,3-butadiene	ug/kg	ND	1940	1950	1420J	1230J	73	63	30-128		30	
Hexachlorobenzene	ug/kg	ND	1940	1950	1570J	1500J	81	77	30-150		30	
Hexachloroethane	ug/kg	ND	1940	1950	ND	ND	41	26	30-125		30	M1
Indeno(1,2,3-cd)pyrene	ug/kg	ND	1940	1950	1690J	2080J	88	107	30-150		30	
Isophorone	ug/kg	ND	1940	1950	1440J	1380J	74	71	30-140		30	
N-Nitroso-di-n-propylamine	ug/kg	ND	1940	1950	1410J	1300J	73	67	30-147		30	
N-Nitrosodimethylamine	ug/kg	ND	1940	1950	ND	ND	52	45	30-125		30	
N-Nitrosodiphenylamine	ug/kg	ND	1940	1950	1760J	1700J	91	87	30-150		30	
Naphthalene	ug/kg	ND	1940	1950	1470J	1460J	76	75	44-125		30	
Nitrobenzene	ug/kg	ND	1940	1950	1290J	1270J	67	65	30-136		30	
Pentachlorophenol	ug/kg	ND	1940	1950	ND	ND	56	48	30-150		30	
Phenanthrene	ug/kg	ND	1940	1950	2210J	4090	53	150	30-150		30	
Phenol	ug/kg	ND	1940	1950	1380J	1340J	71	69	30-129		30	
Pyrene	ug/kg	ND	1940	1950	2560J	5020	76	203	30-150		30	M1
2,4,6-Tribromophenol (S)	%.						64	68	60-125			
2-Fluorobiphenyl (S)	%.						61	64	30-132			
2-Fluorophenol (S)	%.						54	56	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890607 2890608

Parameter	Units	10427018008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						50	52	43-125			P3
p-Terphenyl-d14 (S)	%.						79	78	62-125			
Phenol-d6 (S)	%.						59	57	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 533467 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10427291001, 10427291004, 10427291008

METHOD BLANK: 2897876 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291004, 10427291008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/24/18 14:01	
1,2-Dichlorobenzene	ug/kg	ND	330	04/24/18 14:01	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/24/18 14:01	
1,3-Dichlorobenzene	ug/kg	ND	330	04/24/18 14:01	
1,4-Dichlorobenzene	ug/kg	ND	330	04/24/18 14:01	
1-Methylnaphthalene	ug/kg	ND	330	04/24/18 14:01	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/24/18 14:01	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/24/18 14:01	
2,4-Dichlorophenol	ug/kg	ND	330	04/24/18 14:01	
2,4-Dimethylphenol	ug/kg	ND	330	04/24/18 14:01	
2,4-Dinitrophenol	ug/kg	ND	330	04/24/18 14:01	
2,4-Dinitrotoluene	ug/kg	ND	330	04/24/18 14:01	
2,6-Dinitrotoluene	ug/kg	ND	330	04/24/18 14:01	
2-Chloronaphthalene	ug/kg	ND	330	04/24/18 14:01	
2-Chlorophenol	ug/kg	ND	330	04/24/18 14:01	
2-Methylnaphthalene	ug/kg	ND	330	04/24/18 14:01	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/24/18 14:01	
2-Nitroaniline	ug/kg	ND	330	04/24/18 14:01	
2-Nitrophenol	ug/kg	ND	330	04/24/18 14:01	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/24/18 14:01	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/24/18 14:01	
3-Nitroaniline	ug/kg	ND	330	04/24/18 14:01	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/24/18 14:01	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/24/18 14:01	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/24/18 14:01	
4-Chloroaniline	ug/kg	ND	330	04/24/18 14:01	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/24/18 14:01	
4-Nitroaniline	ug/kg	ND	330	04/24/18 14:01	
4-Nitrophenol	ug/kg	ND	330	04/24/18 14:01	
Acenaphthene	ug/kg	ND	330	04/24/18 14:01	
Acenaphthylene	ug/kg	ND	330	04/24/18 14:01	
Anthracene	ug/kg	ND	330	04/24/18 14:01	
Benzo(a)anthracene	ug/kg	ND	330	04/24/18 14:01	
Benzo(a)pyrene	ug/kg	ND	330	04/24/18 14:01	
Benzo(b)fluoranthene	ug/kg	ND	330	04/24/18 14:01	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/24/18 14:01	
Benzo(k)fluoranthene	ug/kg	ND	330	04/24/18 14:01	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/24/18 14:01	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/24/18 14:01	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/24/18 14:01	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/24/18 14:01	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

METHOD BLANK: 2897876 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291004, 10427291008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/24/18 14:01	
Carbazole	ug/kg	ND	330	04/24/18 14:01	
Chrysene	ug/kg	ND	330	04/24/18 14:01	
Di-n-butylphthalate	ug/kg	ND	330	04/24/18 14:01	
Di-n-octylphthalate	ug/kg	ND	330	04/24/18 14:01	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/24/18 14:01	
Dibenzofuran	ug/kg	ND	330	04/24/18 14:01	
Diethylphthalate	ug/kg	ND	330	04/24/18 14:01	
Dimethylphthalate	ug/kg	ND	330	04/24/18 14:01	
Fluoranthene	ug/kg	ND	330	04/24/18 14:01	
Fluorene	ug/kg	ND	330	04/24/18 14:01	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/24/18 14:01	
Hexachlorobenzene	ug/kg	ND	330	04/24/18 14:01	
Hexachloroethane	ug/kg	ND	330	04/24/18 14:01	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/24/18 14:01	
Isophorone	ug/kg	ND	330	04/24/18 14:01	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/24/18 14:01	
N-Nitrosodimethylamine	ug/kg	ND	330	04/24/18 14:01	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/24/18 14:01	
Naphthalene	ug/kg	ND	330	04/24/18 14:01	
Nitrobenzene	ug/kg	ND	330	04/24/18 14:01	
Pentachlorophenol	ug/kg	ND	670	04/24/18 14:01	
Phenanthrene	ug/kg	ND	330	04/24/18 14:01	
Phenol	ug/kg	ND	330	04/24/18 14:01	
Pyrene	ug/kg	ND	330	04/24/18 14:01	
2,4,6-Tribromophenol (S)	%.	93	60-125	04/24/18 14:01	
2-Fluorobiphenyl (S)	%.	90	30-132	04/24/18 14:01	
2-Fluorophenol (S)	%.	85	40-125	04/24/18 14:01	
Nitrobenzene-d5 (S)	%.	85	43-125	04/24/18 14:01	
p-Terphenyl-d14 (S)	%.	108	62-125	04/24/18 14:01	
Phenol-d6 (S)	%.	85	48-125	04/24/18 14:01	

LABORATORY CONTROL SAMPLE: 2897877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1270	76	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1260	75	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1430	86	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1220	73	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1230	74	39-125	
1-Methylnaphthalene	ug/kg	1670	1360	82	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1490	89	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1470	88	61-125	
2,4-Dichlorophenol	ug/kg	1670	1440	86	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

LABORATORY CONTROL SAMPLE: 2897877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1350	81	51-125	
2,4-Dinitrophenol	ug/kg	1670	1200	72	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1740	104	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1630	98	63-125	
2-Chloronaphthalene	ug/kg	1670	1430	86	61-125	
2-Chlorophenol	ug/kg	1670	1270	76	46-125	
2-Methylnaphthalene	ug/kg	1670	1340	81	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1290	77	50-125	
2-Nitroaniline	ug/kg	1670	1510	91	61-125	
2-Nitrophenol	ug/kg	1670	1350	81	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1360	81	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1450	87	47-125	
3-Nitroaniline	ug/kg	1670	1460	88	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1530J	92	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1520	91	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1560	93	64-125	
4-Chloroaniline	ug/kg	1670	1050	63	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1500	90	64-125	
4-Nitroaniline	ug/kg	1670	1510	91	59-125	
4-Nitrophenol	ug/kg	1670	1430	86	54-125	
Acenaphthene	ug/kg	1670	1440	87	62-125	
Acenaphthylene	ug/kg	1670	1450	87	61-125	
Anthracene	ug/kg	1670	1490	89	66-125	
Benzo(a)anthracene	ug/kg	1670	1580	95	69-125	
Benzo(a)pyrene	ug/kg	1670	1560	94	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1540	92	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1650	99	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1590	96	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1310	79	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1200	72	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1030	62	37-125	6M
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1800	108	69-131	
Butylbenzylphthalate	ug/kg	1670	1740	104	69-129	
Carbazole	ug/kg	1670	1580	95	66-125	
Chrysene	ug/kg	1670	1580	95	68-125	
Di-n-butylphthalate	ug/kg	1670	1700	102	69-125	
Di-n-octylphthalate	ug/kg	1670	1830	110	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1680	101	64-125	
Dibenzofuran	ug/kg	1670	1500	90	65-125	
Diethylphthalate	ug/kg	1670	1600	96	67-125	
Dimethylphthalate	ug/kg	1670	1590	95	67-125	
Fluoranthene	ug/kg	1670	1560	94	66-125	
Fluorene	ug/kg	1670	1490	89	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1210	72	40-125	
Hexachlorobenzene	ug/kg	1670	1550	93	62-125	
Hexachloroethane	ug/kg	1670	1230	74	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1650	99	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

LABORATORY CONTROL SAMPLE: 2897877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1350	81	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1260	75	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1170	70	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1570	94	65-125	
Naphthalene	ug/kg	1670	1270	76	48-125	
Nitrobenzene	ug/kg	1670	1250	75	48-125	
Pentachlorophenol	ug/kg	1670	1220	73	41-125	
Phenanthrene	ug/kg	1670	1490	89	66-125	
Phenol	ug/kg	1670	1250	75	46-125	
Pyrene	ug/kg	1670	1600	96	69-125	
2,4,6-Tribromophenol (S)	%.			97	60-125	
2-Fluorobiphenyl (S)	%.			81	30-132	
2-Fluorophenol (S)	%.			74	40-125	
Nitrobenzene-d5 (S)	%.			72	43-125	
p-Terphenyl-d14 (S)	%.			99	62-125	
Phenol-d6 (S)	%.			74	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897878 2897879

Parameter	Units	10427906003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	<70.8	1850	1840	1210	1310	66	71	30-127	8	30	
1,2-Dichlorobenzene	ug/kg	<68.9	1850	1840	1250	1250	68	68	30-125	0	30	
1,2-Diphenylhydrazine	ug/kg	<66.0	1850	1840	1010	1080	55	59	30-150	7	30	
1,3-Dichlorobenzene	ug/kg	<68.1	1850	1840	1220	1220	66	66	30-125	0	30	
1,4-Dichlorobenzene	ug/kg	<66.5	1850	1840	1230	1210	67	66	30-125	2	30	
1-Methylnaphthalene	ug/kg	<57.3	1850	1840	1270	1360	69	74	42-125	7	30	
2,4,5-Trichlorophenol	ug/kg	<71.3	1850	1840	1160	1250	63	68	30-150	8	30	
2,4,6-Trichlorophenol	ug/kg	<51.8	1850	1840	1240	1360	67	74	30-150	9	30	
2,4-Dichlorophenol	ug/kg	<68.8	1850	1840	1290	1390	70	75	30-135	8	30	
2,4-Dimethylphenol	ug/kg	<137	1850	1840	1290	1430	70	78	30-148	10	30	
2,4-Dinitrophenol	ug/kg	<82.1	1850	1840	ND	ND	0	0	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	<49.4	1850	1840	555	642	30	35	30-150	14	30	
2,6-Dinitrotoluene	ug/kg	<50.9	1850	1840	710	771	39	42	30-150	8	30	
2-Chloronaphthalene	ug/kg	<51.8	1850	1840	1250	1330	68	72	30-138	6	30	
2-Chlorophenol	ug/kg	<72.6	1850	1840	1320	1350	72	74	30-130	2	30	
2-Methylnaphthalene	ug/kg	<56.6	1850	1840	1260	1350	68	73	46-125	7	30	
2-Methylphenol(o-Cresol)	ug/kg	<91.9	1850	1840	1310	1370	71	74	30-133	4	30	
2-Nitroaniline	ug/kg	<80.6	1850	1840	1610	1730	87	94	30-150	7	30	
2-Nitrophenol	ug/kg	<68.7	1850	1840	562	610	30	33	30-134	8	30	
3&4-Methylphenol(m&p Cresol)	ug/kg	<82.3	1850	1840	1330	1390	72	75	30-138	5	30	
3,3'-Dichlorobenzidine	ug/kg	<87.3	1850	1840	1460	1420	79	77	30-149	2	30	
3-Nitroaniline	ug/kg	<89.4	1850	1840	1860	1890	101	102	30-150	1	30	
4,6-Dinitro-2-methylphenol	ug/kg	<147	1850	1840	ND	ND	0	0	30-133		30	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897878 2897879

Parameter	Units	10427906003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	<61.5	1850	1840	1260	1390	68	76	44-125	10	30	
4-Chloro-3-methylphenol	ug/kg	<50.6	1850	1840	1280	1420	70	77	30-150	10	30	
4-Chloroaniline	ug/kg	<102	1850	1840	1060	953	57	52	30-125	11	30	
4-Chlorophenylphenyl ether	ug/kg	<49.9	1850	1840	1280	1360	69	74	44-125	6	30	
4-Nitroaniline	ug/kg	<65.1	1850	1840	1800	1850	97	100	30-150	3	30	
4-Nitrophenol	ug/kg	<105	1850	1840	1100	1160	60	63	30-150	6	30	
Acenaphthene	ug/kg	<59.8	1850	1840	1150	1250	63	68	40-125	8	30	
Acenaphthylene	ug/kg	<50.0	1850	1840	1220	1320	66	72	30-150	8	30	
Anthracene	ug/kg	<52.6	1850	1840	1220	1340	66	73	30-150	9	30	
Benzo(a)anthracene	ug/kg	<42.4	1850	1840	1220	1340	66	73	30-150	10	30	
Benzo(a)pyrene	ug/kg	<41.3	1850	1840	1120	1270	61	69	30-150	13	30	
Benzo(b)fluoranthene	ug/kg	<44.2	1850	1840	1200	1290	65	70	30-150	7	30	
Benzo(g,h,i)perylene	ug/kg	<31.6	1850	1840	967	1090	53	59	30-150	12	30	
Benzo(k)fluoranthene	ug/kg	<44.2	1850	1840	1160	1300	63	71	30-150	12	30	
bis(2-Chloroethoxy)methane	ug/kg	<70.8	1850	1840	1300	1370	71	74	30-134	5	30	
bis(2-Chloroethyl) ether	ug/kg	<80.0	1850	1840	1200	1280	65	70	30-125	7	30	
bis(2-Chloroisopropyl) ether	ug/kg	<84.7	1850	1840	1050	1060	57	57	30-125	1	30	6M
bis(2-Ethylhexyl)phthalate	ug/kg	104J	1850	1840	1490	1660	75	84	30-150	11	30	
Butylbenzylphthalate	ug/kg	140J	1850	1840	1560	1660	77	83	30-150	7	30	
Carbazole	ug/kg	<49.1	1850	1840	1360	1450	74	79	41-125	7	30	
Chrysene	ug/kg	<36.7	1850	1840	1210	1350	66	73	30-150	11	30	
Di-n-butylphthalate	ug/kg	<49.9	1850	1840	1430	1550	78	84	30-150	8	30	
Di-n-octylphthalate	ug/kg	<112	1850	1840	1450	1570	79	85	30-150	7	30	
Dibenz(a,h)anthracene	ug/kg	<37.7	1850	1840	1150	1260	63	69	30-150	9	30	
Dibenzofuran	ug/kg	<53.0	1850	1840	1270	1370	69	74	45-125	7	30	
Diethylphthalate	ug/kg	<43.3	1850	1840	1380	1480	75	81	30-150	7	30	
Dimethylphthalate	ug/kg	<56.2	1850	1840	1400	1470	76	80	30-150	5	30	
Fluoranthene	ug/kg	<39.0	1850	1840	1210	1340	65	72	30-150	10	30	
Fluorene	ug/kg	<50.9	1850	1840	1260	1340	68	73	30-150	6	30	
Hexachloro-1,3-butadiene	ug/kg	<84.2	1850	1840	1150	1270	62	69	30-128	9	30	
Hexachlorobenzene	ug/kg	<47.2	1850	1840	1060	1220	58	66	30-150	14	30	
Hexachloroethane	ug/kg	<74.7	1850	1840	303J	252J	16	14	30-125		30	M1
Indeno(1,2,3-cd)pyrene	ug/kg	<42.5	1850	1840	1070	1180	58	64	30-150	9	30	
Isophorone	ug/kg	<83.7	1850	1840	1230	1350	67	73	30-140	9	30	
N-Nitroso-di-n-propylamine	ug/kg	<112	1850	1840	1300	1290	70	70	30-147	0	30	
N-Nitrosodimethylamine	ug/kg	<95.6	1850	1840	1240	1190	67	65	30-125	4	30	
N-Nitrosodiphenylamine	ug/kg	<44.9	1850	1840	1360	1470	74	80	30-150	8	30	
Naphthalene	ug/kg	<69.5	1850	1840	1240	1320	67	72	44-125	6	30	
Nitrobenzene	ug/kg	<73.4	1850	1840	1180	1230	64	67	30-136	4	30	
Pentachlorophenol	ug/kg	<108	1850	1840	528J	591J	29	32	30-150		30	M1
Phenanthrene	ug/kg	<50.0	1850	1840	1240	1330	66	71	30-150	8	30	
Phenol	ug/kg	<70.6	1850	1840	1250	1290	68	70	30-129	3	30	
Pyrene	ug/kg	<38.4	1850	1840	1270	1400	67	74	30-150	10	30	
2,4,6-Tribromophenol (S)	%.						62	67	60-125			
2-Fluorobiphenyl (S)	%.						67	71	30-132			
2-Fluorophenol (S)	%.						68	69	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897878 2897879

Parameter	Units	10427906003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						61	65	43-125			
p-Terphenyl-d14 (S)	%.						72	78	62-125			
Phenol-d6 (S)	%.						66	70	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 532273 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10427291002, 10427291003, 10427291004, 10427291005, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2890569 Matrix: Solid
Associated Lab Samples: 10427291002, 10427291003, 10427291004, 10427291005, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/16/18 16:05	
Acenaphthylene	ug/kg	ND	10.0	04/16/18 16:05	
Anthracene	ug/kg	ND	10.0	04/16/18 16:05	
Benzo(a)anthracene	ug/kg	ND	10.0	04/16/18 16:05	
Benzo(a)pyrene	ug/kg	ND	10.0	04/16/18 16:05	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/16/18 16:05	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/16/18 16:05	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/16/18 16:05	
Chrysene	ug/kg	ND	10.0	04/16/18 16:05	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/16/18 16:05	
Fluoranthene	ug/kg	ND	10.0	04/16/18 16:05	
Fluorene	ug/kg	ND	10.0	04/16/18 16:05	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/16/18 16:05	
Naphthalene	ug/kg	ND	10.0	04/16/18 16:05	
Phenanthrene	ug/kg	ND	10.0	04/16/18 16:05	
Pyrene	ug/kg	ND	10.0	04/16/18 16:05	
2-Fluorobiphenyl (S)	%.	82	42-125	04/16/18 16:05	
p-Terphenyl-d14 (S)	%.	104	57-125	04/16/18 16:05	

LABORATORY CONTROL SAMPLE: 2890570

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	24.5	73	52-125	
Acenaphthylene	ug/kg	33.3	27.4	82	50-125	
Anthracene	ug/kg	33.3	30.9	93	65-125	
Benzo(a)anthracene	ug/kg	33.3	32.2	97	60-125	
Benzo(a)pyrene	ug/kg	33.3	31.9	96	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	31.4	94	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	25.5	77	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	28.1	84	67-125	
Chrysene	ug/kg	33.3	29.3	88	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	23.6	71	63-125	
Fluoranthene	ug/kg	33.3	30.9	93	75-125	
Fluorene	ug/kg	33.3	26.4	79	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	24.7	74	63-125	
Naphthalene	ug/kg	33.3	27.2	82	49-125	
Phenanthrene	ug/kg	33.3	26.3	79	65-125	
Pyrene	ug/kg	33.3	30.2	91	64-125	
2-Fluorobiphenyl (S)	%.			79	42-125	
p-Terphenyl-d14 (S)	%.			108	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2890571 2890572

Parameter	Units	10427186001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	34.1	34.1	29.8	28.6	87	84	30-125	4	30	
Acenaphthylene	ug/kg	ND	34.1	34.1	29.8	30.2	87	88	30-133	1	30	
Anthracene	ug/kg	ND	34.1	34.1	41.5	41.5	122	122	30-150	0	30	
Benzo(a)anthracene	ug/kg	0.012 mg/kg	34.1	34.1	64.1	57.8	153	134	30-150	10	30	M1
Benzo(a)pyrene	ug/kg	0.013 mg/kg	34.1	34.1	60.0	53.0	137	116	30-150	12	30	
Benzo(b)fluoranthene	ug/kg	0.015 mg/kg	34.1	34.1	66.9	58.5	152	127	30-150	13	30	M1
Benzo(g,h,i)perylene	ug/kg	ND	34.1	34.1	40.8	36.9	120	108	30-150	10	30	
Benzo(k)fluoranthene	ug/kg	ND	34.1	34.1	43.9	40.5	129	119	30-150	8	30	
Chrysene	ug/kg	0.012 mg/kg	34.1	34.1	55.1	51.3	126	114	30-150	7	30	
Dibenz(a,h)anthracene	ug/kg	ND	34.1	34.1	25.2	25.0	74	73	30-131	1	30	
Fluoranthene	ug/kg	0.022 mg/kg	34.1	34.1	92.3	82.7	206	177	30-150	11	30	M1
Fluorene	ug/kg	ND	34.1	34.1	28.3	30.7	83	90	30-147	8	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	34.1	34.1	36.0	34.8	105	102	30-150	3	30	
Naphthalene	ug/kg	ND	34.1	34.1	26.6	27.4	78	80	30-131	3	30	
Phenanthrene	ug/kg	ND	34.1	34.1	58.5	57.4	171	168	30-150	2	30	M1
Pyrene	ug/kg	0.018 mg/kg	34.1	34.1	78.5	70.6	176	153	30-150	11	30	M1
2-Fluorobiphenyl (S)	%.						78	79	42-125			
p-Terphenyl-d14 (S)	%.						106	104	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 532984
QC Batch Method: EPA 3550
Analysis Method: EPA 8270D by SIM
Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10427291001, 10427291006

METHOD BLANK: 2894424
Matrix: Solid
Associated Lab Samples: 10427291001, 10427291006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/19/18 19:46	
Acenaphthylene	ug/kg	ND	10.0	04/19/18 19:46	
Anthracene	ug/kg	ND	10.0	04/19/18 19:46	
Benzo(a)anthracene	ug/kg	ND	10.0	04/19/18 19:46	
Benzo(a)pyrene	ug/kg	ND	10.0	04/19/18 19:46	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/19/18 19:46	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/19/18 19:46	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/19/18 19:46	
Chrysene	ug/kg	ND	10.0	04/19/18 19:46	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/19/18 19:46	
Fluoranthene	ug/kg	ND	10.0	04/19/18 19:46	
Fluorene	ug/kg	ND	10.0	04/19/18 19:46	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/19/18 19:46	
Naphthalene	ug/kg	ND	10.0	04/19/18 19:46	
Phenanthrene	ug/kg	ND	10.0	04/19/18 19:46	
Pyrene	ug/kg	ND	10.0	04/19/18 19:46	
2-Fluorobiphenyl (S)	%.	79	42-125	04/19/18 19:46	
p-Terphenyl-d14 (S)	%.	94	57-125	04/19/18 19:46	

LABORATORY CONTROL SAMPLE: 2894425

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	22.0	66	52-125	
Acenaphthylene	ug/kg	33.3	21.2	64	50-125	
Anthracene	ug/kg	33.3	31.2	94	65-125	
Benzo(a)anthracene	ug/kg	33.3	27.4	82	60-125	
Benzo(a)pyrene	ug/kg	33.3	30.3	91	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	33.2	100	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	30.0	90	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	28.7	86	67-125	
Chrysene	ug/kg	33.3	30.5	91	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	30.0	90	63-125	
Fluoranthene	ug/kg	33.3	29.1	87	75-125	
Fluorene	ug/kg	33.3	24.1	72	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	30.1	90	63-125	
Naphthalene	ug/kg	33.3	21.6	65	49-125	
Phenanthrene	ug/kg	33.3	27.9	84	65-125	
Pyrene	ug/kg	33.3	28.3	85	64-125	
2-Fluorobiphenyl (S)	%.			71	42-125	
p-Terphenyl-d14 (S)	%.			102	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2894426 2894427

Parameter	Units	10427632001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	37.4	37.3	32.7	32.5	88	87	30-125	1	30	
Acenaphthylene	ug/kg	ND	37.4	37.3	47.8	41.6	128	112	30-133	14	30	
Anthracene	ug/kg	ND	37.4	37.3	43.8	42.9	117	115	30-150	2	30	
Benzo(a)anthracene	ug/kg	0.023 mg/kg	37.4	37.3	104	85.5	215	167	30-150	19	30	M1
Benzo(a)pyrene	ug/kg	0.035 mg/kg	37.4	37.3	141	110	283	201	30-150	24	30	M1
Benzo(b)fluoranthene	ug/kg	0.051 mg/kg	37.4	37.3	184	147	356	255	30-150	23	30	M1
Benzo(g,h,i)perylene	ug/kg	0.033 mg/kg	37.4	37.3	120	97.0	233	172	30-150	21	30	M1
Benzo(k)fluoranthene	ug/kg	0.018 mg/kg	37.4	37.3	79.2	61.6	164	117	30-150	25	30	M1
Chrysene	ug/kg	0.032 mg/kg	37.4	37.3	127	101	254	184	30-150	23	30	M1
Dibenz(a,h)anthracene	ug/kg	ND	37.4	37.3	52.3	46.5	140	125	30-131	12	30	M1
Fluoranthene	ug/kg	0.054 mg/kg	37.4	37.3	211	162	419	288	30-150	26	30	M1
Fluorene	ug/kg	ND	37.4	37.3	35.4	34.9	95	94	30-147	1	30	
Indeno(1,2,3-cd)pyrene	ug/kg	0.025 mg/kg	37.4	37.3	96.8	78.2	192	143	30-150	21	30	M1
Naphthalene	ug/kg	ND	37.4	37.3	29.9	29.5	80	79	30-131	2	30	
Phenanthrene	ug/kg	0.028 mg/kg	37.4	37.3	124	113	256	227	30-150	9	30	M1
Pyrene	ug/kg	0.057 mg/kg	37.4	37.3	223	167	443	295	30-150	29	30	M1
2-Fluorobiphenyl (S)	%.						85	85	42-125			
p-Terphenyl-d14 (S)	%.						96	98	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 532497 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2891856 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	04/19/18 17:29	
n-Triacontane (S)	%.	110	50-150	04/19/18 17:29	

LABORATORY CONTROL SAMPLE & LCSD: 2891857 2891858

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	77.3	77.6	97	97	70-120	0	20	
n-Triacontane (S)	%.				104	99	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 438492 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 2026403 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/24/18 13:00	

LABORATORY CONTROL SAMPLE: 2026404

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1010	924	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2026421 2026422

Parameter	Units	10427291008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1080	1150	839	962	77	84	75-125	14	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2026423 2026424

Parameter	Units	10427291008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	42.9	42.7	28.6	29.2	67	68	75-125	2	20	M3

SAMPLE DUPLICATE: 2026425

Parameter	Units	10427354004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 286553 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004

METHOD BLANK: 1676305 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/20/18 13:32	

LABORATORY CONTROL SAMPLE: 1676306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1676307 1676308

Parameter	Units	40167646001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.10J	2.22	2.34	2.3	2.4	98	99	80-120	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1676309 1676310

Parameter	Units	10427291004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.67	3.98	3.65	4.2	3.7	88	82	80-120	12	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 286937 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 1678360 Matrix: Solid
Associated Lab Samples: 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/25/18 13:16	

LABORATORY CONTROL SAMPLE: 1678361

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.1	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678362 1678363

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.52	3.72	3.72	4.0	4.1	93	97	80-120	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678364 1678365

Parameter	Units	10428096003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.45	2.7	2.6	3.5	2.7	112	87	80-120	25	20	M0,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

QC Batch: 140842 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

METHOD BLANK: 557419 Matrix: Solid
Associated Lab Samples: 10427291001, 10427291002, 10427291003, 10427291004, 10427291005, 10427291006, 10427291007, 10427291008, 10427291009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.99	04/19/18 16:14	

LABORATORY CONTROL SAMPLE: 557418

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	50.3	52.6	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 557420 557421

Parameter	Units	10427291004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	1.4	49.8	49.8	12.1	12.9	21	23	80-120	7	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 557422 557423

Parameter	Units	10427291008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	49.7	49	35.4	35.5	69	71	80-120	0	20	M1

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QUALIFIERS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

1M	Sample was black in color and viscous. Sample was centrfuged and decanted prior to analysis.
2M	Sample was black in color.
3M	Sample was dark brown in color.
4M	Sample was light brown in color.
5M	Sample was yellow in color.
6M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALIFIERS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

ANALYTE QUALIFIERS

M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
MN	The reporting limit has been raised in accordance with Minnesota Statutes 4740.2100 Subpart 8. C, D. Reporting Limit Evaluation Rule.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427291002	**FB-SB-G1 (5-10 S)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427291003	**FD-TT-05 (4-9 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427291004	**FD-TT-06 (2-5 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427291005	**FD-TT-07 (6-11 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427291006	**FD-TT-08 (5-12 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427291007	**TS-SB-01 (5-8 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427291008	**TS-SB-02 (5-10 S)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 3550	532516	EPA 8081B	533098
10427291002	**FB-SB-G1 (5-10 S)**	EPA 3550	532516	EPA 8081B	533098
10427291003	**FD-TT-05 (4-9 WM)**	EPA 3550	532516	EPA 8081B	533098
10427291004	**FD-TT-06 (2-5 WM)**	EPA 3550	532516	EPA 8081B	533098
10427291005	**FD-TT-07 (6-11 WM)**	EPA 3550	532516	EPA 8081B	533098
10427291006	**FD-TT-08 (5-12 WM)**	EPA 3550	532516	EPA 8081B	533098
10427291007	**TS-SB-01 (5-8 WM)**	EPA 3550	532516	EPA 8081B	533098
10427291008	**TS-SB-02 (5-10 S)**	EPA 3550	532516	EPA 8081B	533098
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 3550	532516	EPA 8081B	533098
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 3550	532316	EPA 8082A	532613
10427291002	**FB-SB-G1 (5-10 S)**	EPA 3550	532316	EPA 8082A	532613
10427291003	**FD-TT-05 (4-9 WM)**	EPA 3550	532316	EPA 8082A	532613
10427291004	**FD-TT-06 (2-5 WM)**	EPA 3550	532316	EPA 8082A	532613
10427291005	**FD-TT-07 (6-11 WM)**	EPA 3550	532316	EPA 8082A	532613
10427291006	**FD-TT-08 (5-12 WM)**	EPA 3550	532316	EPA 8082A	532613
10427291007	**TS-SB-01 (5-8 WM)**	EPA 3550	532316	EPA 8082A	532613
10427291008	**TS-SB-02 (5-10 S)**	EPA 3550	532316	EPA 8082A	532613
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 3550	532316	EPA 8082A	532613
10427291001	**FD-SB-F1 (10-14.5 S)**	WI MOD DRO	532497	WI MOD DRO	532700
10427291002	**FB-SB-G1 (5-10 S)**	WI MOD DRO	532497	WI MOD DRO	532700
10427291003	**FD-TT-05 (4-9 WM)**	WI MOD DRO	532497	WI MOD DRO	532700
10427291004	**FD-TT-06 (2-5 WM)**	WI MOD DRO	532497	WI MOD DRO	532700
10427291005	**FD-TT-07 (6-11 WM)**	WI MOD DRO	532497	WI MOD DRO	532700
10427291006	**FD-TT-08 (5-12 WM)**	WI MOD DRO	532497	WI MOD DRO	532700
10427291007	**TS-SB-01 (5-8 WM)**	WI MOD DRO	532497	WI MOD DRO	532700
10427291008	**TS-SB-02 (5-10 S)**	WI MOD DRO	532497	WI MOD DRO	532700
10427291009	**TS-SB-03 (1.5-3.0 S)**	WI MOD DRO	532497	WI MOD DRO	532700
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 5030 Medium Soil	533955	WI MOD GRO	534062
10427291002	**FB-SB-G1 (5-10 S)**	EPA 5030 Medium Soil	533955	WI MOD GRO	534062
10427291003	**FD-TT-05 (4-9 WM)**	EPA 5030 Medium Soil	533955	WI MOD GRO	534062
10427291004	**FD-TT-06 (2-5 WM)**	EPA 5030 Medium Soil	533955	WI MOD GRO	534062
10427291005	**FD-TT-07 (6-11 WM)**	EPA 5030 Medium Soil	533955	WI MOD GRO	534062
10427291006	**FD-TT-08 (5-12 WM)**	EPA 5030 Medium Soil	533955	WI MOD GRO	534062
10427291007	**TS-SB-01 (5-8 WM)**	EPA 5030 Medium Soil	533955	WI MOD GRO	534062
10427291008	**TS-SB-02 (5-10 S)**	EPA 5030 Medium Soil	533955	WI MOD GRO	534062
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 5030 Medium Soil	533955	WI MOD GRO	534062
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 3050	532423	EPA 6010C	533058

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427291002	FB-SB-G1 (5-10 S)	EPA 3050	532423	EPA 6010C	533058
10427291003	FD-TT-05 (4-9 WM)	EPA 3050	532423	EPA 6010C	533058
10427291004	FD-TT-06 (2-5 WM)	EPA 3050	532423	EPA 6010C	533058
10427291005	FD-TT-07 (6-11 WM)	EPA 3050	532423	EPA 6010C	533058
10427291006	FD-TT-08 (5-12 WM)	EPA 3050	532423	EPA 6010C	533058
10427291007	TS-SB-01 (5-8 WM)	EPA 3050	532423	EPA 6010C	533058
10427291008	TS-SB-02 (5-10 S)	EPA 3050	532423	EPA 6010C	533058
10427291009	TS-SB-03 (1.5-3.0 S)	EPA 3050	532423	EPA 6010C	533058
10427291001	FD-SB-F1 (10-14.5 S)	EPA 3050B	437531	EPA 6020	438359
10427291002	FB-SB-G1 (5-10 S)	EPA 3050B	437531	EPA 6020	438359
10427291003	FD-TT-05 (4-9 WM)	EPA 3050B	437531	EPA 6020	438359
10427291004	FD-TT-06 (2-5 WM)	EPA 3050B	437531	EPA 6020	438359
10427291005	FD-TT-07 (6-11 WM)	EPA 3050B	437531	EPA 6020	438359
10427291006	FD-TT-08 (5-12 WM)	EPA 3050B	437531	EPA 6020	438359
10427291007	TS-SB-01 (5-8 WM)	EPA 3050B	437531	EPA 6020	438359
10427291008	TS-SB-02 (5-10 S)	EPA 3050B	437531	EPA 6020	438359
10427291009	TS-SB-03 (1.5-3.0 S)	EPA 3050B	437531	EPA 6020	438359
10427291001	FD-SB-F1 (10-14.5 S)	EPA 3050	532416	EPA 6020A	532552
10427291002	FB-SB-G1 (5-10 S)	EPA 3050	532416	EPA 6020A	532552
10427291003	FD-TT-05 (4-9 WM)	EPA 3050	532416	EPA 6020A	532552
10427291004	FD-TT-06 (2-5 WM)	EPA 3050	532416	EPA 6020A	532552
10427291005	FD-TT-07 (6-11 WM)	EPA 3050	532416	EPA 6020A	532552
10427291006	FD-TT-08 (5-12 WM)	EPA 3050	532416	EPA 6020A	532552
10427291007	TS-SB-01 (5-8 WM)	EPA 3050	532416	EPA 6020A	532552
10427291008	TS-SB-02 (5-10 S)	EPA 3050	532416	EPA 6020A	532552
10427291009	TS-SB-03 (1.5-3.0 S)	EPA 3050	532416	EPA 6020A	532552
10427291001	FD-SB-F1 (10-14.5 S)	EPA 7471	532422	EPA 7471	533051
10427291002	FB-SB-G1 (5-10 S)	EPA 7471	532422	EPA 7471	533051
10427291003	FD-TT-05 (4-9 WM)	EPA 7471	532422	EPA 7471	533051
10427291004	FD-TT-06 (2-5 WM)	EPA 7471	532422	EPA 7471	533051
10427291005	FD-TT-07 (6-11 WM)	EPA 7471	532422	EPA 7471	533051
10427291006	FD-TT-08 (5-12 WM)	EPA 7471	532422	EPA 7471	533051
10427291007	TS-SB-01 (5-8 WM)	EPA 7471	532422	EPA 7471	533051
10427291008	TS-SB-02 (5-10 S)	EPA 7471	532422	EPA 7471	533051
10427291009	TS-SB-03 (1.5-3.0 S)	EPA 7471	532422	EPA 7471	533051
10427291001	FD-SB-F1 (10-14.5 S)	ASTM D2974	533208		
10427291002	FB-SB-G1 (5-10 S)	ASTM D2974	533208		
10427291003	FD-TT-05 (4-9 WM)	ASTM D2974	533359		
10427291004	FD-TT-06 (2-5 WM)	ASTM D2974	533359		
10427291005	FD-TT-07 (6-11 WM)	ASTM D2974	533359		
10427291006	FD-TT-08 (5-12 WM)	ASTM D2974	533359		
10427291007	TS-SB-01 (5-8 WM)	ASTM D2974	533359		
10427291008	TS-SB-02 (5-10 S)	ASTM D2974	533359		
10427291009	TS-SB-03 (1.5-3.0 S)	ASTM D2974	533359		
10427291001	FD-SB-F1 (10-14.5 S)	EPA 3550	533467	EPA 8270D	533832

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427291002	**FB-SB-G1 (5-10 S)**	EPA 3550	532275	EPA 8270D	532657
10427291003	**FD-TT-05 (4-9 WM)**	EPA 3550	532275	EPA 8270D	532657
10427291004	**FD-TT-06 (2-5 WM)**	EPA 3550	533467	EPA 8270D	533832
10427291005	**FD-TT-07 (6-11 WM)**	EPA 3550	532275	EPA 8270D	532657
10427291006	**FD-TT-08 (5-12 WM)**	EPA 3550	532275	EPA 8270D	532657
10427291007	**TS-SB-01 (5-8 WM)**	EPA 3550	532275	EPA 8270D	532657
10427291008	**TS-SB-02 (5-10 S)**	EPA 3550	533467	EPA 8270D	533832
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 3550	532275	EPA 8270D	532657
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 3550	532984	EPA 8270D by SIM	533391
10427291002	**FB-SB-G1 (5-10 S)**	EPA 3550	532273	EPA 8270D by SIM	532620
10427291003	**FD-TT-05 (4-9 WM)**	EPA 3550	532273	EPA 8270D by SIM	532620
10427291004	**FD-TT-06 (2-5 WM)**	EPA 3550	532273	EPA 8270D by SIM	532620
10427291005	**FD-TT-07 (6-11 WM)**	EPA 3550	532273	EPA 8270D by SIM	532620
10427291006	**FD-TT-08 (5-12 WM)**	EPA 3550	532984	EPA 8270D by SIM	533391
10427291007	**TS-SB-01 (5-8 WM)**	EPA 3550	532273	EPA 8270D by SIM	532620
10427291008	**TS-SB-02 (5-10 S)**	EPA 3550	532273	EPA 8270D by SIM	532620
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 3550	532273	EPA 8270D by SIM	532620
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 5035/5030B	533981	EPA 8260B	533996
10427291002	**FB-SB-G1 (5-10 S)**	EPA 5035/5030B	533981	EPA 8260B	533996
10427291003	**FD-TT-05 (4-9 WM)**	EPA 5035/5030B	533981	EPA 8260B	533996
10427291004	**FD-TT-06 (2-5 WM)**	EPA 5035/5030B	533981	EPA 8260B	533996
10427291005	**FD-TT-07 (6-11 WM)**	EPA 5035/5030B	533981	EPA 8260B	533996
10427291006	**FD-TT-08 (5-12 WM)**	EPA 5035/5030B	533981	EPA 8260B	533996
10427291007	**TS-SB-01 (5-8 WM)**	EPA 5035/5030B	533981	EPA 8260B	533996
10427291008	**TS-SB-02 (5-10 S)**	EPA 5035/5030B	533981	EPA 8260B	533996
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 5035/5030B	533981	EPA 8260B	533996
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 3060A	438492	EPA 7196A	438766
10427291002	**FB-SB-G1 (5-10 S)**	EPA 3060A	438492	EPA 7196A	438766
10427291003	**FD-TT-05 (4-9 WM)**	EPA 3060A	438492	EPA 7196A	438766
10427291004	**FD-TT-06 (2-5 WM)**	EPA 3060A	438492	EPA 7196A	438766
10427291005	**FD-TT-07 (6-11 WM)**	EPA 3060A	438492	EPA 7196A	438766
10427291006	**FD-TT-08 (5-12 WM)**	EPA 3060A	438492	EPA 7196A	438766
10427291007	**TS-SB-01 (5-8 WM)**	EPA 3060A	438492	EPA 7196A	438766
10427291008	**TS-SB-02 (5-10 S)**	EPA 3060A	438492	EPA 7196A	438766
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 3060A	438492	EPA 7196A	438766
10427291001	**FD-SB-F1 (10-14.5 S)**	Trivalent Chromium Calculation	439198		
10427291002	**FB-SB-G1 (5-10 S)**	Trivalent Chromium Calculation	439198		
10427291003	**FD-TT-05 (4-9 WM)**	Trivalent Chromium Calculation	439198		
10427291004	**FD-TT-06 (2-5 WM)**	Trivalent Chromium Calculation	439198		
10427291005	**FD-TT-07 (6-11 WM)**	Trivalent Chromium Calculation	439198		

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427291

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427291006	**FD-TT-08 (5-12 WM)**	Trivalent Chromium Calculation	439198		
10427291007	**TS-SB-01 (5-8 WM)**	Trivalent Chromium Calculation	439198		
10427291008	**TS-SB-02 (5-10 S)**	Trivalent Chromium Calculation	439198		
10427291009	**TS-SB-03 (1.5-3.0 S)**	Trivalent Chromium Calculation	439198		
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 9012A	286553	EPA 9012	286614
10427291002	**FB-SB-G1 (5-10 S)**	EPA 9012A	286553	EPA 9012	286614
10427291003	**FD-TT-05 (4-9 WM)**	EPA 9012A	286553	EPA 9012	286614
10427291004	**FD-TT-06 (2-5 WM)**	EPA 9012A	286553	EPA 9012	286614
10427291005	**FD-TT-07 (6-11 WM)**	EPA 9012A	286937	EPA 9012	286958
10427291006	**FD-TT-08 (5-12 WM)**	EPA 9012A	286937	EPA 9012	286958
10427291007	**TS-SB-01 (5-8 WM)**	EPA 9012A	286937	EPA 9012	286958
10427291008	**TS-SB-02 (5-10 S)**	EPA 9012A	286937	EPA 9012	286958
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 9012A	286937	EPA 9012	286958
10427291001	**FD-SB-F1 (10-14.5 S)**	EPA 300.0	140842	EPA 9056A	140851
10427291002	**FB-SB-G1 (5-10 S)**	EPA 300.0	140842	EPA 9056A	140851
10427291003	**FD-TT-05 (4-9 WM)**	EPA 300.0	140842	EPA 9056A	140851
10427291004	**FD-TT-06 (2-5 WM)**	EPA 300.0	140842	EPA 9056A	140851
10427291005	**FD-TT-07 (6-11 WM)**	EPA 300.0	140842	EPA 9056A	140851
10427291006	**FD-TT-08 (5-12 WM)**	EPA 300.0	140842	EPA 9056A	140851
10427291007	**TS-SB-01 (5-8 WM)**	EPA 300.0	140842	EPA 9056A	140851
10427291008	**TS-SB-02 (5-10 S)**	EPA 300.0	140842	EPA 9056A	140851
10427291009	**TS-SB-03 (1.5-3.0 S)**	EPA 300.0	140842	EPA 9056A	140851

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WO# : 10427291

10427291

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order N

Turnaroun

Page: 1 of 1

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MPCA-Freeway LF 50/16 Program Code (MDH Lab Only):	Lab Name:	
Project Name:	MPCA-Freeway LF 50/16 Project Task Code:	Address:	18-00383
Project Manager:			Epic Profile # 38716
Potential Hazard?	If yes, add information to Sampler Comments Section	Phone No:	

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

PRESERV.

ANALYSIS: Soil/solid - dioxins; + dioxins

Location Identifier	Sample Type	Date	Time	Start Depth, (in/ ~~cm~~)	End Depth, (in/ ~~cm~~)	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	Soil/solid - dioxins	+ dioxins	Lab Sample No.	#
FD-SB-01 (0-0.5')	S	4/12/18	1015			C	SD				13	X	X	001	1
FD-SB-02 (5-10')	S	4/12/18	1045			C	SD				13	X		002	2
FD-TT-05 (4-9 wm)	S	4/12/18	0945			C	SD				13	X	X	003	3
FD-TT-06 (2-5 wm)	S	4/12/18	1140			C	SD				13	X		004	4
FD-TT-07 (6-11 wm)	S	4/12/18	1300			C	SD				13	X	X	005	5
FD-TT-08 (5-12 wm)	S	4/12/18	1430			C	SD				13	X		006	6
TS-SB-01 (2.5-8 wm)	S	4/12/18	1720			C	SD				13	X	X	007	7
TS-SB-02 (5-10')	S	4/12/18	1910			C	SD				13	X		008	8
TS-SB-03 (1.5-3.0')	S	4/12/18	1955			C	SD				13	X	X	009	9
															10

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/13/18/0745	E DuPaine	4/13/18 800

T = 3.1

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: **WO#: 10427291**

PM: JMA **Due Date: 04/27/18**

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☒ Other: PB **Temp Blank?** ☒ Yes ☐ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 2.9 **Cooler Temp Corrected (°C):** 3.1 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** RG 4/13/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No		12. No time on label
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: [signature] **Date:** 04/13/2018

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

March 22, 2018

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*)	
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427291 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/13/2018 Results Requested By: 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

						Preserved Containers						Requested Analysis													
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved						Fluoride by method 9056													LAB USE ONLY
1	FD-SB-F1 (10-14.5 S)	PS	4/12/2018 10:15	10427291001	Solid	1						X													
2	FB-SB-G1 (5-10 S)	PS	4/12/2018 10:45	10427291002	Solid	1						X													
3	FD-TT-05 (4-9 WM)	PS	4/12/2018 09:45	10427291003	Solid	1						X													
4	FD-TT-06 (2-5 WM)	PS	4/12/2018 11:40	10427291004	Solid	1						X													
5	FD-TT-07 (6-11 WM)	PS	4/12/2018 13:00	10427291005	Solid	1						X													
6	FD-TT-08 (5-12 WM)	PS	4/12/2018 14:30	10427291006	Solid	1						X													
7	TS-SB-01 (5-8 WM)	PS	4/12/2018 17:20	10427291007	Solid	1						X													
8	TS-SB-02 (5-10 S)	PS	4/12/2018 19:10	10427291008	Solid	1						X													
9	TS-SB-03 (1.5-3.0 S)	PS	4/12/2018 19:55	10427291009	Solid	1						X													

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	PACE CB	4/16/18 1745	CB	4/16/18 1745	
2	CB	4/16/18 2130	B Mathews	4/17/18 0700	
3					

Cooler Temperature on Receipt 5.6 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace - Mpls. Project #:

WO#: 12107161
PM: HRZ Due Date: 04/27/18
CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 5.3 Cooler Temp Corrected °C: 5.4 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 4/16/18 GS

Comments: BM 4/17/18

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☒ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☒ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Angela Loisel Date: 4/17/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO# : 12107161
PM: HRZ Due Date: 04/27/18
CLIENT: PACE MPLS

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427291 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/13/2018 Results Requested By: 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury by 1630	LAB USE ONLY
1	FD-SB-F1 (10-14.5 S)	PS	4/12/2018 10:15	10427291001	Solid	1	X	
2	FB-SB-G1 (5-10 S)	PS	4/12/2018 10:45	10427291002	Solid	1	X	
3	FD-TT-05 (4-9 WM)	PS	4/12/2018 09:45	10427291003	Solid	1	X	
4	FD-TT-06 (2-5 WM)	PS	4/12/2018 11:40	10427291004	Solid	1	X	
5	FD-TT-07 (6-11 WM)	PS	4/12/2018 13:00	10427291005	Solid	1	X	
6	FD-TT-08 (5-12 WM)	PS	4/12/2018 14:30	10427291006	Solid	1	X	
7	TS-SB-01 (5-8 WM)	PS	4/12/2018 17:20	10427291007	Solid	1	X	
8	TS-SB-02 (5-10 S)	PS	4/12/2018 19:10	10427291008	Solid	1	X	
9	TS-SB-03 (1.5-3.0 S)	PS	4/12/2018 19:55	10427291009	Solid	1	X	

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	4/16/18 1702	CB	4/16/18 17:45
2	CB	4/17/18 1515	[signature]	4/17/18 15:15
3				

Cooler Temperature on Receipt _____ °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: PACE MPLS

Project #: WO#: 12107161

12107161

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☐ Yes ☑ No

Thermometer Used: ☑ 01339252/1710 ☐ IR-1 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 5.9 Cooler Temp Corrected °C: 5.9 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: 0.0 Date and Initials of Person Examining Contents: 4/17/18 DB

If temperature is ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☑ NA

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☑ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☑ Yes	☐ No	☐ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: _____ **Date:** _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427291 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/13/2018 Results Requested By: 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID		Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Total Cyanide by 9012	LAB USE ONLY
1	FD-SB-F1 (10-14.5 S)	001	PS	4/12/2018 10:15	10427291001	Solid	1	X	
2	FB-SB-G1 (5-10 S)	002	PS	4/12/2018 10:45	10427291002	Solid	1	X	
3	FD-TT-05 (4-9 WM)	003	PS	4/12/2018 09:45	10427291003	Solid	1	X	
4	FD-TT-06 (2-5 WM)	004	PS	4/12/2018 11:40	10427291004	Solid	1	X	
5	FD-TT-07 (6-11 WM)	005	PS	4/12/2018 13:00	10427291005	Solid	1	X	
6	FD-TT-08 (5-12 WM)	006	PS	4/12/2018 14:30	10427291006	Solid	1	X	
7	TS-SB-01 (5-8 WM)	007	PS	4/12/2018 17:20	10427291007	Solid	1	X	
8	TS-SB-02 (5-10 S)	008	PS	4/12/2018 19:10	10427291008	Solid	1	X	
9	TS-SB-03 (1.5-3.0 S)	009	PS	4/12/2018 19:55	10427291009	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	4/16/18 1720		
2	via ltio	4/17/18 0900		
3				

Comments

Cooler Temperature on Receipt 2 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: Pace MN

Sample Preservation Receipt Form

Project # 40167542

All containers needing preservation have been checked and noted below: □Yes □No ☒N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/ Time:

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001																																	2.5 / 5 / 10
002																																	2.5 / 5 / 10
003																																	2.5 / 5 / 10
004																																	2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : □Yes □No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP2N	500 mL plastic HNO3
BP2Z	500 mL plastic NaOH, Znact
BP3U	250 mL plastic unpres
BP3C	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

DG9A	40 mL amber ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres

SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN:	

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace MN

Project #: WO#: 40167542

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other:

Tracking #: 1693529-1

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 75 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 2 /Corr: 2

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 4/17/18
Initials: SSM

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☒N/A	4. TRUO SSM 4/17/18
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☒No ☐N/A	7.
Sufficient Volume: ☒Yes ☐No ☐N/A	MS/MSD ☐Yes ☐No ☒N/A	8.
Correct Containers Used:	☒Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☐No ☒N/A	
-Pace IR Containers Used:	☒Yes ☐No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☐Yes ☒No ☐N/A	12. client labels have no collect time SSM 4/17/18
-Includes date/time/ID/Analysis Matrix: S		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: CC Date: 4/17/18

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427291 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/13/2018 **Results Requested By:** 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Chromium III	Chromium VI	Total Cr by 6020	LAB USE ONLY
1	FD-SB-F1 (10-14.5 S)	PS	4/12/2018 10:15	10427291001	Solid	1	X	X	X	50194564
2	FB-SB-G1 (5-10 S)	PS	4/12/2018 10:45	10427291002	Solid	1	X	X	X	
3	FD-TT-05 (4-9 WM)	PS	4/12/2018 09:45	10427291003	Solid	1	X	X	X	
4	FD-TT-06 (2-5 WM)	PS	4/12/2018 11:40	10427291004	Solid	1	X	X	X	
5	FD-TT-07 (6-11 WM)	PS	4/12/2018 13:00	10427291005	Solid	1	X	X	X	
6	FD-TT-08 (5-12 WM)	PS	4/12/2018 14:30	10427291006	Solid	1	X	X	X	
7	TS-SB-01 (5-8 WM)	PS	4/12/2018 17:20	10427291007	Solid	1	X	X	X	
8	TS-SB-02 (5-10 S)	PS	4/12/2018 19:10	10427291008	Solid	1	X	X	X	
9	TS-SB-03 (1.5-3.0 S)	PS	4/12/2018 19:55	10427291009	Solid	1	X	X	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] FedEx	4/16/18 1630	FedEx	
2	FedEx		[signature]	4/17/18 0830
3				

Comments

Cooler Temperature on Receipt 2.3 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50194564

Date/Time and Initials of person examining contents: [illegible] 4/12/23 0945

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9832 1940

Custody Seal on Cooler/Box Present: ☒ Yes ☐ No Seals Intact: ☒ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer: ☒ 1 2 3 4 5 6 A B C D E F Ice Type: ☒ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☒ N

Cooler Temperature: 2.1/2.3 Ice Visible in Sample Containers?: ☐ Yes ☒ No ☐ N

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☒ N

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		✓	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			✓
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		✓				
Chain of Custody Present:	✓					
Chain of Custody Filled Out:	✓		Dissolved Metals field filtered?:			✓
Short Hold Time Analysis (<72hr)?: Analysis:		✓	Headspace Wisconsin Sulfide			✓
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			✓
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			✓
Rush TAT Requested:		✓	Headspace in VOA Vials (>6mm):			✓
Containers Intact?:	✓		Trip Blank Present?:		✓	
Sample Labels Match COC?: Except TCs, which only require sample ID	✓		Trip Blank Custody Seals?:		✓	

Comments:

Sample Container Count

WO# : 50194564

50194564

CLIENT: PACE MN

COC PAGE 1 of 1

COC ID#

Project # S0194564

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	SBS D... Bulk Kit R				Matrix SI/W (Soil/Water Aqueous L...	pH <2	pH >9	pH>12
1							1														3L			
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
VGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic	BP3U	250mL unpreserved plastic
BP1N	1 liter HNO3 plastic	BP3Z	250mL NaOH, Zn Ac plastic
BP1S	1 liter H2SO4 plastic		
BP1U	1 liter unpreserved plastic	AF	Air Filter
BP1Z	1 liter NaOH, Zn, Ac	C	Air Cassettes
BP2A	500mL NaOH, Asc Acid plastic	R	Terra core kit
BP2N	500mL HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
BP2O	500mL NaOH plastic	U	Summa Can
BP2S	500mL H2SO4 plastic	ZPLC	Ziploc Bag
BP2U	500mL unpreserved plastic		
BP2Z	500mL NaOH, Zn Ac		
BP3B	250mL NaOH plastic		
BP3N	250mL HNO3 plastic		
BP3S	250mL H2SO4 plastic		

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

April 25, 2018

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

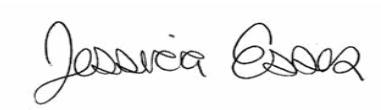
RE: 18-00383 MPCA Freeway LF Solid - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/17/2018.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jessica Esser

Project Manager

Certification List			Expires
ADEQ	Arkansas Department of Environmental Quality	17-065-0	09/26/2018
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2019
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2018
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2018
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2018
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2018
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2017-154	08/31/2018
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2018
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2018

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427291
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FD-SB-F1 (10-14.5 S) (10427291001)	A181607-01	Solid	04/12/2018	04/17/2018
FB-SB-G1 (5-10 S) (10427291002)	A181607-02	Solid	04/12/2018	04/17/2018
FD-TT-05 (4-9 WM) (10427291003)	A181607-03	Solid	04/12/2018	04/17/2018
FD-TT-06 (2-5 WM) (10427291004)	A181607-04	Solid	04/12/2018	04/17/2018
FD-TT-07 (6-11 WM) (10427291005)	A181607-05	Solid	04/12/2018	04/17/2018
FD-TT-08 (5-12 WM) (10427291006)	A181607-06	Solid	04/12/2018	04/17/2018
TS-SB-01 (5-8 WM) (10427291007)	A181607-07	Solid	04/12/2018	04/17/2018
TS-SB-02 (5-10 S) (10427291008)	A181607-08	Solid	04/12/2018	04/17/2018
TS-SB-03 (1.5-3.0 S) (10427291009)	A181607-09	Solid	04/12/2018	04/17/2018

CASE NARRATIVE

Sample Receipt Information:
9 samples were received on 04/17/2018. Samples were received at 4.4 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427291
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FD-SB-F1 (10-14.5 S) (10427291001)

A181607-01 (Solid)

Date Sampled
04/12/2018 10:15

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 05:32	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 05:04	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 05:32	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 05:32	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 05:04	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 05:32	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 05:32	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 05:32	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 05:04	EPA 8321B	
Surrogate: DCAA		*66.2 %*		*70.8-116*	*04/20/2018*	*04/21/2018 05:32*	*EPA 8321B*	*S*
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**67.4**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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FB-SB-G1 (5-10 S) (10427291002)

A181607-02 (Solid)

Date Sampled
04/12/2018 10:45

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 06:39	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 06:39	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 06:39	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 06:39	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 06:39	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 06:39	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 06:39	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 06:39	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 06:39	EPA 8321B	
Surrogate: DCAA		*96.1 %*		*70.8-116*	*04/20/2018*	*04/21/2018 06:39*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**89.4**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FD-TT-05 (4-9 WM) (10427291003)

A181607-03 (Solid)

Date Sampled
04/12/2018 09:45

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 07:46	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 07:46	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 07:46	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 07:46	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 07:16	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 07:46	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 07:46	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 07:46	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 07:46	EPA 8321B	
Surrogate: DCAA		*82.7 %*		*70.8-116*	*04/20/2018*	*04/21/2018 07:46*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**75.5**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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FD-TT-06 (2-5 WM) (10427291004)

A181607-04 (Solid)

Date Sampled
04/12/2018 11:40

Pace Analytical - Madison

Acid Herbicides by High Performance Liquid Chromatography — **Preparation Batch: A804171**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 08:22	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 08:53	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 08:53	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 08:53	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 08:22	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 08:53	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 08:53	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 08:53	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 08:53	EPA 8321B	
Surrogate: DCAA		*77.4 %*		*70.8-116*	*04/20/2018*	*04/21/2018 08:53*	*EPA 8321B*	

Classical Chemistry Parameters — **Preparation Batch: A804163**

% Solids	**64.4**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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FD-TT-07 (6-11 WM) (10427291005)

A181607-05 (Solid)

Date Sampled
04/12/2018 13:00

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	**0.13**	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:01	EPA 8321B	P
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 09:28	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:01	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:01	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:01	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:01	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:01	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:01	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 09:28	EPA 8321B	
Surrogate: DCAA		*86.1 %*		*70.8-116*	*04/20/2018*	*04/21/2018 10:01*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**64.7**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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FD-TT-08 (5-12 WM) (10427291006)

A181607-06 (Solid)

Date Sampled
04/12/2018 14:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:34	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:34	EPA 8321B	
2,4,5-T	**0.16**	0.10	mg/kg dry	1	04/20/2018	04/21/2018 11:08	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:34	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 11:08	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 11:08	EPA 8321B	
MCPA	**0.13**	0.10	mg/kg dry	1	04/20/2018	04/21/2018 11:08	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 11:08	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/21/2018 10:34	EPA 8321B	
Surrogate: DCAA		*80.7 %*		*70.8-116*	*04/20/2018*	*04/21/2018 11:08*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**79.0**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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TS-SB-01 (5-8 WM) (10427291007)

A181607-07 (Solid)

Date Sampled
04/12/2018 17:20

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 19:28	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 19:28	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 19:28	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 19:28	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 19:11	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 19:28	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 19:28	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 19:28	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 19:28	EPA 8321B	
Surrogate: DCAA		*93.0 %*		*70.8-116*	*04/20/2018*	*04/20/2018 19:28*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**86.4**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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TS-SB-02 (5-10 S) (10427291008)

A181607-08 (Solid)

Date Sampled
04/12/2018 19:10

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 21:43	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 21:43	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 21:43	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 21:43	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 21:23	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 21:43	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 21:43	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 21:43	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 21:43	EPA 8321B	
Surrogate: DCAA		*102 %*		*70.8-116*	*04/20/2018*	*04/20/2018 21:43*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**92.8**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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TS-SB-03 (1.5-3.0 S) (10427291009)

A181607-09 (Solid)

Date Sampled
04/12/2018 19:55

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804171**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 20:36	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 20:36	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 20:36	EPA 8321B	
2,4,5-TP	**0.15**	0.10	mg/kg dry	1	04/20/2018	04/20/2018 20:36	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 20:17	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 20:36	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 20:36	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/20/2018 20:36	EPA 8321B	
Triclopyr	**0.11**	0.10	mg/kg dry	1	04/20/2018	04/20/2018 20:17	EPA 8321B	
Surrogate: DCAA		*100 %*		*70.8-116*	*04/20/2018*	*04/20/2018 20:36*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804163**			
% Solids	**90.3**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804171 - EPA 3570										
Blank (A804171-BLK1)				Prepared: 04/20/2018 Analyzed: 04/20/2018 18:21						
2,4-D	ND	0.10	mg/kg wet							
2,4-D [2C]	ND	0.10	mg/kg wet							
2,4-DB	ND	0.10	mg/kg wet							
2,4-DB [2C]	ND	0.10	mg/kg wet							
2,4,5-T	ND	0.10	mg/kg wet							
2,4,5-T [2C]	ND	0.10	mg/kg wet							
2,4,5-TP	ND	0.10	mg/kg wet							
2,4,5-TP [2C]	ND	0.10	mg/kg wet							
Bentazon	ND	0.10	mg/kg wet							
Bentazon [2C]	ND	0.10	mg/kg wet							
Dicamba	ND	0.10	mg/kg wet							
Dicamba [2C]	ND	0.10	mg/kg wet							
MCPA	ND	0.10	mg/kg wet							
MCPA [2C]	ND	0.10	mg/kg wet							
Picloram	ND	0.10	mg/kg wet							
Picloram [2C]	ND	0.10	mg/kg wet							
Triclopyr	ND	0.10	mg/kg wet							
Triclopyr [2C]	ND	0.10	mg/kg wet							
Surrogate: DCAA	*21.2*		*mg/kg wet*	*20.00*		*106*	*70.8-116*			
Surrogate: DCAA [2C]	*19.0*		*mg/kg wet*	*20.00*		*95.3*	*62.3-114*			
LCS (A804171-BS1)				Prepared: 04/20/2018 Analyzed: 04/20/2018 17:14						
2,4-D	1.92	0.10	mg/kg wet	2.000		96.2	81.6-107			
2,4-D [2C]	1.66	0.10	mg/kg wet	2.000		83.2	71.8-120			
2,4-DB	1.77	0.10	mg/kg wet	2.000		88.7	76.4-107			
2,4-DB [2C]	1.69	0.10	mg/kg wet	2.000		84.5	62.2-129			
2,4,5-T	1.93	0.10	mg/kg wet	2.000		96.6	81.2-110			
2,4,5-T [2C]	1.88	0.10	mg/kg wet	2.000		93.8	70.6-125			
2,4,5-TP	1.87	0.10	mg/kg wet	2.000		93.5	79.1-106			
2,4,5-TP [2C]	1.69	0.10	mg/kg wet	2.000		84.4	68.2-118			
Bentazon	1.07	0.10	mg/kg wet	1.000		107	82.5-119			
Bentazon [2C]	0.806	0.10	mg/kg wet	1.000		80.6	73.3-125			
Dicamba	1.98	0.10	mg/kg wet	2.000		98.8	85.1-108			
Dicamba [2C]	1.85	0.10	mg/kg wet	2.000		92.4	71.4-115			
Picloram	0.991	0.10	mg/kg wet	1.000		99.1	86.1-106			
Picloram [2C]	0.878	0.10	mg/kg wet	1.000		87.8	74.5-114			
Triclopyr	1.89	0.10	mg/kg wet	2.000		94.4	78.6-106			
Triclopyr [2C]	1.67	0.10	mg/kg wet	2.000		83.4	69.4-118			
Surrogate: DCAA	*20.9*		*mg/kg wet*	*20.00*		*105*	*70.8-116*			
Surrogate: DCAA [2C]	*18.7*		*mg/kg wet*	*20.00*		*93.5*	*62.3-114*			
LCS (A804171-BS2)				Prepared: 04/20/2018 Analyzed: 04/20/2018 16:07						
MCPA	2.15	0.10	mg/kg wet	2.000		107	79.4-116			
MCPA [2C]	1.92	0.10	mg/kg wet	2.000		96.2	77-123			

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Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804171 - EPA 3570										
LCS (A804171-BS2)				Prepared: 04/20/2018 Analyzed: 04/20/2018 16:07						
Surrogate: DCAA	*21.1*		*mg/kg wet*	*20.00*		*106*	*70.8-116*			
Surrogate: DCAA [2C]	*21.1*		*mg/kg wet*	*20.00*		*105*	*62.3-114*			
Matrix Spike (A804171-MS1)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/20/2018 22:50						
2,4-D	1.92	0.10	mg/kg dry	2.156	ND	89.2	71.4-105			
2,4-D [2C]	1.82	0.10	mg/kg dry	2.156	0.0525	81.8	50.5-123			
2,4-DB	1.86	0.10	mg/kg dry	2.156	ND	86.1	46.4-117			
2,4-DB [2C]	1.72	0.10	mg/kg dry	2.156	ND	79.7	44.5-121			
2,4,5-T	2.03	0.10	mg/kg dry	2.156	ND	94.1	66.2-110			
2,4,5-T [2C]	1.94	0.10	mg/kg dry	2.156	ND	90.0	43.6-126			
2,4,5-TP	1.97	0.10	mg/kg dry	2.156	ND	91.3	52.4-114			
2,4,5-TP [2C]	1.83	0.10	mg/kg dry	2.156	ND	85.0	47.6-117			
Bentazon	1.02	0.10	mg/kg dry	1.078	0.0456	90.9	61.5-117			
Bentazon [2C]	0.920	0.10	mg/kg dry	1.078	ND	85.3	50.7-127			
Dicamba	1.59	0.10	mg/kg dry	2.156	ND	73.9	48.4-111			
Dicamba [2C]	1.56	0.10	mg/kg dry	2.156	ND	72.3	43.3-108			
Picloram	0.633	0.10	mg/kg dry	1.078	ND	58.7	26.7-110			
Picloram [2C]	0.389	0.10	mg/kg dry	1.078	0.0164	34.6	10.8-110			
Triclopyr	1.95	0.10	mg/kg dry	2.156	ND	90.7	56-113			
Triclopyr [2C]	1.78	0.10	mg/kg dry	2.156	0.0278	81.2	47.9-120			
Surrogate: DCAA	*21.4*		*mg/kg dry*	*21.56*		*99.2*	*70.8-116*			
Surrogate: DCAA [2C]	*19.1*		*mg/kg dry*	*21.56*		*88.6*	*62.3-114*			
Matrix Spike (A804171-MS2)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/21/2018 01:04						
MCPA	2.22	0.10	mg/kg dry	2.156	ND	103	74.2-114			
MCPA [2C]	2.11	0.10	mg/kg dry	2.156	ND	97.8	60.9-122			
Surrogate: DCAA	*21.5*		*mg/kg dry*	*21.56*		*99.6*	*70.8-116*			
Surrogate: DCAA [2C]	*21.8*		*mg/kg dry*	*21.56*		*101*	*62.3-114*			
Matrix Spike Dup (A804171-MSD1)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/20/2018 23:57						
2,4-D	1.96	0.10	mg/kg dry	2.156	ND	90.7	71.4-105	1.67	20	
2,4-D [2C]	1.88	0.10	mg/kg dry	2.156	0.0525	84.8	50.5-123	3.52	20	
2,4-DB	1.86	0.10	mg/kg dry	2.156	ND	86.1	46.4-117	0.0708	20	
2,4-DB [2C]	1.81	0.10	mg/kg dry	2.156	ND	84.1	44.5-121	5.40	20	
2,4,5-T	2.01	0.10	mg/kg dry	2.156	ND	93.3	66.2-110	0.865	20	
2,4,5-T [2C]	1.92	0.10	mg/kg dry	2.156	ND	89.0	43.6-126	1.06	20	
2,4,5-TP	1.95	0.10	mg/kg dry	2.156	ND	90.3	52.4-114	1.05	20	
2,4,5-TP [2C]	1.83	0.10	mg/kg dry	2.156	ND	84.9	47.6-117	0.106	20	
Bentazon	1.04	0.10	mg/kg dry	1.078	0.0456	92.2	61.5-117	1.44	20	
Bentazon [2C]	0.960	0.10	mg/kg dry	1.078	ND	89.1	50.7-127	4.28	20	
Dicamba	1.62	0.10	mg/kg dry	2.156	ND	74.9	48.4-111	1.41	20	
Dicamba [2C]	1.60	0.10	mg/kg dry	2.156	ND	74.1	43.3-108	2.52	20	
Picloram	0.641	0.10	mg/kg dry	1.078	ND	59.5	26.7-110	1.30	20	
Picloram [2C]	0.387	0.10	mg/kg dry	1.078	0.0164	34.4	10.8-110	0.574	20	

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608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427291
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804171 - EPA 3570										
Matrix Spike Dup (A804171-MSD1)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/20/2018 23:57						
Triclopyr	1.97	0.10	mg/kg dry	2.156	ND	91.4	56-113	0.809	20	
Triclopyr [2C]	1.78	0.10	mg/kg dry	2.156	0.0278	81.1	47.9-120	0.221	20	
Surrogate: DCAA	*21.2*		*mg/kg dry*	*21.56*		*98.4*	*70.8-116*			
Surrogate: DCAA [2C]	*18.9*		*mg/kg dry*	*21.56*		*87.9*	*62.3-114*			
Matrix Spike Dup (A804171-MSD2)	**Source: A181607-08**			Prepared: 04/20/2018 Analyzed: 04/21/2018 02:11						
MCPA	2.21	0.10	mg/kg dry	2.156	ND	103	74.2-114	0.307	20	
MCPA [2C]	2.08	0.10	mg/kg dry	2.156	ND	96.5	60.9-122	1.37	20	
Surrogate: DCAA	*21.6*		*mg/kg dry*	*21.56*		*100*	*70.8-116*			
Surrogate: DCAA [2C]	*21.9*		*mg/kg dry*	*21.56*		*102*	*62.3-114*			

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427291
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Classical Chemistry Parameters - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804163 - % Solids										
Duplicate (A804163-DUP1)		**Source: A181607-09**		Prepared: 04/18/2018 Analyzed: 04/19/2018 11:20						
% Solids	90.0	0.00	% by Weight		90.3			0.390	20	

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427291
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
P	The difference in the concentrations between the primary and confirmation column was > 40%.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A181607

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427291 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/13/2018 Results Requested By: 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: MDA List II	LAB USE ONLY
1	FD-SB-F1 (10-14.5 S)	PS	4/12/2018 10:15	10427291001	Solid	1	X	01
2	FB-SB-G1 (5-10 S)	PS	4/12/2018 10:45	10427291002	Solid	1	X	02
3	FD-TT-05 (4-9 WM)	PS	4/12/2018 09:45	10427291003	Solid	1	X	03
4	FD-TT-06 (2-5 WM)	PS	4/12/2018 11:40	10427291004	Solid	1	X	04
5	FD-TT-07 (6-11 WM)	PS	4/12/2018 13:00	10427291005	Solid	1	X	05
6	FD-TT-08 (5-12 WM)	PS	4/12/2018 14:30	10427291006	Solid	1	X	06
7	TS-SB-01 (5-8 WM)	PS	4/12/2018 17:20	10427291007	Solid	1	X	07
8	TS-SB-02 (5-10 S)	PS	4/12/2018 19:10	10427291008	Solid	1	X	08
9	TS-SB-03 (1.5-3.0 S)	PS	4/12/2018 19:55	10427291009	Solid	1	X	09

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	Mary Heed FedEx	4/16/18 1630	Kari-Ann Kullin	4/17/18 0940
2				
3				

Cooler Temperature on Receipt 4.4 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

160142274
exp 7/12/18

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 01, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 13, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6451
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
California Certification #2973
California Certification #2973
Alaska Certification UST-107
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Montana DHHS Certification #: CERT0102
Minnesota Dept of Health Certification #: 1382680
Nevada DCNR Certification #: MN000372018-1
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10427354001	**TS-SB-04 (7-15 WM)**	Solid	04/13/18 09:00	04/13/18 16:30
10427354002	**TS-SB-05 (5-7.5 WM)**	Solid	04/13/18 10:10	04/13/18 16:30
10427354003	**TS-SB-06 (8-12.5WM)**	Solid	04/13/18 11:05	04/13/18 16:30
10427354004	**TS-SB-07 (15.18.5)**	Solid	04/13/18 12:20	04/13/18 16:30
10427354005	**TS-SB-08 (10-20WM)**	Solid	04/13/18 14:10	04/13/18 16:30

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10427354001	**TS-SB-04 (7-15 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	BT	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	BT	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	BT	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427354004	**TS-SB-07 (15.18.5)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	BT	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427354005	**TS-SB-08 (10-20WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	IP	11	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	BT	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-04 (7-15 WM) **Lab ID: 10427354001** Collected: 04/13/18 09:00 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.3	1	04/25/18 10:56	04/30/18 14:26	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	309-00-2	
alpha-BHC	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	319-84-6	
beta-BHC	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	319-85-7	
delta-BHC	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	58-89-9	
Chlordane (Technical)	ND	ug/kg	940	50	04/16/18 14:37	04/20/18 08:21	57-74-9	
alpha-Chlordane	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	5103-71-9	
gamma-Chlordane	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	5103-74-2	
4,4'-DDD	ND	ug/kg	188	50	04/16/18 14:37	04/20/18 08:21	72-54-8	
4,4'-DDE	ND	ug/kg	188	50	04/16/18 14:37	04/20/18 08:21	72-55-9	
4,4'-DDT	ND	ug/kg	188	50	04/16/18 14:37	04/20/18 08:21	50-29-3	
Dieldrin	ND	ug/kg	188	50	04/16/18 14:37	04/20/18 08:21	60-57-1	
Endosulfan I	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	959-98-8	
Endosulfan II	ND	ug/kg	188	50	04/16/18 14:37	04/20/18 08:21	33213-65-9	
Endosulfan sulfate	ND	ug/kg	188	50	04/16/18 14:37	04/20/18 08:21	1031-07-8	
Endrin	ND	ug/kg	188	50	04/16/18 14:37	04/20/18 08:21	72-20-8	
Endrin aldehyde	ND	ug/kg	188	50	04/16/18 14:37	04/20/18 08:21	7421-93-4	
Endrin ketone	ND	ug/kg	188	50	04/16/18 14:37	04/20/18 08:21	53494-70-5	
Heptachlor	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	76-44-8	
Heptachlor epoxide	ND	ug/kg	94.0	50	04/16/18 14:37	04/20/18 08:21	1024-57-3	
Methoxychlor	ND	ug/kg	940	50	04/16/18 14:37	04/20/18 08:21	72-43-5	
Toxaphene	ND	ug/kg	2820	50	04/16/18 14:37	04/20/18 08:21	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	50	04/16/18 14:37	04/20/18 08:21	877-09-8	1M, D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	50	04/16/18 14:37	04/20/18 08:21	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	11097-69-1	
PCB-1260 (Aroclor 1260)	**150**	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	11100-14-4	
PCB, Total	**150**	ug/kg	37.1	1	04/16/18 15:03	04/18/18 02:02	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	65	%.	48-125	1	04/16/18 15:03	04/18/18 02:02	877-09-8	
Decachlorobiphenyl (S)	68	%.	30-134	1	04/16/18 15:03	04/18/18 02:02	2051-24-3	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-04 (7-15 WM) **Lab ID: 10427354001** Collected: 04/13/18 09:00 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**371**	mg/kg	193	20	04/16/18 14:24	04/19/18 17:44		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	04/16/18 14:24	04/19/18 17:44	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.9	1	04/25/18 10:39	04/25/18 18:33		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/25/18 10:39	04/25/18 18:33	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**3310**	mg/kg	11.0	1	04/17/18 04:48	04/17/18 19:26	7429-90-5	
Barium	**47.3**	mg/kg	0.55	1	04/17/18 04:48	04/17/18 19:26	7440-39-3	
Boron	ND	mg/kg	8.2	1	04/17/18 04:48	04/17/18 19:26	7440-42-8	
Copper	**8.8**	mg/kg	0.55	1	04/17/18 04:48	04/17/18 19:26	7440-50-8	
Iron	**7490**	mg/kg	2.7	1	04/17/18 04:48	04/17/18 19:26	7439-89-6	
Manganese	**318**	mg/kg	0.27	1	04/17/18 04:48	04/17/18 19:26	7439-96-5	
Nickel	**8.0**	mg/kg	1.1	1	04/17/18 04:48	04/17/18 19:26	7440-02-0	
Silver	ND	mg/kg	0.55	1	04/17/18 04:48	04/17/18 19:26	7440-22-4	
Tin	ND	mg/kg	4.1	1	04/17/18 04:48	04/17/18 19:26	7440-31-5	
Titanium	**208**	mg/kg	1.4	1	04/17/18 04:48	04/17/18 19:26	7440-32-6	
Zinc	**58.5**	mg/kg	1.1	1	04/17/18 04:48	04/17/18 19:26	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**12.0**	mg/kg	1.1	5	04/20/18 09:20	04/21/18 02:34	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.56	20	04/17/18 05:10	04/17/18 12:24	7440-36-0	
Arsenic	**3.9**	mg/kg	0.56	20	04/17/18 05:10	04/17/18 12:24	7440-38-2	
Beryllium	ND	mg/kg	0.22	20	04/17/18 05:10	04/17/18 12:24	7440-41-7	
Cadmium	**0.14**	mg/kg	0.089	20	04/17/18 05:10	04/17/18 12:24	7440-43-9	
Cobalt	**4.6**	mg/kg	0.56	20	04/17/18 05:10	04/17/18 12:24	7440-48-4	
Lead	**14.2**	mg/kg	0.11	20	04/17/18 05:10	04/17/18 12:24	7439-92-1	
Lithium	**4.8**	mg/kg	0.56	20	04/17/18 05:10	04/17/18 12:24	7439-93-2	
Selenium	ND	mg/kg	0.56	20	04/17/18 05:10	04/17/18 12:24	7782-49-2	
Strontium	**24.9**	mg/kg	0.56	20	04/17/18 05:10	04/17/18 12:24	7440-24-6	
Vanadium	**19.3**	mg/kg	1.1	20	04/17/18 05:10	04/17/18 12:24	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.14**	mg/kg	0.022	1	04/23/18 05:40	04/23/18 15:18	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**11.4**	%	0.10	1		04/19/18 11:01		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	83-32-9	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-04 (7-15 WM) **Lab ID: 10427354001** Collected: 04/13/18 09:00 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	208-96-8	
Anthracene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	120-12-7	
Benzo(a)anthracene	**527**	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	56-55-3	
Benzo(a)pyrene	**423**	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	50-32-8	
Benzo(b)fluoranthene	**497**	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	101-55-3	
Butylbenzylphthalate	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	85-68-7	
Carbazole	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	59-50-7	
4-Chloroaniline	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	108-60-1	
2-Chloronaphthalene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	91-58-7	
2-Chlorophenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	7005-72-3	
Chrysene	**727**	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	53-70-3	
Dibenzofuran	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	120-83-2	
Diethylphthalate	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	105-67-9	
Dimethylphthalate	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	131-11-3	
Di-n-butylphthalate	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	1910	1	04/19/18 17:13	04/20/18 17:00	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	606-20-2	
Di-n-octylphthalate	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	117-81-7	
Fluoranthene	**997**	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	206-44-0	
Fluorene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	87-68-3	
Hexachlorobenzene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	118-74-1	
Hexachloroethane	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	193-39-5	
Isophorone	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	78-59-1	
1-Methylnaphthalene	**607**	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	90-12-0	
2-Methylnaphthalene	**826**	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-04 (7-15 WM) **Lab ID: 10427354001** Collected: 04/13/18 09:00 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	743	1	04/19/18 17:13	04/20/18 17:00		
Naphthalene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	91-20-3	
2-Nitroaniline	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	88-74-4	
3-Nitroaniline	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	99-09-2	
4-Nitroaniline	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	100-01-6	
Nitrobenzene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	98-95-3	
2-Nitrophenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	88-75-5	
4-Nitrophenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	86-30-6	
Pentachlorophenol	ND	ug/kg	754	1	04/19/18 17:13	04/20/18 17:00	87-86-5	
Phenanthrene	**1440**	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	85-01-8	
Phenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	108-95-2	
Pyrene	**1320**	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	371	1	04/19/18 17:13	04/20/18 17:00	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	73	%.	43-125	1	04/19/18 17:13	04/20/18 17:00	4165-60-0	
2-Fluorobiphenyl (S)	81	%.	30-132	1	04/19/18 17:13	04/20/18 17:00	321-60-8	
p-Terphenyl-d14 (S)	81	%.	62-125	1	04/19/18 17:13	04/20/18 17:00	1718-51-0	
Phenol-d6 (S)	79	%.	48-125	1	04/19/18 17:13	04/20/18 17:00	13127-88-3	
2-Fluorophenol (S)	77	%.	40-125	1	04/19/18 17:13	04/20/18 17:00	367-12-4	
2,4,6-Tribromophenol (S)	71	%.	60-125	1	04/19/18 17:13	04/20/18 17:00	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	83-32-9	
Acenaphthylene	ND	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	208-96-8	
Anthracene	ND	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	120-12-7	
Benzo(a)anthracene	**132**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	56-55-3	
Benzo(a)pyrene	**124**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	50-32-8	
Benzo(b)fluoranthene	**167**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	205-99-2	
Benzo(g,h,i)perylene	**82.4**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	191-24-2	
Benzo(k)fluoranthene	**69.8**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	207-08-9	
Chrysene	**138**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	53-70-3	
Fluoranthene	**293**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	206-44-0	
Fluorene	ND	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	86-73-7	
Indeno(1,2,3-cd)pyrene	**71.6**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	193-39-5	
Naphthalene	ND	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	91-20-3	
Phenanthrene	**239**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	85-01-8	
Pyrene	**257**	ug/kg	56.4	5	04/17/18 12:13	04/18/18 21:02	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	81	%.	42-125	5	04/17/18 12:13	04/18/18 21:02	321-60-8	D3

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-04 (7-15 WM) **Lab ID: 10427354001** Collected: 04/13/18 09:00 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	96	%.	57-125	5	04/17/18 12:13	04/18/18 21:02	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1160	1	04/24/18 16:08	04/25/18 03:48	67-64-1	
Allyl chloride	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	107-05-1	
Benzene	ND	ug/kg	23.2	1	04/24/18 16:08	04/25/18 03:48	71-43-2	
Bromobenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	108-86-1	
Bromochloromethane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	74-97-5	
Bromodichloromethane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	75-27-4	
Bromoform	ND	ug/kg	580	1	04/24/18 16:08	04/25/18 03:48	75-25-2	
Bromomethane	ND	ug/kg	580	1	04/24/18 16:08	04/25/18 03:48	74-83-9	
2-Butanone (MEK)	ND	ug/kg	290	1	04/24/18 16:08	04/25/18 03:48	78-93-3	
n-Butylbenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	104-51-8	
sec-Butylbenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	135-98-8	
tert-Butylbenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	98-06-6	
Carbon tetrachloride	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	56-23-5	
Chlorobenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	108-90-7	
Chloroethane	ND	ug/kg	580	1	04/24/18 16:08	04/25/18 03:48	75-00-3	
Chloroform	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	67-66-3	
Chloromethane	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	74-87-3	
2-Chlorotoluene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	95-49-8	
4-Chlorotoluene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	580	1	04/24/18 16:08	04/25/18 03:48	96-12-8	
Dibromochloromethane	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	106-93-4	
Dibromomethane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	75-71-8	
1,1-Dichloroethane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	75-34-3	
1,2-Dichloroethane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	107-06-2	
1,1-Dichloroethene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	156-60-5	
Dichlorofluoromethane	ND	ug/kg	580	1	04/24/18 16:08	04/25/18 03:48	75-43-4	
1,2-Dichloropropane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	78-87-5	
1,3-Dichloropropane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	142-28-9	
2,2-Dichloropropane	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	594-20-7	
1,1-Dichloropropene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	60-29-7	
Ethylbenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	290	1	04/24/18 16:08	04/25/18 03:48	87-68-3	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-04 (7-15 WM) **Lab ID: 10427354001** Collected: 04/13/18 09:00 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	98-82-8	
p-Isopropyltoluene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	99-87-6	
Methylene Chloride	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	290	1	04/24/18 16:08	04/25/18 03:48	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	1634-04-4	
Naphthalene	**448**	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	91-20-3	
n-Propylbenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	103-65-1	
Styrene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	79-34-5	
Tetrachloroethene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	127-18-4	
Tetrahydrofuran	ND	ug/kg	2320	1	04/24/18 16:08	04/25/18 03:48	109-99-9	
Toluene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	79-00-5	
Trichloroethene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	79-01-6	
Trichlorofluoromethane	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	232	1	04/24/18 16:08	04/25/18 03:48	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	58.0	1	04/24/18 16:08	04/25/18 03:48	108-67-8	
Vinyl chloride	ND	ug/kg	23.2	1	04/24/18 16:08	04/25/18 03:48	75-01-4	
Xylene (Total)	ND	ug/kg	174	1	04/24/18 16:08	04/25/18 03:48	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	04/24/18 16:08	04/25/18 03:48	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/24/18 16:08	04/25/18 03:48	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	75-125	1	04/24/18 16:08	04/25/18 03:48	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	11.1	5	04/23/18 11:09	04/24/18 13:26	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**12.0**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.37	1	04/20/18 10:25	04/20/18 13:49	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**2.8**	mg/kg	0.99	1	04/18/18 14:45	04/19/18 18:11	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-05 (5-7.5 WM) **Lab ID: 10427354002** Collected: 04/13/18 10:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	13.8	1	04/25/18 10:56	04/27/18 17:27	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	309-00-2	
alpha-BHC	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	319-84-6	
beta-BHC	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	319-85-7	
delta-BHC	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	58-89-9	
Chlordane (Technical)	ND	ug/kg	490	20	04/16/18 14:37	04/20/18 08:39	57-74-9	
alpha-Chlordane	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	5103-71-9	
gamma-Chlordane	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	5103-74-2	
4,4'-DDD	ND	ug/kg	97.7	20	04/16/18 14:37	04/20/18 08:39	72-54-8	
4,4'-DDE	ND	ug/kg	97.7	20	04/16/18 14:37	04/20/18 08:39	72-55-9	
4,4'-DDT	ND	ug/kg	97.7	20	04/16/18 14:37	04/20/18 08:39	50-29-3	
Dieldrin	ND	ug/kg	97.7	20	04/16/18 14:37	04/20/18 08:39	60-57-1	
Endosulfan I	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	959-98-8	
Endosulfan II	ND	ug/kg	97.7	20	04/16/18 14:37	04/20/18 08:39	33213-65-9	
Endosulfan sulfate	ND	ug/kg	97.7	20	04/16/18 14:37	04/20/18 08:39	1031-07-8	
Endrin	ND	ug/kg	97.7	20	04/16/18 14:37	04/20/18 08:39	72-20-8	
Endrin aldehyde	ND	ug/kg	97.7	20	04/16/18 14:37	04/20/18 08:39	7421-93-4	
Endrin ketone	ND	ug/kg	97.7	20	04/16/18 14:37	04/20/18 08:39	53494-70-5	
Heptachlor	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	76-44-8	
Heptachlor epoxide	ND	ug/kg	49.0	20	04/16/18 14:37	04/20/18 08:39	1024-57-3	
Methoxychlor	ND	ug/kg	490	20	04/16/18 14:37	04/20/18 08:39	72-43-5	
Toxaphene	ND	ug/kg	1470	20	04/16/18 14:37	04/20/18 08:39	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	04/16/18 14:37	04/20/18 08:39	877-09-8	3M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	04/16/18 14:37	04/20/18 08:39	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	11100-14-4	
PCB, Total	ND	ug/kg	48.4	1	04/16/18 15:03	04/18/18 02:50	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	74	%.	48-125	1	04/16/18 15:03	04/18/18 02:50	877-09-8	
Decachlorobiphenyl (S)	62	%.	30-134	1	04/16/18 15:03	04/18/18 02:50	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-05 (5-7.5 WM) **Lab ID: 10427354002** Collected: 04/13/18 10:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**1150**	mg/kg	532	10	04/16/18 14:24	04/19/18 17:58		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/16/18 14:24	04/19/18 17:58	638-68-6	P3,S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**38.9**	mg/kg	19.1	1	04/25/18 10:39	04/25/18 16:31		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/25/18 10:39	04/25/18 16:31	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**4730**	mg/kg	14.7	1	04/17/18 04:48	04/17/18 19:30	7429-90-5	
Barium	**174**	mg/kg	0.73	1	04/17/18 04:48	04/17/18 19:30	7440-39-3	
Boron	**18.4**	mg/kg	11.0	1	04/17/18 04:48	04/17/18 19:30	7440-42-8	
Copper	**18.2**	mg/kg	0.73	1	04/17/18 04:48	04/17/18 19:30	7440-50-8	
Iron	**27600**	mg/kg	18.4	5	04/17/18 04:48	04/18/18 11:36	7439-89-6	
Manganese	**723**	mg/kg	0.37	1	04/17/18 04:48	04/17/18 19:30	7439-96-5	
Nickel	**11.3**	mg/kg	1.5	1	04/17/18 04:48	04/17/18 19:30	7440-02-0	
Silver	ND	mg/kg	0.73	1	04/17/18 04:48	04/17/18 19:30	7440-22-4	
Tin	**10.5**	mg/kg	5.5	1	04/17/18 04:48	04/17/18 19:30	7440-31-5	
Titanium	**172**	mg/kg	1.8	1	04/17/18 04:48	04/17/18 19:30	7440-32-6	
Zinc	**999**	mg/kg	1.5	1	04/17/18 04:48	04/17/18 19:30	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**38.2**	mg/kg	1.4	5	04/20/18 09:20	04/21/18 02:38	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**0.78**	mg/kg	0.73	20	04/17/18 05:10	04/17/18 12:27	7440-36-0	
Arsenic	**11.4**	mg/kg	0.73	20	04/17/18 05:10	04/17/18 12:27	7440-38-2	
Beryllium	**0.31**	mg/kg	0.29	20	04/17/18 05:10	04/17/18 12:27	7440-41-7	
Cadmium	**3.4**	mg/kg	0.12	20	04/17/18 05:10	04/17/18 12:27	7440-43-9	
Cobalt	**5.2**	mg/kg	0.73	20	04/17/18 05:10	04/17/18 12:27	7440-48-4	
Lead	**579**	mg/kg	0.15	20	04/17/18 05:10	04/17/18 12:27	7439-92-1	
Lithium	**5.6**	mg/kg	0.73	20	04/17/18 05:10	04/17/18 12:27	7439-93-2	
Selenium	ND	mg/kg	0.73	20	04/17/18 05:10	04/17/18 12:27	7782-49-2	
Strontium	**72.7**	mg/kg	0.73	20	04/17/18 05:10	04/17/18 12:27	7440-24-6	
Vanadium	**19.5**	mg/kg	1.5	20	04/17/18 05:10	04/17/18 12:27	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.14**	mg/kg	0.027	1	04/23/18 05:40	04/23/18 15:20	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**31.9**	%	0.10	1		04/19/18 11:02		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-05 (5-7.5 WM) **Lab ID: 10427354002** Collected: 04/13/18 10:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	208-96-8	
Anthracene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	120-12-7	
Benzo(a)anthracene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	56-55-3	
Benzo(a)pyrene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	101-55-3	
Butylbenzylphthalate	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	85-68-7	
Carbazole	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	59-50-7	
4-Chloroaniline	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	108-60-1	
2-Chloronaphthalene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	91-58-7	
2-Chlorophenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	7005-72-3	
Chrysene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	53-70-3	
Dibenzofuran	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	120-83-2	
Diethylphthalate	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	105-67-9	
Dimethylphthalate	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	131-11-3	
Di-n-butylphthalate	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2490	1	04/19/18 17:13	04/20/18 23:25	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	606-20-2	
Di-n-octylphthalate	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	122-66-7	
bis(2-Ethylhexyl)phthalate	**6560**	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	117-81-7	
Fluoranthene	**718**	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	206-44-0	
Fluorene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	87-68-3	
Hexachlorobenzene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	118-74-1	
Hexachloroethane	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	193-39-5	
Isophorone	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	78-59-1	
1-Methylnaphthalene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	90-12-0	
2-Methylnaphthalene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-05 (5-7.5 WM) **Lab ID: 10427354002** Collected: 04/13/18 10:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	966	1	04/19/18 17:13	04/20/18 23:25		
Naphthalene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	91-20-3	
2-Nitroaniline	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	88-74-4	
3-Nitroaniline	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	99-09-2	
4-Nitroaniline	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	100-01-6	
Nitrobenzene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	98-95-3	
2-Nitrophenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	88-75-5	
4-Nitrophenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	86-30-6	
Pentachlorophenol	ND	ug/kg	981	1	04/19/18 17:13	04/20/18 23:25	87-86-5	
Phenanthrene	**815**	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	85-01-8	
Phenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	108-95-2	
Pyrene	**618**	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	483	1	04/19/18 17:13	04/20/18 23:25	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	48	%.	43-125	1	04/19/18 17:13	04/20/18 23:25	4165-60-0	
2-Fluorobiphenyl (S)	66	%.	30-132	1	04/19/18 17:13	04/20/18 23:25	321-60-8	
p-Terphenyl-d14 (S)	65	%.	62-125	1	04/19/18 17:13	04/20/18 23:25	1718-51-0	
Phenol-d6 (S)	52	%.	48-125	1	04/19/18 17:13	04/20/18 23:25	13127-88-3	
2-Fluorophenol (S)	53	%.	40-125	1	04/19/18 17:13	04/20/18 23:25	367-12-4	
2,4,6-Tribromophenol (S)	59	%.	60-125	1	04/19/18 17:13	04/20/18 23:25	118-79-6	S5
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**167**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	83-32-9	
Acenaphthylene	ND	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	208-96-8	
Anthracene	**217**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	120-12-7	
Benzo(a)anthracene	**373**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	56-55-3	
Benzo(a)pyrene	**307**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	50-32-8	
Benzo(b)fluoranthene	**398**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	205-99-2	
Benzo(g,h,i)perylene	**190**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	191-24-2	
Benzo(k)fluoranthene	**112**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	207-08-9	
Chrysene	**356**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	53-70-3	
Fluoranthene	**872**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	206-44-0	
Fluorene	**354**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	86-73-7	
Indeno(1,2,3-cd)pyrene	**153**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	193-39-5	
Naphthalene	**825**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	91-20-3	
Phenanthrene	**1100**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	85-01-8	
Pyrene	**781**	ug/kg	73.2	5	04/17/18 12:13	04/18/18 21:43	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	71	%.	42-125	5	04/17/18 12:13	04/18/18 21:43	321-60-8	D3

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-05 (5-7.5 WM) **Lab ID: 10427354002** Collected: 04/13/18 10:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	78	%.	57-125	5	04/17/18 12:13	04/18/18 21:43	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1960	1	04/24/18 16:08	04/25/18 04:05	67-64-1	
Allyl chloride	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	107-05-1	
Benzene	**58.1**	ug/kg	39.2	1	04/24/18 16:08	04/25/18 04:05	71-43-2	
Bromobenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	108-86-1	
Bromochloromethane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	74-97-5	
Bromodichloromethane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	75-27-4	
Bromoform	ND	ug/kg	980	1	04/24/18 16:08	04/25/18 04:05	75-25-2	
Bromomethane	ND	ug/kg	980	1	04/24/18 16:08	04/25/18 04:05	74-83-9	
2-Butanone (MEK)	ND	ug/kg	490	1	04/24/18 16:08	04/25/18 04:05	78-93-3	
n-Butylbenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	104-51-8	
sec-Butylbenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	135-98-8	
tert-Butylbenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	98-06-6	
Carbon tetrachloride	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	56-23-5	
Chlorobenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	108-90-7	
Chloroethane	ND	ug/kg	980	1	04/24/18 16:08	04/25/18 04:05	75-00-3	
Chloroform	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	67-66-3	
Chloromethane	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	74-87-3	
2-Chlorotoluene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	95-49-8	
4-Chlorotoluene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	980	1	04/24/18 16:08	04/25/18 04:05	96-12-8	
Dibromochloromethane	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	106-93-4	
Dibromomethane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	75-71-8	
1,1-Dichloroethane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	75-34-3	
1,2-Dichloroethane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	107-06-2	
1,1-Dichloroethene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	156-60-5	
Dichlorofluoromethane	ND	ug/kg	980	1	04/24/18 16:08	04/25/18 04:05	75-43-4	
1,2-Dichloropropane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	78-87-5	
1,3-Dichloropropane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	142-28-9	
2,2-Dichloropropane	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	594-20-7	
1,1-Dichloropropene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	60-29-7	
Ethylbenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	490	1	04/24/18 16:08	04/25/18 04:05	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-05 (5-7.5 WM) **Lab ID: 10427354002** Collected: 04/13/18 10:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	**106**	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	98-82-8	
p-Isopropyltoluene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	99-87-6	
Methylene Chloride	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	490	1	04/24/18 16:08	04/25/18 04:05	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	1634-04-4	
Naphthalene	**493**	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	91-20-3	
n-Propylbenzene	**117**	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	103-65-1	
Styrene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	630-20-6	
1,1,2,2-Tetrachloroethane	**138**	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	79-34-5	
Tetrachloroethene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	127-18-4	
Tetrahydrofuran	ND	ug/kg	3920	1	04/24/18 16:08	04/25/18 04:05	109-99-9	
Toluene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	79-00-5	
Trichloroethene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	79-01-6	
Trichlorofluoromethane	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	392	1	04/24/18 16:08	04/25/18 04:05	76-13-1	
1,2,4-Trimethylbenzene	**386**	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	98.0	1	04/24/18 16:08	04/25/18 04:05	108-67-8	
Vinyl chloride	ND	ug/kg	39.2	1	04/24/18 16:08	04/25/18 04:05	75-01-4	
Xylene (Total)	ND	ug/kg	294	1	04/24/18 16:08	04/25/18 04:05	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	04/24/18 16:08	04/25/18 04:05	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	04/24/18 16:08	04/25/18 04:05	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	04/24/18 16:08	04/25/18 04:05	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	57.1	20	04/23/18 11:09	04/24/18 13:27	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**38.2**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.38	1	04/20/18 10:25	04/20/18 13:52	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**4.1**	mg/kg	0.99	1	04/18/18 14:45	04/19/18 19:49	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-06 (8-12.5WM) **Lab ID: 10427354003** Collected: 04/13/18 11:05 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.3	1	04/25/18 10:56	04/27/18 17:34	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	309-00-2	
alpha-BHC	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	319-84-6	
beta-BHC	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	319-85-7	
delta-BHC	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	58-89-9	
Chlordane (Technical)	ND	ug/kg	420	20	04/16/18 14:37	04/20/18 08:57	57-74-9	
alpha-Chlordane	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	5103-71-9	
gamma-Chlordane	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	5103-74-2	
4,4'-DDD	ND	ug/kg	83.7	20	04/16/18 14:37	04/20/18 08:57	72-54-8	
4,4'-DDE	ND	ug/kg	83.7	20	04/16/18 14:37	04/20/18 08:57	72-55-9	
4,4'-DDT	ND	ug/kg	83.7	20	04/16/18 14:37	04/20/18 08:57	50-29-3	
Dieldrin	ND	ug/kg	83.7	20	04/16/18 14:37	04/20/18 08:57	60-57-1	
Endosulfan I	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	959-98-8	
Endosulfan II	ND	ug/kg	83.7	20	04/16/18 14:37	04/20/18 08:57	33213-65-9	
Endosulfan sulfate	ND	ug/kg	83.7	20	04/16/18 14:37	04/20/18 08:57	1031-07-8	
Endrin	ND	ug/kg	83.7	20	04/16/18 14:37	04/20/18 08:57	72-20-8	
Endrin aldehyde	ND	ug/kg	83.7	20	04/16/18 14:37	04/20/18 08:57	7421-93-4	
Endrin ketone	ND	ug/kg	83.7	20	04/16/18 14:37	04/20/18 08:57	53494-70-5	
Heptachlor	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	76-44-8	
Heptachlor epoxide	ND	ug/kg	42.0	20	04/16/18 14:37	04/20/18 08:57	1024-57-3	
Methoxychlor	ND	ug/kg	420	20	04/16/18 14:37	04/20/18 08:57	72-43-5	
Toxaphene	ND	ug/kg	1260	20	04/16/18 14:37	04/20/18 08:57	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	04/16/18 14:37	04/20/18 08:57	877-09-8	3M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	04/16/18 14:37	04/20/18 08:57	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	12672-29-6	
PCB-1254 (Aroclor 1254)	**94.1**	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	11100-14-4	
PCB, Total	**94.1**	ug/kg	41.3	1	04/16/18 15:03	04/18/18 03:06	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	75	%.	48-125	1	04/16/18 15:03	04/18/18 03:06	877-09-8	
Decachlorobiphenyl (S)	66	%.	30-134	1	04/16/18 15:03	04/18/18 03:06	2051-24-3	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-06 (8-12.5WM) **Lab ID: 10427354003** Collected: 04/13/18 11:05 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**3820**	mg/kg	614	50	04/16/18 14:24	04/20/18 09:34		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	50	04/16/18 14:24	04/20/18 09:34	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	14.4	1	04/25/18 10:39	04/25/18 16:55		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/25/18 10:39	04/25/18 16:55	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**8830**	mg/kg	11.9	1	04/17/18 04:48	04/17/18 19:33	7429-90-5	
Barium	**118**	mg/kg	0.59	1	04/17/18 04:48	04/17/18 19:33	7440-39-3	
Boron	**23.6**	mg/kg	8.9	1	04/17/18 04:48	04/17/18 19:33	7440-42-8	
Copper	**341**	mg/kg	0.59	1	04/17/18 04:48	04/17/18 19:33	7440-50-8	
Iron	**11500**	mg/kg	3.0	1	04/17/18 04:48	04/17/18 19:33	7439-89-6	
Manganese	**247**	mg/kg	0.30	1	04/17/18 04:48	04/17/18 19:33	7439-96-5	
Nickel	**21.2**	mg/kg	1.2	1	04/17/18 04:48	04/17/18 19:33	7440-02-0	
Silver	ND	mg/kg	0.59	1	04/17/18 04:48	04/17/18 19:33	7440-22-4	
Tin	ND	mg/kg	4.5	1	04/17/18 04:48	04/17/18 19:33	7440-31-5	
Titanium	**228**	mg/kg	1.5	1	04/17/18 04:48	04/17/18 19:33	7440-32-6	
Zinc	**519**	mg/kg	1.2	1	04/17/18 04:48	04/17/18 19:33	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**24.3**	mg/kg	1.2	5	04/20/18 09:20	04/21/18 02:52	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**3.1**	mg/kg	0.59	20	04/17/18 05:10	04/17/18 12:30	7440-36-0	
Arsenic	**5.5**	mg/kg	0.59	20	04/17/18 05:10	04/17/18 12:30	7440-38-2	
Beryllium	ND	mg/kg	0.24	20	04/17/18 05:10	04/17/18 12:30	7440-41-7	
Cadmium	**1.3**	mg/kg	0.094	20	04/17/18 05:10	04/17/18 12:30	7440-43-9	
Cobalt	**4.0**	mg/kg	0.59	20	04/17/18 05:10	04/17/18 12:30	7440-48-4	
Lead	**436**	mg/kg	0.12	20	04/17/18 05:10	04/17/18 12:30	7439-92-1	
Lithium	**3.5**	mg/kg	0.59	20	04/17/18 05:10	04/17/18 12:30	7439-93-2	
Selenium	ND	mg/kg	0.59	20	04/17/18 05:10	04/17/18 12:30	7782-49-2	
Strontium	**45.4**	mg/kg	0.59	20	04/17/18 05:10	04/17/18 12:30	7440-24-6	
Vanadium	**13.1**	mg/kg	1.2	20	04/17/18 05:10	04/17/18 12:30	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.23**	mg/kg	0.023	1	04/23/18 05:40	04/23/18 15:27	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**20.5**	%	0.10	1		04/19/18 11:04		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	83-32-9	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-06 (8-12.5WM) **Lab ID: 10427354003** Collected: 04/13/18 11:05 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	208-96-8	
Anthracene	**5490**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	120-12-7	
Benzo(a)anthracene	**13800**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	56-55-3	
Benzo(a)pyrene	**12700**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	50-32-8	
Benzo(b)fluoranthene	**18000**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	205-99-2	
Benzo(g,h,i)perylene	**8300**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	191-24-2	
Benzo(k)fluoranthene	**6380**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	101-55-3	
Butylbenzylphthalate	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	85-68-7	
Carbazole	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	59-50-7	
4-Chloroaniline	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	108-60-1	
2-Chloronaphthalene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	91-58-7	
2-Chlorophenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	7005-72-3	
Chrysene	**14800**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	53-70-3	
Dibenzofuran	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	120-83-2	
Diethylphthalate	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	105-67-9	
Dimethylphthalate	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	131-11-3	
Di-n-butylphthalate	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	21400	10	04/19/18 17:13	04/23/18 21:33	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	606-20-2	
Di-n-octylphthalate	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	117-81-7	
Fluoranthene	**31200**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	206-44-0	
Fluorene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	87-68-3	
Hexachlorobenzene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	118-74-1	
Hexachloroethane	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	67-72-1	
Indeno(1,2,3-cd)pyrene	**7520**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	193-39-5	
Isophorone	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	78-59-1	
1-Methylnaphthalene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	90-12-0	
2-Methylnaphthalene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-06 (8-12.5WM) **Lab ID: 10427354003** Collected: 04/13/18 11:05 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	8300	10	04/19/18 17:13	04/23/18 21:33		
Naphthalene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	91-20-3	
2-Nitroaniline	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	88-74-4	
3-Nitroaniline	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	99-09-2	
4-Nitroaniline	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	100-01-6	
Nitrobenzene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	98-95-3	
2-Nitrophenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	88-75-5	
4-Nitrophenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	86-30-6	
Pentachlorophenol	ND	ug/kg	8420	10	04/19/18 17:13	04/23/18 21:33	87-86-5	
Phenanthrene	**19500**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	85-01-8	
Phenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	108-95-2	
Pyrene	**27200**	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	4150	10	04/19/18 17:13	04/23/18 21:33	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	10	04/19/18 17:13	04/23/18 21:33	4165-60-0	S4
2-Fluorobiphenyl (S)	0	%.	30-132	10	04/19/18 17:13	04/23/18 21:33	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	62-125	10	04/19/18 17:13	04/23/18 21:33	1718-51-0	S4
Phenol-d6 (S)	0	%.	48-125	10	04/19/18 17:13	04/23/18 21:33	13127-88-3	S4
2-Fluorophenol (S)	0	%.	40-125	10	04/19/18 17:13	04/23/18 21:33	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	60-125	10	04/19/18 17:13	04/23/18 21:33	118-79-6	S4
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**367**	ug/kg	62.9	5	04/17/18 12:13	04/18/18 22:03	83-32-9	
Acenaphthylene	ND	ug/kg	62.9	5	04/17/18 12:13	04/18/18 22:03	208-96-8	
Anthracene	**1210**	ug/kg	62.9	5	04/17/18 12:13	04/18/18 22:03	120-12-7	
Benzo(a)anthracene	**3210**	ug/kg	314	25	04/17/18 12:13	04/19/18 22:11	56-55-3	
Benzo(a)pyrene	**3060**	ug/kg	314	25	04/17/18 12:13	04/19/18 22:11	50-32-8	
Benzo(b)fluoranthene	**3850**	ug/kg	314	25	04/17/18 12:13	04/19/18 22:11	205-99-2	
Benzo(g,h,i)perylene	**1690**	ug/kg	62.9	5	04/17/18 12:13	04/18/18 22:03	191-24-2	
Benzo(k)fluoranthene	**1390**	ug/kg	62.9	5	04/17/18 12:13	04/18/18 22:03	207-08-9	
Chrysene	**2910**	ug/kg	314	25	04/17/18 12:13	04/19/18 22:11	218-01-9	
Dibenz(a,h)anthracene	**511**	ug/kg	62.9	5	04/17/18 12:13	04/18/18 22:03	53-70-3	
Fluoranthene	**6940**	ug/kg	314	25	04/17/18 12:13	04/19/18 22:11	206-44-0	
Fluorene	**413**	ug/kg	62.9	5	04/17/18 12:13	04/18/18 22:03	86-73-7	
Indeno(1,2,3-cd)pyrene	**1550**	ug/kg	62.9	5	04/17/18 12:13	04/18/18 22:03	193-39-5	
Naphthalene	ND	ug/kg	62.9	5	04/17/18 12:13	04/18/18 22:03	91-20-3	
Phenanthrene	**4240**	ug/kg	314	25	04/17/18 12:13	04/19/18 22:11	85-01-8	
Pyrene	**5350**	ug/kg	314	25	04/17/18 12:13	04/19/18 22:11	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	86	%.	42-125	5	04/17/18 12:13	04/18/18 22:03	321-60-8	D3

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-06 (8-12.5WM) **Lab ID: 10427354003** Collected: 04/13/18 11:05 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	101	%.	57-125	5	04/17/18 12:13	04/18/18 22:03	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1280	1	04/24/18 16:08	04/25/18 04:22	67-64-1	
Allyl chloride	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	107-05-1	
Benzene	ND	ug/kg	25.7	1	04/24/18 16:08	04/25/18 04:22	71-43-2	
Bromobenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	108-86-1	
Bromochloromethane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	74-97-5	
Bromodichloromethane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	75-27-4	
Bromoform	ND	ug/kg	642	1	04/24/18 16:08	04/25/18 04:22	75-25-2	
Bromomethane	ND	ug/kg	642	1	04/24/18 16:08	04/25/18 04:22	74-83-9	
2-Butanone (MEK)	ND	ug/kg	321	1	04/24/18 16:08	04/25/18 04:22	78-93-3	
n-Butylbenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	104-51-8	
sec-Butylbenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	135-98-8	
tert-Butylbenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	98-06-6	
Carbon tetrachloride	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	56-23-5	
Chlorobenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	108-90-7	
Chloroethane	ND	ug/kg	642	1	04/24/18 16:08	04/25/18 04:22	75-00-3	
Chloroform	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	67-66-3	
Chloromethane	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	74-87-3	
2-Chlorotoluene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	95-49-8	
4-Chlorotoluene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	642	1	04/24/18 16:08	04/25/18 04:22	96-12-8	
Dibromochloromethane	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	106-93-4	
Dibromomethane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	75-71-8	
1,1-Dichloroethane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	75-34-3	
1,2-Dichloroethane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	107-06-2	
1,1-Dichloroethene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	156-60-5	
Dichlorofluoromethane	ND	ug/kg	642	1	04/24/18 16:08	04/25/18 04:22	75-43-4	
1,2-Dichloropropane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	78-87-5	
1,3-Dichloropropane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	142-28-9	
2,2-Dichloropropane	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	594-20-7	
1,1-Dichloropropene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	60-29-7	
Ethylbenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	321	1	04/24/18 16:08	04/25/18 04:22	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-06 (8-12.5WM) **Lab ID: 10427354003** Collected: 04/13/18 11:05 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	98-82-8	
p-Isopropyltoluene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	99-87-6	
Methylene Chloride	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	321	1	04/24/18 16:08	04/25/18 04:22	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	1634-04-4	
Naphthalene	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	91-20-3	
n-Propylbenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	103-65-1	
Styrene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	79-34-5	
Tetrachloroethene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	127-18-4	
Tetrahydrofuran	ND	ug/kg	2570	1	04/24/18 16:08	04/25/18 04:22	109-99-9	
Toluene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	79-00-5	
Trichloroethene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	79-01-6	
Trichlorofluoromethane	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	257	1	04/24/18 16:08	04/25/18 04:22	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	64.2	1	04/24/18 16:08	04/25/18 04:22	108-67-8	
Vinyl chloride	ND	ug/kg	25.7	1	04/24/18 16:08	04/25/18 04:22	75-01-4	
Xylene (Total)	ND	ug/kg	193	1	04/24/18 16:08	04/25/18 04:22	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1	04/24/18 16:08	04/25/18 04:22	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	04/24/18 16:08	04/25/18 04:22	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	04/24/18 16:08	04/25/18 04:22	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	48.4	20	04/23/18 11:09	04/24/18 13:27	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**24.3**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.30	1	04/20/18 10:25	04/20/18 13:52	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	04/18/18 14:45	04/19/18 18:31	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-07 (15.18.5) **Lab ID: 10427354004** Collected: 04/13/18 12:20 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	9.58	1	04/25/18 10:56	04/27/18 17:40	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	309-00-2	
alpha-BHC	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	319-84-6	
beta-BHC	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	319-85-7	
delta-BHC	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	58-89-9	
Chlordane (Technical)	ND	ug/kg	35.9	2	04/16/18 14:37	04/20/18 01:56	57-74-9	
alpha-Chlordane	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	5103-71-9	
gamma-Chlordane	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	5103-74-2	
4,4'-DDD	ND	ug/kg	7.2	2	04/16/18 14:37	04/20/18 01:56	72-54-8	
4,4'-DDE	ND	ug/kg	7.2	2	04/16/18 14:37	04/20/18 01:56	72-55-9	
4,4'-DDT	ND	ug/kg	7.2	2	04/16/18 14:37	04/20/18 01:56	50-29-3	
Dieldrin	ND	ug/kg	7.2	2	04/16/18 14:37	04/20/18 01:56	60-57-1	
Endosulfan I	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	959-98-8	
Endosulfan II	ND	ug/kg	7.2	2	04/16/18 14:37	04/20/18 01:56	33213-65-9	
Endosulfan sulfate	ND	ug/kg	7.2	2	04/16/18 14:37	04/20/18 01:56	1031-07-8	
Endrin	ND	ug/kg	7.2	2	04/16/18 14:37	04/20/18 01:56	72-20-8	
Endrin aldehyde	ND	ug/kg	7.2	2	04/16/18 14:37	04/20/18 01:56	7421-93-4	
Endrin ketone	ND	ug/kg	7.2	2	04/16/18 14:37	04/20/18 01:56	53494-70-5	
Heptachlor	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	76-44-8	
Heptachlor epoxide	ND	ug/kg	3.6	2	04/16/18 14:37	04/20/18 01:56	1024-57-3	
Methoxychlor	ND	ug/kg	35.9	2	04/16/18 14:37	04/20/18 01:56	72-43-5	
Toxaphene	ND	ug/kg	108	2	04/16/18 14:37	04/20/18 01:56	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	95	%.	30-150	2	04/16/18 14:37	04/20/18 01:56	877-09-8	5M,D3
Decachlorobiphenyl (S)	92	%.	30-150	2	04/16/18 14:37	04/20/18 01:56	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	11100-14-4	
PCB, Total	ND	ug/kg	35.5	1	04/16/18 15:03	04/18/18 03:21	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	87	%.	48-125	1	04/16/18 15:03	04/18/18 03:21	877-09-8	
Decachlorobiphenyl (S)	80	%.	30-134	1	04/16/18 15:03	04/18/18 03:21	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	7.2	1	04/16/18 14:24	04/19/18 19:45		

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-07 (15.18.5) **Lab ID: 10427354004** Collected: 04/13/18 12:20 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	92	%.	50-150	1	04/16/18 14:24	04/19/18 19:45	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	11.2	1	04/25/18 10:39	04/25/18 17:19		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/25/18 10:39	04/25/18 17:19	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**2680**	mg/kg	10.1	1	04/17/18 04:48	04/17/18 19:37	7429-90-5	
Barium	**40.0**	mg/kg	0.50	1	04/17/18 04:48	04/17/18 19:37	7440-39-3	
Boron	ND	mg/kg	7.6	1	04/17/18 04:48	04/17/18 19:37	7440-42-8	
Copper	**6.3**	mg/kg	0.50	1	04/17/18 04:48	04/17/18 19:37	7440-50-8	
Iron	**7710**	mg/kg	2.5	1	04/17/18 04:48	04/17/18 19:37	7439-89-6	
Manganese	**300**	mg/kg	0.25	1	04/17/18 04:48	04/17/18 19:37	7439-96-5	
Nickel	**7.6**	mg/kg	1.0	1	04/17/18 04:48	04/17/18 19:37	7440-02-0	
Silver	ND	mg/kg	0.50	1	04/17/18 04:48	04/17/18 19:37	7440-22-4	
Tin	ND	mg/kg	3.8	1	04/17/18 04:48	04/17/18 19:37	7440-31-5	
Titanium	**182**	mg/kg	1.3	1	04/17/18 04:48	04/17/18 19:37	7440-32-6	
Zinc	**16.1**	mg/kg	1.0	1	04/17/18 04:48	04/17/18 19:37	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**8.3**	mg/kg	0.98	5	04/20/18 09:20	04/21/18 02:57	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.53	20	04/17/18 05:10	04/17/18 12:32	7440-36-0	
Arsenic	**2.1**	mg/kg	0.53	20	04/17/18 05:10	04/17/18 12:32	7440-38-2	
Beryllium	ND	mg/kg	0.21	20	04/17/18 05:10	04/17/18 12:32	7440-41-7	
Cadmium	**0.12**	mg/kg	0.085	20	04/17/18 05:10	04/17/18 12:32	7440-43-9	
Cobalt	**3.4**	mg/kg	0.53	20	04/17/18 05:10	04/17/18 12:32	7440-48-4	
Lead	**4.8**	mg/kg	0.11	20	04/17/18 05:10	04/17/18 12:32	7439-92-1	
Lithium	**4.5**	mg/kg	0.53	20	04/17/18 05:10	04/17/18 12:32	7439-93-2	
Selenium	ND	mg/kg	0.53	20	04/17/18 05:10	04/17/18 12:32	7782-49-2	
Strontium	**27.3**	mg/kg	0.53	20	04/17/18 05:10	04/17/18 12:32	7440-24-6	
Vanadium	**19.7**	mg/kg	1.1	20	04/17/18 05:10	04/17/18 12:32	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.020	1	04/23/18 05:40	04/23/18 15:29	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**7.2**	%	0.10	1		04/19/18 11:05		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	83-32-9	
Acenaphthylene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-07 (15.18.5) **Lab ID: 10427354004** Collected: 04/13/18 12:20 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	120-12-7	
Benzo(a)anthracene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	56-55-3	
Benzo(a)pyrene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	101-55-3	
Butylbenzylphthalate	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	85-68-7	
Carbazole	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	59-50-7	
4-Chloroaniline	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	108-60-1	
2-Chloronaphthalene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	91-58-7	
2-Chlorophenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	7005-72-3	
Chrysene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	53-70-3	
Dibenzofuran	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	120-83-2	
Diethylphthalate	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	105-67-9	
Dimethylphthalate	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	131-11-3	
Di-n-butylphthalate	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	1830	1	04/19/18 17:13	04/20/18 17:30	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	606-20-2	
Di-n-octylphthalate	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	117-81-7	
Fluoranthene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	206-44-0	
Fluorene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	87-68-3	
Hexachlorobenzene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	118-74-1	
Hexachloroethane	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	193-39-5	
Isophorone	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	78-59-1	
1-Methylnaphthalene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	90-12-0	
2-Methylnaphthalene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	95-48-7	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-07 (15.18.5) **Lab ID: 10427354004** Collected: 04/13/18 12:20 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	710	1	04/19/18 17:13	04/20/18 17:30		
Naphthalene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	91-20-3	
2-Nitroaniline	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	88-74-4	
3-Nitroaniline	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	99-09-2	
4-Nitroaniline	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	100-01-6	
Nitrobenzene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	98-95-3	
2-Nitrophenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	88-75-5	
4-Nitrophenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	86-30-6	
Pentachlorophenol	ND	ug/kg	721	1	04/19/18 17:13	04/20/18 17:30	87-86-5	
Phenanthrene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	85-01-8	
Phenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	108-95-2	
Pyrene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	355	1	04/19/18 17:13	04/20/18 17:30	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	58	%.	43-125	1	04/19/18 17:13	04/20/18 17:30	4165-60-0	
2-Fluorobiphenyl (S)	67	%.	30-132	1	04/19/18 17:13	04/20/18 17:30	321-60-8	
p-Terphenyl-d14 (S)	70	%.	62-125	1	04/19/18 17:13	04/20/18 17:30	1718-51-0	
Phenol-d6 (S)	62	%.	48-125	1	04/19/18 17:13	04/20/18 17:30	13127-88-3	
2-Fluorophenol (S)	62	%.	40-125	1	04/19/18 17:13	04/20/18 17:30	367-12-4	
2,4,6-Tribromophenol (S)	55	%.	60-125	1	04/19/18 17:13	04/20/18 17:30	118-79-6	S5
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	83-32-9	
Acenaphthylene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	208-96-8	
Anthracene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	120-12-7	
Benzo(a)anthracene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	56-55-3	
Benzo(a)pyrene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	207-08-9	
Chrysene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	53-70-3	
Fluoranthene	**15.6**	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	206-44-0	
Fluorene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	193-39-5	
Naphthalene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	91-20-3	
Phenanthrene	ND	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	85-01-8	
Pyrene	**13.2**	ug/kg	10.8	1	04/17/18 12:13	04/18/18 17:39	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	72	%.	42-125	1	04/17/18 12:13	04/18/18 17:39	321-60-8	
p-Terphenyl-d14 (S)	92	%.	57-125	1	04/17/18 12:13	04/18/18 17:39	1718-51-0	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-07 (15.18.5) **Lab ID: 10427354004** Collected: 04/13/18 12:20 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1040	1	04/24/18 16:08	04/25/18 04:39	67-64-1	
Allyl chloride	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	107-05-1	
Benzene	ND	ug/kg	20.8	1	04/24/18 16:08	04/25/18 04:39	71-43-2	
Bromobenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	108-86-1	
Bromochloromethane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	74-97-5	
Bromodichloromethane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	75-27-4	
Bromoform	ND	ug/kg	521	1	04/24/18 16:08	04/25/18 04:39	75-25-2	
Bromomethane	ND	ug/kg	521	1	04/24/18 16:08	04/25/18 04:39	74-83-9	
2-Butanone (MEK)	ND	ug/kg	261	1	04/24/18 16:08	04/25/18 04:39	78-93-3	
n-Butylbenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	104-51-8	
sec-Butylbenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	135-98-8	
tert-Butylbenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	98-06-6	
Carbon tetrachloride	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	56-23-5	
Chlorobenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	108-90-7	
Chloroethane	ND	ug/kg	521	1	04/24/18 16:08	04/25/18 04:39	75-00-3	
Chloroform	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	67-66-3	
Chloromethane	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	74-87-3	
2-Chlorotoluene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	95-49-8	
4-Chlorotoluene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	521	1	04/24/18 16:08	04/25/18 04:39	96-12-8	
Dibromochloromethane	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	106-93-4	
Dibromomethane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	75-71-8	
1,1-Dichloroethane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	75-34-3	
1,2-Dichloroethane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	107-06-2	
1,1-Dichloroethene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	156-60-5	
Dichlorofluoromethane	ND	ug/kg	521	1	04/24/18 16:08	04/25/18 04:39	75-43-4	
1,2-Dichloropropane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	78-87-5	
1,3-Dichloropropane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	142-28-9	
2,2-Dichloropropane	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	594-20-7	
1,1-Dichloropropene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	60-29-7	
Ethylbenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	261	1	04/24/18 16:08	04/25/18 04:39	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	98-82-8	
p-Isopropyltoluene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	99-87-6	
Methylene Chloride	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	261	1	04/24/18 16:08	04/25/18 04:39	108-10-1	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-07 (15.18.5) **Lab ID: 10427354004** Collected: 04/13/18 12:20 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	1634-04-4	
Naphthalene	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	91-20-3	
n-Propylbenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	103-65-1	
Styrene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	79-34-5	
Tetrachloroethene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	127-18-4	
Tetrahydrofuran	ND	ug/kg	2080	1	04/24/18 16:08	04/25/18 04:39	109-99-9	
Toluene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	79-00-5	
Trichloroethene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	79-01-6	
Trichlorofluoromethane	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	208	1	04/24/18 16:08	04/25/18 04:39	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	52.1	1	04/24/18 16:08	04/25/18 04:39	108-67-8	
Vinyl chloride	ND	ug/kg	20.8	1	04/24/18 16:08	04/25/18 04:39	75-01-4	
Xylene (Total)	ND	ug/kg	156	1	04/24/18 16:08	04/25/18 04:39	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%.	75-125	1	04/24/18 16:08	04/25/18 04:39	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	04/24/18 16:08	04/25/18 04:39	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	04/24/18 16:08	04/25/18 04:39	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	2.1	1	04/23/18 11:09	04/24/18 13:52	18540-29-9	
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**8.3**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.32	1	04/20/18 10:25	04/20/18 13:53	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**0.99**	mg/kg	0.99	1	04/18/18 14:45	04/19/18 17:32	16984-48-8	

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-08 (10-20WM) **Lab ID: 10427354005** Collected: 04/13/18 14:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	15.2	1	04/25/18 10:56	04/30/18 14:06	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	309-00-2	
alpha-BHC	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	319-84-6	
beta-BHC	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	319-85-7	
delta-BHC	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	58-89-9	
Chlordane (Technical)	ND	ug/kg	2750	100	04/16/18 14:37	04/20/18 10:29	57-74-9	
alpha-Chlordane	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	5103-71-9	
gamma-Chlordane	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	5103-74-2	
4,4'-DDD	ND	ug/kg	548	100	04/16/18 14:37	04/20/18 10:29	72-54-8	
4,4'-DDE	ND	ug/kg	548	100	04/16/18 14:37	04/20/18 10:29	72-55-9	
4,4'-DDT	ND	ug/kg	548	100	04/16/18 14:37	04/20/18 10:29	50-29-3	
Dieldrin	ND	ug/kg	548	100	04/16/18 14:37	04/20/18 10:29	60-57-1	
Endosulfan I	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	959-98-8	
Endosulfan II	ND	ug/kg	548	100	04/16/18 14:37	04/20/18 10:29	33213-65-9	
Endosulfan sulfate	ND	ug/kg	548	100	04/16/18 14:37	04/20/18 10:29	1031-07-8	
Endrin	ND	ug/kg	548	100	04/16/18 14:37	04/20/18 10:29	72-20-8	
Endrin aldehyde	ND	ug/kg	548	100	04/16/18 14:37	04/20/18 10:29	7421-93-4	
Endrin ketone	ND	ug/kg	548	100	04/16/18 14:37	04/20/18 10:29	53494-70-5	
Heptachlor	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	76-44-8	
Heptachlor epoxide	ND	ug/kg	275	100	04/16/18 14:37	04/20/18 10:29	1024-57-3	
Methoxychlor	ND	ug/kg	2750	100	04/16/18 14:37	04/20/18 10:29	72-43-5	
Toxaphene	ND	ug/kg	8220	100	04/16/18 14:37	04/20/18 10:29	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	100	04/16/18 14:37	04/20/18 10:29	877-09-8	2M, D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	100	04/16/18 14:37	04/20/18 10:29	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	11100-14-4	
PCB, Total	ND	ug/kg	54.4	1	04/16/18 15:03	04/18/18 03:37	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	53	%.	48-125	1	04/16/18 15:03	04/18/18 03:37	877-09-8	
Decachlorobiphenyl (S)	50	%.	30-134	1	04/16/18 15:03	04/18/18 03:37	2051-24-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-08 (10-20WM) **Lab ID: 10427354005** Collected: 04/13/18 14:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**2810**	mg/kg	831	10	04/16/18 14:24	04/19/18 18:19		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/16/18 14:24	04/19/18 18:19	638-68-6	P3,S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**47.7**	mg/kg	22.6	1	04/25/18 10:39	04/25/18 17:44		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	04/25/18 10:39	04/25/18 17:44	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**1030**	mg/kg	16.0	1	04/17/18 04:48	04/17/18 19:41	7429-90-5	
Barium	**83.2**	mg/kg	0.80	1	04/17/18 04:48	04/17/18 19:41	7440-39-3	
Boron	**22.3**	mg/kg	12.0	1	04/17/18 04:48	04/17/18 19:41	7440-42-8	
Copper	**6.0**	mg/kg	0.80	1	04/17/18 04:48	04/17/18 19:41	7440-50-8	
Iron	**5320**	mg/kg	4.0	1	04/17/18 04:48	04/17/18 19:41	7439-89-6	
Manganese	**75.7**	mg/kg	0.40	1	04/17/18 04:48	04/17/18 19:41	7439-96-5	
Nickel	**2.3**	mg/kg	1.6	1	04/17/18 04:48	04/17/18 19:41	7440-02-0	
Silver	ND	mg/kg	0.80	1	04/17/18 04:48	04/17/18 19:41	7440-22-4	
Tin	ND	mg/kg	6.0	1	04/17/18 04:48	04/17/18 19:41	7440-31-5	
Titanium	**131**	mg/kg	2.0	1	04/17/18 04:48	04/17/18 19:41	7440-32-6	
Zinc	**137**	mg/kg	1.6	1	04/17/18 04:48	04/17/18 19:41	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**110**	mg/kg	1.5	5	04/20/18 09:20	04/21/18 03:01	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.78	20	04/17/18 05:10	04/17/18 12:35	7440-36-0	
Arsenic	ND	mg/kg	0.78	20	04/17/18 05:10	04/17/18 12:35	7440-38-2	
Beryllium	ND	mg/kg	0.31	20	04/17/18 05:10	04/17/18 12:35	7440-41-7	
Cadmium	**0.13**	mg/kg	0.12	20	04/17/18 05:10	04/17/18 12:35	7440-43-9	
Cobalt	**0.79**	mg/kg	0.78	20	04/17/18 05:10	04/17/18 12:35	7440-48-4	
Lead	**56.1**	mg/kg	0.16	20	04/17/18 05:10	04/17/18 12:35	7439-92-1	
Lithium	**0.84**	mg/kg	0.78	20	04/17/18 05:10	04/17/18 12:35	7439-93-2	
Selenium	ND	mg/kg	0.78	20	04/17/18 05:10	04/17/18 12:35	7782-49-2	
Strontium	**64.2**	mg/kg	0.78	20	04/17/18 05:10	04/17/18 12:35	7440-24-6	
Vanadium	**2.5**	mg/kg	1.6	20	04/17/18 05:10	04/17/18 12:35	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.15**	mg/kg	0.032	1	04/23/18 05:40	04/23/18 15:31	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**39.4**	%	0.10	1		04/19/18 11:06		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	83-32-9	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-08 (10-20WM) **Lab ID: 10427354005** Collected: 04/13/18 14:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	208-96-8	
Anthracene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	120-12-7	
Benzo(a)anthracene	**3330**	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	56-55-3	
Benzo(a)pyrene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	50-32-8	
Benzo(b)fluoranthene	**3570**	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	101-55-3	
Butylbenzylphthalate	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	85-68-7	
Carbazole	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	59-50-7	
4-Chloroaniline	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	108-60-1	
2-Chloronaphthalene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	91-58-7	
2-Chlorophenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	7005-72-3	
Chrysene	**3700**	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	53-70-3	
Dibenzofuran	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	120-83-2	
Diethylphthalate	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	105-67-9	
Dimethylphthalate	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	131-11-3	
Di-n-butylphthalate	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	13900	5	04/19/18 17:13	04/24/18 17:51	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	606-20-2	
Di-n-octylphthalate	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	122-66-7	
bis(2-Ethylhexyl)phthalate	**100000**	ug/kg	10800	20	04/19/18 17:13	04/24/18 19:47	117-81-7	
Fluoranthene	**8330**	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	206-44-0	
Fluorene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	87-68-3	
Hexachlorobenzene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	118-74-1	
Hexachloroethane	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	193-39-5	
Isophorone	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	78-59-1	
1-Methylnaphthalene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	90-12-0	
2-Methylnaphthalene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-08 (10-20WM) **Lab ID: 10427354005** Collected: 04/13/18 14:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	5410	5	04/19/18 17:13	04/24/18 17:51		
Naphthalene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	91-20-3	
2-Nitroaniline	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	88-74-4	
3-Nitroaniline	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	99-09-2	
4-Nitroaniline	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	100-01-6	
Nitrobenzene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	98-95-3	
2-Nitrophenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	88-75-5	
4-Nitrophenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	86-30-6	
Pentachlorophenol	ND	ug/kg	5500	5	04/19/18 17:13	04/24/18 17:51	87-86-5	
Phenanthrene	**7550**	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	85-01-8	
Phenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	108-95-2	
Pyrene	**8120**	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	2710	5	04/19/18 17:13	04/24/18 17:51	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	60	%.	43-125	5	04/19/18 17:13	04/24/18 17:51	4165-60-0	D4
2-Fluorobiphenyl (S)	73	%.	30-132	5	04/19/18 17:13	04/24/18 17:51	321-60-8	
p-Terphenyl-d14 (S)	79	%.	62-125	5	04/19/18 17:13	04/24/18 17:51	1718-51-0	
Phenol-d6 (S)	71	%.	48-125	5	04/19/18 17:13	04/24/18 17:51	13127-88-3	
2-Fluorophenol (S)	72	%.	40-125	5	04/19/18 17:13	04/24/18 17:51	367-12-4	
2,4,6-Tribromophenol (S)	66	%.	60-125	5	04/19/18 17:13	04/24/18 17:51	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**674**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	83-32-9	
Acenaphthylene	ND	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	208-96-8	
Anthracene	**1270**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	120-12-7	
Benzo(a)anthracene	**1640**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	56-55-3	
Benzo(a)pyrene	**1240**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	50-32-8	
Benzo(b)fluoranthene	**1560**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	205-99-2	
Benzo(g,h,i)perylene	**730**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	191-24-2	
Benzo(k)fluoranthene	**760**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	207-08-9	
Chrysene	**1940**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	218-01-9	
Dibenz(a,h)anthracene	**220**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	53-70-3	
Fluoranthene	**5080**	ug/kg	411	25	04/17/18 12:13	04/19/18 21:50	206-44-0	
Fluorene	**972**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	86-73-7	
Indeno(1,2,3-cd)pyrene	**714**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	193-39-5	
Naphthalene	**2240**	ug/kg	82.2	5	04/17/18 12:13	04/18/18 21:23	91-20-3	
Phenanthrene	**8530**	ug/kg	411	25	04/17/18 12:13	04/19/18 21:50	85-01-8	
Pyrene	**3920**	ug/kg	411	25	04/17/18 12:13	04/19/18 21:50	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	67	%.	42-125	5	04/17/18 12:13	04/18/18 21:23	321-60-8	D3

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-08 (10-20WM) **Lab ID: 10427354005** Collected: 04/13/18 14:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	81	%.	57-125	5	04/17/18 12:13	04/18/18 21:23	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2290	1	04/24/18 16:08	04/25/18 04:55	67-64-1	
Allyl chloride	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	107-05-1	
Benzene	ND	ug/kg	45.7	1	04/24/18 16:08	04/25/18 04:55	71-43-2	
Bromobenzene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	108-86-1	
Bromochloromethane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	74-97-5	
Bromodichloromethane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	75-27-4	
Bromoform	ND	ug/kg	1140	1	04/24/18 16:08	04/25/18 04:55	75-25-2	
Bromomethane	ND	ug/kg	1140	1	04/24/18 16:08	04/25/18 04:55	74-83-9	
2-Butanone (MEK)	ND	ug/kg	572	1	04/24/18 16:08	04/25/18 04:55	78-93-3	
n-Butylbenzene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	104-51-8	
sec-Butylbenzene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	135-98-8	
tert-Butylbenzene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	98-06-6	
Carbon tetrachloride	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	56-23-5	
Chlorobenzene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	108-90-7	
Chloroethane	ND	ug/kg	1140	1	04/24/18 16:08	04/25/18 04:55	75-00-3	
Chloroform	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	67-66-3	
Chloromethane	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	74-87-3	
2-Chlorotoluene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	95-49-8	
4-Chlorotoluene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1140	1	04/24/18 16:08	04/25/18 04:55	96-12-8	
Dibromochloromethane	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	106-93-4	
Dibromomethane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	541-73-1	
1,4-Dichlorobenzene	**512**	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	75-71-8	
1,1-Dichloroethane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	75-34-3	
1,2-Dichloroethane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	107-06-2	
1,1-Dichloroethene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1140	1	04/24/18 16:08	04/25/18 04:55	75-43-4	
1,2-Dichloropropane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	78-87-5	
1,3-Dichloropropane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	142-28-9	
2,2-Dichloropropane	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	594-20-7	
1,1-Dichloropropene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	60-29-7	
Ethylbenzene	**649**	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	572	1	04/24/18 16:08	04/25/18 04:55	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Sample: TS-SB-08 (10-20WM) **Lab ID: 10427354005** Collected: 04/13/18 14:10 Received: 04/13/18 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	**292**	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	98-82-8	
p-Isopropyltoluene	**635**	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	99-87-6	
Methylene Chloride	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	572	1	04/24/18 16:08	04/25/18 04:55	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	1634-04-4	
Naphthalene	**4880**	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	91-20-3	
n-Propylbenzene	**329**	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	103-65-1	
Styrene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	79-34-5	
Tetrachloroethene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	127-18-4	
Tetrahydrofuran	ND	ug/kg	4570	1	04/24/18 16:08	04/25/18 04:55	109-99-9	
Toluene	**135**	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	79-00-5	
Trichloroethene	ND	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	79-01-6	
Trichlorofluoromethane	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	457	1	04/24/18 16:08	04/25/18 04:55	76-13-1	
1,2,4-Trimethylbenzene	**1130**	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	95-63-6	
1,3,5-Trimethylbenzene	**366**	ug/kg	114	1	04/24/18 16:08	04/25/18 04:55	108-67-8	
Vinyl chloride	ND	ug/kg	45.7	1	04/24/18 16:08	04/25/18 04:55	75-01-4	
Xylene (Total)	**1320**	ug/kg	343	1	04/24/18 16:08	04/25/18 04:55	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	04/24/18 16:08	04/25/18 04:55	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	04/24/18 16:08	04/25/18 04:55	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125	1	04/24/18 16:08	04/25/18 04:55	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	65.2	20	04/23/18 11:09	04/24/18 13:53	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**110**	mg/kg	1.0	1		04/26/18 11:45	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**1.1**	mg/kg	0.65	1	04/20/18 10:25	04/20/18 13:54	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	04/18/18 14:45	04/19/18 17:52	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 141622 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10427354002, 10427354003, 10427354004

METHOD BLANK: 559956 Matrix: Solid
Associated Lab Samples: 10427354002, 10427354003, 10427354004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.16	04/27/18 14:14	N3

METHOD BLANK: 559957 Matrix: Solid
Associated Lab Samples: 10427354002, 10427354003, 10427354004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.05	04/27/18 14:20	N3

METHOD BLANK: 559958 Matrix: Solid
Associated Lab Samples: 10427354002, 10427354003, 10427354004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.14	04/27/18 14:27	N3

LABORATORY CONTROL SAMPLE: 559959

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	99.7	116	117	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559960 559961

Parameter	Units	10427018004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	374	387	412	449	110	116	65-135	9	35	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559962 559963

Parameter	Units	10427291002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	344	356	391	403	114	113	65-135	3	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 141683 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10427354001, 10427354005

METHOD BLANK: 560161 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.05	04/30/18 13:39	N3

METHOD BLANK: 560162 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	2.98	04/30/18 13:46	N3

METHOD BLANK: 560163 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.04	04/30/18 13:53	N3

LABORATORY CONTROL SAMPLE: 560164

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	104	119	115	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 560165 560166

Parameter	Units	10427354001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	357	357	354	388	99	108	65-135	9	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 534067 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2901345 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	04/25/18 14:28	
a,a,a-Trifluorotoluene (S)	%.	99	80-150	04/25/18 14:28	

LABORATORY CONTROL SAMPLE & LCSD: 2901346 2901347

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	43.7	44.3	87	89	80-120	2	20	
a,a,a-Trifluorotoluene (S)	%.				98	98	80-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2902666 2902667

Parameter	Units	10428015007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	57.6	56.7	61.1	58.2	99	96	80-120	5	20	
a,a,a-Trifluorotoluene (S)	%.						98	99	80-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 533671 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2898910 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.020	04/23/18 15:14	

LABORATORY CONTROL SAMPLE: 2898911

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.42	0.46	111	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898912 2898913

Parameter	Units	10427354002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.14	.62	.7	0.81	0.96	109	115	80-120	17	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 532662 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2892962 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	9.9	04/17/18 18:34	
Barium	mg/kg	ND	0.50	04/17/18 18:34	
Boron	mg/kg	ND	7.4	04/17/18 18:34	
Copper	mg/kg	ND	0.50	04/17/18 18:34	
Iron	mg/kg	ND	2.5	04/17/18 18:34	
Manganese	mg/kg	ND	0.25	04/17/18 18:34	
Nickel	mg/kg	ND	0.99	04/17/18 18:34	
Silver	mg/kg	ND	0.50	04/17/18 18:34	
Tin	mg/kg	ND	3.7	04/17/18 18:34	
Titanium	mg/kg	ND	1.2	04/17/18 18:34	
Zinc	mg/kg	ND	0.99	04/17/18 18:34	

LABORATORY CONTROL SAMPLE: 2892963

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	990	992	100	80-120	
Barium	mg/kg	49.5	49.7	100	80-120	
Boron	mg/kg	49.5	46.6	94	80-120	
Copper	mg/kg	49.5	47.9	97	80-120	
Iron	mg/kg	990	986	100	80-120	
Manganese	mg/kg	49.5	50.0	101	80-120	
Nickel	mg/kg	49.5	49.4	100	80-120	
Silver	mg/kg	24.8	23.2	94	80-120	
Tin	mg/kg	49.5	50.1	101	80-120	
Titanium	mg/kg	49.5	49.4	100	80-120	
Zinc	mg/kg	49.5	50.2	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2892964 2892965

Parameter	Units	10427351005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	1400	1120	1110	3090	3090	152	153	75-125	0	20	P6
Barium	mg/kg	35.2	55.9	55.3	99.0	101	114	118	75-125	2	20	
Boron	mg/kg	ND	55.9	55.3	54.9	55.1	90	91	75-125	0	20	
Copper	mg/kg	41.0	55.9	55.3	132	119	162	141	75-125	10	20	M1
Iron	mg/kg	27900	1120	1110	65600	58600	3380	2780	75-125	11	20	P6
Manganese	mg/kg	155	55.9	55.3	380	325	403	307	75-125	16	20	M1
Nickel	mg/kg	21.6	55.9	55.3	92.0	83.3	126	111	75-125	10	20	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2892964 2892965

Parameter	Units	10427351005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	ND	28	27.7	25.3	25.3	90	91	75-125	0	20	
Tin	mg/kg	ND	55.9	55.3	54.1	53.3	91	91	75-125	1	20	
Titanium	mg/kg	176	55.9	55.3	269	258	165	149	75-125	4	20	M1
Zinc	mg/kg	88.0	55.9	55.3	170	172	146	152	75-125	1	20	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 437531 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2021107 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.18	04/21/18 01:07	N2

LABORATORY CONTROL SAMPLE: 2021108

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.8	3.7	99	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2021109 2021110

Parameter	Units	10427291001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	53.4	5.64	5.49	61.8	58.5	152	94	75-125	6	20	N2,P6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 532660 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2892954 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.50	04/17/18 11:38	
Arsenic	mg/kg	ND	0.50	04/17/18 11:38	
Beryllium	mg/kg	ND	0.20	04/17/18 11:38	
Cadmium	mg/kg	ND	0.079	04/17/18 11:38	
Cobalt	mg/kg	ND	0.50	04/17/18 11:38	
Lead	mg/kg	ND	0.099	04/17/18 11:38	
Lithium	mg/kg	ND	0.50	04/17/18 11:38	
Selenium	mg/kg	ND	0.50	04/17/18 11:38	
Strontium	mg/kg	ND	0.50	04/17/18 11:38	
Vanadium	mg/kg	ND	0.99	04/17/18 11:38	

LABORATORY CONTROL SAMPLE: 2892955

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	48.1	50.1	104	80-120	
Arsenic	mg/kg	48.1	48.5	101	80-120	
Beryllium	mg/kg	48.1	49.9	104	80-120	
Cadmium	mg/kg	48.1	48.4	101	80-120	
Cobalt	mg/kg	48.1	49.9	104	80-120	
Lead	mg/kg	48.1	48.9	102	80-120	
Lithium	mg/kg	48.1	50.1	104	80-120	
Selenium	mg/kg	48.1	49.3	102	80-120	
Strontium	mg/kg	48.1	48.7	101	80-120	
Vanadium	mg/kg	48.1	49.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2892956 2892957

Parameter	Units	10427419021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	0.80	49	49	24.9	26.3	49	52	75-125	5	20	M6
Arsenic	mg/kg	20.9	49	49	79.6	73.5	120	107	75-125	8	20	
Beryllium	mg/kg	0.84	49	49	49.6	51.1	100	102	75-125	3	20	
Cadmium	mg/kg	0.54	49	49	52.7	52.5	106	106	75-125	0	20	
Cobalt	mg/kg	9.3	49	49	65.5	63.7	114	111	75-125	3	20	
Lead	mg/kg	59.4	49	49	108	103	99	89	75-125	5	20	
Lithium	mg/kg	14.4	49	49	60.9	61.8	95	97	75-125	1	20	
Selenium	mg/kg	0.30J	49	49	48.4	49.8	98	101	75-125	3	20	
Strontium	mg/kg	34.6	49	49	94.7	91.9	122	117	75-125	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2892956 2892957

Parameter	Units	10427419021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vanadium	mg/kg	32.6	49	49	89.6	87.1	116	111	75-125	3	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 533197 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

SAMPLE DUPLICATE: 2896518

Parameter	Units	10427638001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	24.6	24.9	1	30	

SAMPLE DUPLICATE: 2896519

Parameter	Units	10427249001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	83.7	83.8	0	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 534064 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2901329 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	04/25/18 01:17	
1,1,1-Trichloroethane	ug/kg	ND	50.0	04/25/18 01:17	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	04/25/18 01:17	
1,1,2-Trichloroethane	ug/kg	ND	50.0	04/25/18 01:17	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	04/25/18 01:17	
1,1-Dichloroethane	ug/kg	ND	50.0	04/25/18 01:17	
1,1-Dichloroethene	ug/kg	ND	50.0	04/25/18 01:17	
1,1-Dichloropropene	ug/kg	ND	50.0	04/25/18 01:17	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	04/25/18 01:17	
1,2,3-Trichloropropane	ug/kg	ND	200	04/25/18 01:17	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	04/25/18 01:17	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	04/25/18 01:17	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	04/25/18 01:17	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	04/25/18 01:17	
1,2-Dichlorobenzene	ug/kg	ND	50.0	04/25/18 01:17	
1,2-Dichloroethane	ug/kg	ND	50.0	04/25/18 01:17	
1,2-Dichloropropane	ug/kg	ND	50.0	04/25/18 01:17	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	04/25/18 01:17	
1,3-Dichlorobenzene	ug/kg	ND	50.0	04/25/18 01:17	
1,3-Dichloropropane	ug/kg	ND	50.0	04/25/18 01:17	
1,4-Dichlorobenzene	ug/kg	ND	50.0	04/25/18 01:17	
2,2-Dichloropropane	ug/kg	ND	200	04/25/18 01:17	
2-Butanone (MEK)	ug/kg	ND	250	04/25/18 01:17	
2-Chlorotoluene	ug/kg	ND	50.0	04/25/18 01:17	
4-Chlorotoluene	ug/kg	ND	50.0	04/25/18 01:17	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	04/25/18 01:17	
Acetone	ug/kg	ND	1000	04/25/18 01:17	
Allyl chloride	ug/kg	ND	200	04/25/18 01:17	
Benzene	ug/kg	ND	20.0	04/25/18 01:17	
Bromobenzene	ug/kg	ND	50.0	04/25/18 01:17	
Bromochloromethane	ug/kg	ND	50.0	04/25/18 01:17	
Bromodichloromethane	ug/kg	ND	50.0	04/25/18 01:17	
Bromoform	ug/kg	ND	500	04/25/18 01:17	MN
Bromomethane	ug/kg	ND	500	04/25/18 01:17	
Carbon tetrachloride	ug/kg	ND	50.0	04/25/18 01:17	
Chlorobenzene	ug/kg	ND	50.0	04/25/18 01:17	
Chloroethane	ug/kg	ND	500	04/25/18 01:17	
Chloroform	ug/kg	ND	50.0	04/25/18 01:17	
Chloromethane	ug/kg	ND	200	04/25/18 01:17	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	04/25/18 01:17	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	04/25/18 01:17	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

METHOD BLANK: 2901329 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	04/25/18 01:17	
Dibromomethane	ug/kg	ND	50.0	04/25/18 01:17	
Dichlorodifluoromethane	ug/kg	ND	200	04/25/18 01:17	
Dichlorofluoromethane	ug/kg	ND	500	04/25/18 01:17	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	04/25/18 01:17	
Ethylbenzene	ug/kg	ND	50.0	04/25/18 01:17	
Hexachloro-1,3-butadiene	ug/kg	ND	250	04/25/18 01:17	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	04/25/18 01:17	
Methyl-tert-butyl ether	ug/kg	ND	50.0	04/25/18 01:17	
Methylene Chloride	ug/kg	ND	200	04/25/18 01:17	
n-Butylbenzene	ug/kg	ND	50.0	04/25/18 01:17	
n-Propylbenzene	ug/kg	ND	50.0	04/25/18 01:17	
Naphthalene	ug/kg	ND	200	04/25/18 01:17	
p-Isopropyltoluene	ug/kg	ND	50.0	04/25/18 01:17	
sec-Butylbenzene	ug/kg	ND	50.0	04/25/18 01:17	
Styrene	ug/kg	ND	50.0	04/25/18 01:17	
tert-Butylbenzene	ug/kg	ND	50.0	04/25/18 01:17	
Tetrachloroethene	ug/kg	ND	50.0	04/25/18 01:17	
Tetrahydrofuran	ug/kg	ND	2000	04/25/18 01:17	
Toluene	ug/kg	ND	50.0	04/25/18 01:17	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	04/25/18 01:17	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	04/25/18 01:17	
Trichloroethene	ug/kg	ND	50.0	04/25/18 01:17	
Trichlorofluoromethane	ug/kg	ND	200	04/25/18 01:17	
Vinyl chloride	ug/kg	ND	20.0	04/25/18 01:17	
Xylene (Total)	ug/kg	ND	150	04/25/18 01:17	
1,2-Dichloroethane-d4 (S)	%.	94	75-125	04/25/18 01:17	
4-Bromofluorobenzene (S)	%.	99	75-125	04/25/18 01:17	
Toluene-d8 (S)	%.	97	75-125	04/25/18 01:17	

LABORATORY CONTROL SAMPLE & LCSD: 2901330 2901331

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	1050	999	105	100	59-125	5	20	
1,1,1-Trichloroethane	ug/kg	1000	1030	1010	103	101	59-125	2	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	985	943	99	94	58-125	4	20	
1,1,2-Trichloroethane	ug/kg	1000	1010	960	101	96	64-125	5	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	946	881	95	88	65-125	7	20	
1,1-Dichloroethane	ug/kg	1000	1010	971	101	97	63-125	4	20	
1,1-Dichloroethene	ug/kg	1000	1000	975	100	97	59-125	3	20	
1,1-Dichloropropene	ug/kg	1000	1050	1050	105	105	64-125	1	20	
1,2,3-Trichlorobenzene	ug/kg	1000	949	964	95	96	55-126	2	20	
1,2,3-Trichloropropane	ug/kg	1000	933	899	93	90	62-125	4	20	
1,2,4-Trichlorobenzene	ug/kg	1000	982	996	98	100	62-125	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

LABORATORY CONTROL SAMPLE & LCSD: 2901330 2901331

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	961	936	96	94	59-125	3	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2300	2320	92	93	54-125	1	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	1080	1010	108	101	64-125	7	20	
1,2-Dichlorobenzene	ug/kg	1000	980	963	98	96	63-125	2	20	
1,2-Dichloroethane	ug/kg	1000	937	893	94	89	57-125	5	20	
1,2-Dichloropropane	ug/kg	1000	947	917	95	92	67-125	3	20	
1,3,5-Trimethylbenzene	ug/kg	1000	988	965	99	97	59-125	2	20	
1,3-Dichlorobenzene	ug/kg	1000	975	967	98	97	64-125	1	20	
1,3-Dichloropropane	ug/kg	1000	986	964	99	96	64-125	2	20	
1,4-Dichlorobenzene	ug/kg	1000	937	921	94	92	63-125	2	20	
2,2-Dichloropropane	ug/kg	1000	1020	977	102	98	37-126	4	20	
2-Butanone (MEK)	ug/kg	5000	4810	4800	96	96	48-125	0	20	
2-Chlorotoluene	ug/kg	1000	981	942	98	94	62-125	4	20	
4-Chlorotoluene	ug/kg	1000	968	951	97	95	63-125	2	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4860	4550	97	91	52-135	6	20	
Acetone	ug/kg	5000	5580	5890	112	118	65-125	5	20	
Allyl chloride	ug/kg	1000	961	953	96	95	52-125	1	20	
Benzene	ug/kg	1000	1030	980	103	98	61-125	4	20	
Bromobenzene	ug/kg	1000	1010	1010	101	101	64-125	0	20	
Bromochloromethane	ug/kg	1000	960	960	96	96	65-125	0	20	
Bromodichloromethane	ug/kg	1000	1010	981	101	98	57-125	3	20	
Bromoform	ug/kg	1000	962	942	96	94	57-125	2	20	
Bromomethane	ug/kg	1000	758	832	76	83	60-125	9	20	
Carbon tetrachloride	ug/kg	1000	1040	983	104	98	58-125	6	20	
Chlorobenzene	ug/kg	1000	993	920	99	92	66-125	8	20	
Chloroethane	ug/kg	1000	895	850	89	85	62-125	5	20	
Chloroform	ug/kg	1000	942	908	94	91	59-125	4	20	
Chloromethane	ug/kg	1000	801	784	80	78	50-125	2	20	
cis-1,2-Dichloroethene	ug/kg	1000	982	964	98	96	61-125	2	20	
cis-1,3-Dichloropropene	ug/kg	1000	1040	1020	104	102	61-125	2	20	
Dibromochloromethane	ug/kg	1000	957	902	96	90	60-125	6	20	
Dibromomethane	ug/kg	1000	1030	994	103	99	69-125	4	20	
Dichlorodifluoromethane	ug/kg	1000	727	668	73	67	38-125	8	20	
Dichlorofluoromethane	ug/kg	1000	990	922	99	92	67-125	7	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1910	1590	191	159	60-125	19	20	CH,L3,SS
Ethylbenzene	ug/kg	1000	1040	971	104	97	62-125	7	20	
Hexachloro-1,3-butadiene	ug/kg	1000	987	981	99	98	56-125	1	20	
Isopropylbenzene (Cumene)	ug/kg	1000	1060	985	106	99	65-125	8	20	
Methyl-tert-butyl ether	ug/kg	1000	931	887	93	89	59-125	5	20	
Methylene Chloride	ug/kg	1000	906	917	91	92	64-125	1	20	
n-Butylbenzene	ug/kg	1000	1020	983	102	98	59-125	3	20	
n-Propylbenzene	ug/kg	1000	1010	965	101	97	61-125	4	20	
Naphthalene	ug/kg	1000	961	966	96	97	53-125	0	20	
p-Isopropyltoluene	ug/kg	1000	1040	1000	104	100	63-125	4	20	
sec-Butylbenzene	ug/kg	1000	989	950	99	95	62-125	4	20	
Styrene	ug/kg	1000	1030	990	103	99	66-125	4	20	
tert-Butylbenzene	ug/kg	1000	980	942	98	94	64-125	4	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

LABORATORY CONTROL SAMPLE & LCSD: 2901330 2901331

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	1080	1020	108	102	67-125	6	20	
Tetrahydrofuran	ug/kg	10000	9720	9470	97	95	62-125	3	20	
Toluene	ug/kg	1000	967	915	97	91	61-125	6	20	
trans-1,2-Dichloroethene	ug/kg	1000	1050	1030	105	103	64-125	1	20	
trans-1,3-Dichloropropene	ug/kg	1000	1070	1030	107	103	56-125	4	20	
Trichloroethene	ug/kg	1000	1020	951	102	95	67-125	7	20	
Trichlorofluoromethane	ug/kg	1000	1010	956	101	96	65-125	6	20	
Vinyl chloride	ug/kg	1000	902	890	90	89	57-125	1	20	
Xylene (Total)	ug/kg	3000	3040	2830	101	94	62-125	7	20	
1,2-Dichloroethane-d4 (S)	%.				97	96	75-125			
4-Bromofluorobenzene (S)	%.				101	101	75-125			
Toluene-d8 (S)	%.				103	101	75-125			

MATRIX SPIKE SAMPLE: 2901503

Parameter	Units	10428008008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	1160	1340	115	64-146	
1,1,1-Trichloroethane	ug/kg	ND	1160	1490	128	56-148	
1,1,2,2-Tetrachloroethane	ug/kg	ND	1160	1310	112	36-150	
1,1,2-Trichloroethane	ug/kg	ND	1160	1280	110	67-148	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	1160	1280	110	60-142	
1,1-Dichloroethane	ug/kg	ND	1160	1350	116	57-140	
1,1-Dichloroethene	ug/kg	ND	1160	1330	115	59-139	
1,1-Dichloropropene	ug/kg	ND	1160	1480	127	61-142	
1,2,3-Trichlorobenzene	ug/kg	ND	1160	1280	110	69-150	
1,2,3-Trichloropropane	ug/kg	ND	1160	1350	116	64-150	
1,2,4-Trichlorobenzene	ug/kg	ND	1160	1300	112	71-149	
1,2,4-Trimethylbenzene	ug/kg	ND	1160	1280	110	67-149	
1,2-Dibromo-3-chloropropane	ug/kg	ND	2900	3230	111	61-150	
1,2-Dibromoethane (EDB)	ug/kg	ND	1160	1370	118	67-147	
1,2-Dichlorobenzene	ug/kg	ND	1160	1290	111	70-142	
1,2-Dichloroethane	ug/kg	ND	1160	1250	107	58-132	
1,2-Dichloropropane	ug/kg	ND	1160	1330	114	64-144	
1,3,5-Trimethylbenzene	ug/kg	ND	1160	1290	111	71-146	
1,3-Dichlorobenzene	ug/kg	ND	1160	1290	111	71-142	
1,3-Dichloropropane	ug/kg	ND	1160	1270	110	68-140	
1,4-Dichlorobenzene	ug/kg	ND	1160	1210	104	68-142	
2,2-Dichloropropane	ug/kg	ND	1160	1280	111	34-150	
2-Butanone (MEK)	ug/kg	ND	5810	7590	131	51-150	
2-Chlorotoluene	ug/kg	ND	1160	1290	111	66-144	
4-Chlorotoluene	ug/kg	ND	1160	1260	108	66-140	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	5810	6380	110	63-150	
Acetone	ug/kg	ND	5810	8260	142	54-150	
Allyl chloride	ug/kg	ND	1160	1350	116	53-135	
Benzene	ug/kg	ND	1160	1320	114	65-135	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

MATRIX SPIKE SAMPLE: 2901503

Parameter	Units	10428008008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/kg	ND	1160	1370	118	71-141	
Bromochloromethane	ug/kg	ND	1160	1390	120	62-145	
Bromodichloromethane	ug/kg	ND	1160	1370	118	59-148	
Bromoform	ug/kg	ND	1160	1210	104	57-145	
Bromomethane	ug/kg	ND	1160	1230	106	51-129	
Carbon tetrachloride	ug/kg	ND	1160	1470	127	55-144	
Chlorobenzene	ug/kg	ND	1160	1250	107	70-142	
Chloroethane	ug/kg	ND	1160	1250	107	61-135	
Chloroform	ug/kg	ND	1160	1340	115	58-135	
Chloromethane	ug/kg	ND	1160	1080	93	37-125	
cis-1,2-Dichloroethene	ug/kg	ND	1160	1360	117	60-138	
cis-1,3-Dichloropropene	ug/kg	ND	1160	1380	118	62-142	
Dibromochloromethane	ug/kg	ND	1160	1240	107	65-141	
Dibromomethane	ug/kg	ND	1160	1360	117	72-150	
Dichlorodifluoromethane	ug/kg	ND	1160	897	77	30-125	
Dichlorofluoromethane	ug/kg	ND	1160	1300	112	62-148	
Diethyl ether (Ethyl ether)	ug/kg	ND	1160	2940	253	62-135	CH,M0,SS
Ethylbenzene	ug/kg	ND	1160	1280	110	72-138	
Hexachloro-1,3-butadiene	ug/kg	ND	1160	1300	112	38-150	
Isopropylbenzene (Cumene)	ug/kg	ND	1160	1320	114	75-148	
Methyl-tert-butyl ether	ug/kg	ND	1160	1280	110	63-139	
Methylene Chloride	ug/kg	ND	1160	1250	107	58-135	
n-Butylbenzene	ug/kg	ND	1160	1290	111	63-150	
n-Propylbenzene	ug/kg	ND	1160	1310	113	70-146	
Naphthalene	ug/kg	ND	1160	1300	111	63-150	
p-Isopropyltoluene	ug/kg	ND	1160	1340	116	72-150	
sec-Butylbenzene	ug/kg	ND	1160	1290	111	66-150	
Styrene	ug/kg	ND	1160	1310	113	72-146	
tert-Butylbenzene	ug/kg	ND	1160	1300	112	71-148	
Tetrachloroethene	ug/kg	ND	1160	1360	117	70-150	
Tetrahydrofuran	ug/kg	ND	11600	13900	120	62-150	
Toluene	ug/kg	ND	1160	1220	105	65-142	
trans-1,2-Dichloroethene	ug/kg	ND	1160	1390	120	55-141	
trans-1,3-Dichloropropene	ug/kg	ND	1160	1340	115	57-147	
Trichloroethene	ug/kg	ND	1160	1330	115	62-150	
Trichlorofluoromethane	ug/kg	ND	1160	1310	113	51-150	
Vinyl chloride	ug/kg	ND	1160	1210	104	45-132	
Xylene (Total)	ug/kg	ND	3480	3760	108	75-140	
1,2-Dichloroethane-d4 (S)	%.				96	75-125	
4-Bromofluorobenzene (S)	%.				101	75-125	
Toluene-d8 (S)	%.				99	75-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

SAMPLE DUPLICATE: 2901333

Parameter	Units	10428008009 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	ND		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	ND		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

SAMPLE DUPLICATE: 2901333

Parameter	Units	10428008009 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	ND		30	
n-Propylbenzene	ug/kg	ND	ND		30	
Naphthalene	ug/kg	ND	ND		30	
p-Isopropyltoluene	ug/kg	ND	ND		30	
sec-Butylbenzene	ug/kg	ND	ND		30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	95	94	3		
4-Bromofluorobenzene (S)	%.	97	99	1		
Toluene-d8 (S)	%.	98	100	1		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 532491 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2891843 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/16/18 21:16	
4,4'-DDE	ug/kg	ND	3.3	04/16/18 21:16	
4,4'-DDT	ug/kg	ND	3.3	04/16/18 21:16	
Aldrin	ug/kg	ND	1.7	04/16/18 21:16	
alpha-BHC	ug/kg	ND	1.7	04/16/18 21:16	
alpha-Chlordane	ug/kg	ND	1.7	04/16/18 21:16	
beta-BHC	ug/kg	ND	1.7	04/16/18 21:16	
Chlordane (Technical)	ug/kg	ND	16.7	04/16/18 21:16	
delta-BHC	ug/kg	ND	1.7	04/16/18 21:16	
Dieldrin	ug/kg	ND	3.3	04/16/18 21:16	
Endosulfan I	ug/kg	ND	1.7	04/16/18 21:16	
Endosulfan II	ug/kg	ND	3.3	04/16/18 21:16	
Endosulfan sulfate	ug/kg	ND	3.3	04/16/18 21:16	
Endrin	ug/kg	ND	3.3	04/16/18 21:16	
Endrin aldehyde	ug/kg	ND	3.3	04/16/18 21:16	
Endrin ketone	ug/kg	ND	3.3	04/16/18 21:16	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/16/18 21:16	
gamma-Chlordane	ug/kg	ND	1.7	04/16/18 21:16	
Heptachlor	ug/kg	ND	1.7	04/16/18 21:16	
Heptachlor epoxide	ug/kg	ND	1.7	04/16/18 21:16	
Methoxychlor	ug/kg	ND	16.7	04/16/18 21:16	
Toxaphene	ug/kg	ND	50.0	04/16/18 21:16	
Decachlorobiphenyl (S)	%.	96	30-150	04/16/18 21:16	
Tetrachloro-m-xylene (S)	%.	98	30-150	04/16/18 21:16	

LABORATORY CONTROL SAMPLE: 2891844

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	33.5	100	62-127	
4,4'-DDE	ug/kg	33.3	33.3	100	66-125	
4,4'-DDT	ug/kg	33.3	33.6	101	67-128	
Aldrin	ug/kg	16.7	15.1	91	66-125	
alpha-BHC	ug/kg	16.7	16.1	96	64-125	
alpha-Chlordane	ug/kg	16.7	15.5	93	68-125	
beta-BHC	ug/kg	16.7	15.4	93	69-125	
delta-BHC	ug/kg	16.7	13.0	78	42-133	
Dieldrin	ug/kg	33.3	34.2	103	69-126	
Endosulfan I	ug/kg	16.7	14.2	85	63-125	
Endosulfan II	ug/kg	33.3	33.0	99	69-125	
Endosulfan sulfate	ug/kg	33.3	28.8	87	56-137	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

LABORATORY CONTROL SAMPLE: 2891844

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	31.5	95	69-125	
Endrin aldehyde	ug/kg	33.3	31.4	94	65-125	
Endrin ketone	ug/kg	33.3	33.1	99	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	15.9	95	67-125	
gamma-Chlordane	ug/kg	16.7	14.0	84	63-125	
Heptachlor	ug/kg	16.7	16.2	97	69-125	
Heptachlor epoxide	ug/kg	16.7	15.5	93	68-125	
Methoxychlor	ug/kg	167	163	98	65-134	
Decachlorobiphenyl (S)	%.			94	30-150	
Tetrachloro-m-xylene (S)	%.			98	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891845 2891846

Parameter	Units	10427018001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	50.7	50.5	53.3	56.7	105	112	56-125	6	20	
4,4'-DDE	ug/kg	ND	50.7	50.5	56.1	55.9	111	110	32-150	0	20	
4,4'-DDT	ug/kg	ND	50.7	50.5	54.8	52.9	108	105	60-132	4	20	
Aldrin	ug/kg	ND	25.4	25.3	20J	21.5J	79	85	56-125		20	
alpha-BHC	ug/kg	ND	25.4	25.3	25.2J	24.3J	99	96	54-136		20	
alpha-Chlordane	ug/kg	ND	25.4	25.3	25.7	28.8	101	114	54-133	12	20	
beta-BHC	ug/kg	ND	25.4	25.3	26.7	26.6	105	105	30-150	0	20	
delta-BHC	ug/kg	ND	25.4	25.3	17.1J	18.7J	68	74	45-145		20	
Dieldrin	ug/kg	ND	50.7	50.5	63.9	54.7	126	108	47-150	15	20	
Endosulfan I	ug/kg	ND	25.4	25.3	24.1J	24.4J	95	97	35-145		20	
Endosulfan II	ug/kg	ND	50.7	50.5	46.4J	49.1J	92	97	50-147		20	
Endosulfan sulfate	ug/kg	ND	50.7	50.5	39.2J	44J	77	87	54-132		20	
Endrin	ug/kg	ND	50.7	50.5	41.8J	44.2J	82	87	62-125		20	
Endrin aldehyde	ug/kg	ND	50.7	50.5	45.3J	48.8J	89	97	33-150		20	
Endrin ketone	ug/kg	ND	50.7	50.5	45.9J	49.7J	91	98	56-144		20	
gamma-BHC (Lindane)	ug/kg	ND	25.4	25.3	23.7J	25.1J	94	99	63-125		20	
gamma-Chlordane	ug/kg	ND	25.4	25.3	21.9J	23.2J	86	92	45-132		20	
Heptachlor	ug/kg	ND	25.4	25.3	21.1J	23.1J	83	91	51-142		20	
Heptachlor epoxide	ug/kg	ND	25.4	25.3	14.1J	25.5	56	101	50-142		20	
Methoxychlor	ug/kg	ND	254	253	278	283	109	112	58-139	2	20	
Decachlorobiphenyl (S)	%.						0	0	30-150			S4
Tetrachloro-m-xylene (S)	%.						0	0	30-150			4M, D3, S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 532605 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2892737 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/18/18 01:31	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/18/18 01:31	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/18/18 01:31	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/18/18 01:31	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/18/18 01:31	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/18/18 01:31	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/18/18 01:31	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/18/18 01:31	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/18/18 01:31	
Decachlorobiphenyl (S)	%.	96	30-134	04/18/18 01:31	
Tetrachloro-m-xylene (S)	%.	94	48-125	04/18/18 01:31	

LABORATORY CONTROL SAMPLE: 2892738

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	576	86	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	587	88	62-125	
Decachlorobiphenyl (S)	%.			95	30-134	
Tetrachloro-m-xylene (S)	%.			92	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2892739 2892740

Parameter	Units	10427354001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	751	751	652	620	87	83	30-150	5	30	
PCB-1260 (Aroclor 1260)	ug/kg	150	751	751	622	569	63	56	30-138	9	30	
Decachlorobiphenyl (S)	%.						73	71	30-134			
Tetrachloro-m-xylene (S)	%.						77	75	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 533361 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2897277 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/20/18 12:32	
1,2-Dichlorobenzene	ug/kg	ND	330	04/20/18 12:32	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/20/18 12:32	
1,3-Dichlorobenzene	ug/kg	ND	330	04/20/18 12:32	
1,4-Dichlorobenzene	ug/kg	ND	330	04/20/18 12:32	
1-Methylnaphthalene	ug/kg	ND	330	04/20/18 12:32	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/20/18 12:32	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/20/18 12:32	
2,4-Dichlorophenol	ug/kg	ND	330	04/20/18 12:32	
2,4-Dimethylphenol	ug/kg	ND	330	04/20/18 12:32	
2,4-Dinitrophenol	ug/kg	ND	330	04/20/18 12:32	
2,4-Dinitrotoluene	ug/kg	ND	330	04/20/18 12:32	
2,6-Dinitrotoluene	ug/kg	ND	330	04/20/18 12:32	
2-Chloronaphthalene	ug/kg	ND	330	04/20/18 12:32	
2-Chlorophenol	ug/kg	ND	330	04/20/18 12:32	
2-Methylnaphthalene	ug/kg	ND	330	04/20/18 12:32	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/20/18 12:32	
2-Nitroaniline	ug/kg	ND	330	04/20/18 12:32	
2-Nitrophenol	ug/kg	ND	330	04/20/18 12:32	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/20/18 12:32	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/20/18 12:32	
3-Nitroaniline	ug/kg	ND	330	04/20/18 12:32	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/20/18 12:32	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/20/18 12:32	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/20/18 12:32	
4-Chloroaniline	ug/kg	ND	330	04/20/18 12:32	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/20/18 12:32	
4-Nitroaniline	ug/kg	ND	330	04/20/18 12:32	
4-Nitrophenol	ug/kg	ND	330	04/20/18 12:32	
Acenaphthene	ug/kg	ND	330	04/20/18 12:32	
Acenaphthylene	ug/kg	ND	330	04/20/18 12:32	
Anthracene	ug/kg	ND	330	04/20/18 12:32	
Benzo(a)anthracene	ug/kg	ND	330	04/20/18 12:32	
Benzo(a)pyrene	ug/kg	ND	330	04/20/18 12:32	
Benzo(b)fluoranthene	ug/kg	ND	330	04/20/18 12:32	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/20/18 12:32	
Benzo(k)fluoranthene	ug/kg	ND	330	04/20/18 12:32	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/20/18 12:32	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/20/18 12:32	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/20/18 12:32	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/20/18 12:32	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

METHOD BLANK: 2897277 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/20/18 12:32	
Carbazole	ug/kg	ND	330	04/20/18 12:32	
Chrysene	ug/kg	ND	330	04/20/18 12:32	
Di-n-butylphthalate	ug/kg	ND	330	04/20/18 12:32	
Di-n-octylphthalate	ug/kg	ND	330	04/20/18 12:32	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/20/18 12:32	
Dibenzofuran	ug/kg	ND	330	04/20/18 12:32	
Diethylphthalate	ug/kg	ND	330	04/20/18 12:32	
Dimethylphthalate	ug/kg	ND	330	04/20/18 12:32	
Fluoranthene	ug/kg	ND	330	04/20/18 12:32	
Fluorene	ug/kg	ND	330	04/20/18 12:32	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/20/18 12:32	
Hexachlorobenzene	ug/kg	ND	330	04/20/18 12:32	
Hexachloroethane	ug/kg	ND	330	04/20/18 12:32	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/20/18 12:32	
Isophorone	ug/kg	ND	330	04/20/18 12:32	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/20/18 12:32	
N-Nitrosodimethylamine	ug/kg	ND	330	04/20/18 12:32	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/20/18 12:32	
Naphthalene	ug/kg	ND	330	04/20/18 12:32	
Nitrobenzene	ug/kg	ND	330	04/20/18 12:32	
Pentachlorophenol	ug/kg	ND	670	04/20/18 12:32	
Phenanthrene	ug/kg	ND	330	04/20/18 12:32	
Phenol	ug/kg	ND	330	04/20/18 12:32	
Pyrene	ug/kg	ND	330	04/20/18 12:32	
2,4,6-Tribromophenol (S)	%.	70	60-125	04/20/18 12:32	
2-Fluorobiphenyl (S)	%.	71	30-132	04/20/18 12:32	
2-Fluorophenol (S)	%.	71	40-125	04/20/18 12:32	
Nitrobenzene-d5 (S)	%.	68	43-125	04/20/18 12:32	
p-Terphenyl-d14 (S)	%.	94	62-125	04/20/18 12:32	
Phenol-d6 (S)	%.	70	48-125	04/20/18 12:32	

LABORATORY CONTROL SAMPLE: 2897278

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1180	71	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1200	72	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1380	83	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1190	72	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1180	71	39-125	
1-Methylnaphthalene	ug/kg	1670	1210	72	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1300	78	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1370	82	61-125	
2,4-Dichlorophenol	ug/kg	1670	1270	76	57-125	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

LABORATORY CONTROL SAMPLE: 2897278

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1240	74	51-125	
2,4-Dinitrophenol	ug/kg	1670	943	57	30-132	6M
2,4-Dinitrotoluene	ug/kg	1670	1410	85	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1360	81	63-125	
2-Chloronaphthalene	ug/kg	1670	1240	74	61-125	
2-Chlorophenol	ug/kg	1670	1200	72	46-125	
2-Methylnaphthalene	ug/kg	1670	1200	72	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1200	72	50-125	
2-Nitroaniline	ug/kg	1670	1410	85	61-125	
2-Nitrophenol	ug/kg	1670	1270	76	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1300	78	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1230	74	47-125	6M
3-Nitroaniline	ug/kg	1670	1260	75	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1330J	80	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1340	80	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1270	76	64-125	
4-Chloroaniline	ug/kg	1670	1130	68	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1270	76	64-125	
4-Nitroaniline	ug/kg	1670	1440	86	59-125	
4-Nitrophenol	ug/kg	1670	1360	82	54-125	
Acenaphthene	ug/kg	1670	1250	75	62-125	
Acenaphthylene	ug/kg	1670	1280	77	61-125	
Anthracene	ug/kg	1670	1320	79	66-125	
Benzo(a)anthracene	ug/kg	1670	1360	82	69-125	
Benzo(a)pyrene	ug/kg	1670	1350	81	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1330	80	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1430	86	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1360	82	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1230	74	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1190	72	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1240	74	37-125	
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1470	88	69-131	
Butylbenzylphthalate	ug/kg	1670	1430	86	69-129	
Carbazole	ug/kg	1670	1340	80	66-125	
Chrysene	ug/kg	1670	1380	83	68-125	
Di-n-butylphthalate	ug/kg	1670	1410	85	69-125	
Di-n-octylphthalate	ug/kg	1670	1460	87	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1420	85	64-125	
Dibenzofuran	ug/kg	1670	1260	76	65-125	
Diethylphthalate	ug/kg	1670	1340	81	67-125	
Dimethylphthalate	ug/kg	1670	1340	81	67-125	
Fluoranthene	ug/kg	1670	1340	81	66-125	
Fluorene	ug/kg	1670	1280	77	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1220	73	40-125	
Hexachlorobenzene	ug/kg	1670	1320	79	62-125	
Hexachloroethane	ug/kg	1670	1210	73	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1400	84	64-125	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

LABORATORY CONTROL SAMPLE: 2897278

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1230	74	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1210	72	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1200	72	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1350	81	65-125	
Naphthalene	ug/kg	1670	1190	71	48-125	
Nitrobenzene	ug/kg	1670	1260	75	48-125	
Pentachlorophenol	ug/kg	1670	1230	74	41-125	
Phenanthrene	ug/kg	1670	1320	79	66-125	
Phenol	ug/kg	1670	1250	75	46-125	
Pyrene	ug/kg	1670	1410	85	69-125	
2,4,6-Tribromophenol (S)	%.			75	60-125	
2-Fluorobiphenyl (S)	%.			71	30-132	
2-Fluorophenol (S)	%.			71	40-125	
Nitrobenzene-d5 (S)	%.			69	43-125	
p-Terphenyl-d14 (S)	%.			89	62-125	
Phenol-d6 (S)	%.			68	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897279 2897280

Parameter	Units	10427355002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	1870	1850	1170	1150	63	62	30-127	2	30	
1,2-Dichlorobenzene	ug/kg	ND	1870	1850	1120	1080	60	58	30-125	4	30	
1,2-Diphenylhydrazine	ug/kg	ND	1870	1850	1490	1450	80	78	30-150	3	30	
1,3-Dichlorobenzene	ug/kg	ND	1870	1850	1080	1100	58	60	30-125	2	30	
1,4-Dichlorobenzene	ug/kg	ND	1870	1850	1060	1040	57	56	30-125	2	30	
1-Methylnaphthalene	ug/kg	ND	1870	1850	1270	1280	68	69	42-125	1	30	
2,4,5-Trichlorophenol	ug/kg	ND	1870	1850	1490	1470	80	79	30-150	1	30	
2,4,6-Trichlorophenol	ug/kg	ND	1870	1850	1410	1420	76	76	30-150	0	30	
2,4-Dichlorophenol	ug/kg	ND	1870	1850	1410	1350	76	73	30-135	4	30	
2,4-Dimethylphenol	ug/kg	ND	1870	1850	1290	1350	69	73	30-148	4	30	
2,4-Dinitrophenol	ug/kg	ND	1870	1850	923	728	50	39	30-125	24	30	6M
2,4-Dinitrotoluene	ug/kg	ND	1870	1850	1550	1500	83	81	30-150	3	30	
2,6-Dinitrotoluene	ug/kg	ND	1870	1850	1530	1510	82	82	30-150	1	30	
2-Chloronaphthalene	ug/kg	ND	1870	1850	1380	1370	74	74	30-138	1	30	
2-Chlorophenol	ug/kg	ND	1870	1850	1230	1180	66	63	30-130	4	30	
2-Methylnaphthalene	ug/kg	ND	1870	1850	1270	1240	68	67	46-125	2	30	
2-Methylphenol(o-Cresol)	ug/kg	ND	1870	1850	1310	1260	70	68	30-133	3	30	
2-Nitroaniline	ug/kg	ND	1870	1850	1580	1550	85	84	30-150	2	30	
2-Nitrophenol	ug/kg	ND	1870	1850	1140	1240	61	67	30-134	8	30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	1870	1850	1270	1220	68	66	30-138	4	30	
3,3'-Dichlorobenzidine	ug/kg	ND	1870	1850	1410	1510	76	82	30-149	7	30	6M
3-Nitroaniline	ug/kg	ND	1870	1850	1330	1360	71	73	30-150	2	30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1870	1850	1380J	1150J	74	62	30-133		30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897279 2897280

Parameter	Units	10427355002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	1870	1850	1530	1480	82	80	44-125	4	30	
4-Chloro-3-methylphenol	ug/kg	ND	1870	1850	1430	1390	77	75	30-150	3	30	
4-Chloroaniline	ug/kg	ND	1870	1850	1000	1110	54	60	30-125	11	30	
4-Chlorophenylphenyl ether	ug/kg	ND	1870	1850	1330	1400	71	76	44-125	5	30	
4-Nitroaniline	ug/kg	ND	1870	1850	1490	1490	80	80	30-150	0	30	
4-Nitrophenol	ug/kg	ND	1870	1850	1560	1450	84	78	30-150	7	30	
Acenaphthene	ug/kg	ND	1870	1850	1390	1330	74	72	40-125	4	30	
Acenaphthylene	ug/kg	ND	1870	1850	1410	1400	76	75	30-150	0	30	
Anthracene	ug/kg	ND	1870	1850	1490	1490	80	80	30-150	0	30	
Benzo(a)anthracene	ug/kg	ND	1870	1850	1540	1570	83	85	30-150	2	30	
Benzo(a)pyrene	ug/kg	ND	1870	1850	1510	1510	81	81	30-150	0	30	
Benzo(b)fluoranthene	ug/kg	ND	1870	1850	1570	1600	84	87	30-150	2	30	
Benzo(g,h,i)perylene	ug/kg	ND	1870	1850	1620	1600	87	86	30-150	1	30	
Benzo(k)fluoranthene	ug/kg	ND	1870	1850	1500	1500	81	81	30-150	0	30	
bis(2-Chloroethoxy)methane	ug/kg	ND	1870	1850	1240	1270	67	68	30-134	2	30	
bis(2-Chloroethyl) ether	ug/kg	ND	1870	1850	1170	1120	63	61	30-125	4	30	
bis(2-Chloroisopropyl) ether	ug/kg	ND	1870	1850	1170	1090	63	59	30-125	6	30	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	1870	1850	1630	1590	88	86	30-150	3	30	
Butylbenzylphthalate	ug/kg	ND	1870	1850	1660	1570	89	85	30-150	5	30	
Carbazole	ug/kg	ND	1870	1850	1510	1490	81	80	41-125	2	30	
Chrysene	ug/kg	ND	1870	1850	1560	1570	84	85	30-150	1	30	
Di-n-butylphthalate	ug/kg	ND	1870	1850	1520	1540	82	83	30-150	1	30	
Di-n-octylphthalate	ug/kg	ND	1870	1850	1630	1570	88	85	30-150	4	30	
Dibenz(a,h)anthracene	ug/kg	ND	1870	1850	1530	1500	82	81	30-150	1	30	
Dibenzofuran	ug/kg	ND	1870	1850	1400	1400	75	75	45-125	0	30	
Diethylphthalate	ug/kg	ND	1870	1850	1450	1490	78	81	30-150	3	30	
Dimethylphthalate	ug/kg	ND	1870	1850	1470	1380	79	75	30-150	6	30	
Fluoranthene	ug/kg	ND	1870	1850	1490	1590	80	86	30-150	6	30	
Fluorene	ug/kg	ND	1870	1850	1450	1390	78	75	30-150	4	30	
Hexachloro-1,3-butadiene	ug/kg	ND	1870	1850	1160	1140	62	61	30-128	2	30	
Hexachlorobenzene	ug/kg	ND	1870	1850	1520	1470	81	79	30-150	3	30	
Hexachloroethane	ug/kg	ND	1870	1850	1170	1080	63	59	30-125	8	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	1870	1850	1580	1570	85	85	30-150	1	30	
Isophorone	ug/kg	ND	1870	1850	1260	1240	68	67	30-140	1	30	
N-Nitroso-di-n-propylamine	ug/kg	ND	1870	1850	1220	1120	65	61	30-147	8	30	
N-Nitrosodimethylamine	ug/kg	ND	1870	1850	1210	1050	65	56	30-125	15	30	
N-Nitrosodiphenylamine	ug/kg	ND	1870	1850	1480	1500	80	81	30-150	1	30	
Naphthalene	ug/kg	ND	1870	1850	1170	1170	63	63	44-125	0	30	
Nitrobenzene	ug/kg	ND	1870	1850	1220	1200	65	64	30-136	2	30	
Pentachlorophenol	ug/kg	ND	1870	1850	1230	1260	66	68	30-150	2	30	
Phenanthrene	ug/kg	ND	1870	1850	1510	1540	81	83	30-150	2	30	
Phenol	ug/kg	ND	1870	1850	1230	1180	66	64	30-129	4	30	
Pyrene	ug/kg	ND	1870	1850	1650	1750	89	95	30-150	6	30	
2,4,6-Tribromophenol (S)	%.						74	73	60-125			
2-Fluorobiphenyl (S)	%.						68	68	30-132			
2-Fluorophenol (S)	%.						59	55	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897279 2897280

Parameter	Units	10427355002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						58	57	43-125			
p-Terphenyl-d14 (S)	%.						87	83	62-125			
Phenol-d6 (S)	%.						63	59	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 532788 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2893351 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/18/18 11:32	
Acenaphthylene	ug/kg	ND	10.0	04/18/18 11:32	
Anthracene	ug/kg	ND	10.0	04/18/18 11:32	
Benzo(a)anthracene	ug/kg	ND	10.0	04/18/18 11:32	
Benzo(a)pyrene	ug/kg	ND	10.0	04/18/18 11:32	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/18/18 11:32	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/18/18 11:32	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/18/18 11:32	
Chrysene	ug/kg	ND	10.0	04/18/18 11:32	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/18/18 11:32	
Fluoranthene	ug/kg	ND	10.0	04/18/18 11:32	
Fluorene	ug/kg	ND	10.0	04/18/18 11:32	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/18/18 11:32	
Naphthalene	ug/kg	ND	10.0	04/18/18 11:32	
Phenanthrene	ug/kg	ND	10.0	04/18/18 11:32	
Pyrene	ug/kg	ND	10.0	04/18/18 11:32	
2-Fluorobiphenyl (S)	%.	83	42-125	04/18/18 11:32	
p-Terphenyl-d14 (S)	%.	99	57-125	04/18/18 11:32	

LABORATORY CONTROL SAMPLE: 2893353

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	24.2	73	52-125	
Acenaphthylene	ug/kg	33.3	25.6	77	50-125	
Anthracene	ug/kg	33.3	27.5	82	65-125	
Benzo(a)anthracene	ug/kg	33.3	28.8	86	60-125	
Benzo(a)pyrene	ug/kg	33.3	28.3	85	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	31.7	95	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	31.0	93	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	29.4	88	67-125	
Chrysene	ug/kg	33.3	28.8	86	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	33.4	100	63-125	
Fluoranthene	ug/kg	33.3	28.9	87	75-125	
Fluorene	ug/kg	33.3	26.1	78	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	32.3	97	63-125	
Naphthalene	ug/kg	33.3	24.3	73	49-125	
Phenanthrene	ug/kg	33.3	27.0	81	65-125	
Pyrene	ug/kg	33.3	29.4	88	64-125	
2-Fluorobiphenyl (S)	%.			79	42-125	
p-Terphenyl-d14 (S)	%.			94	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2893354 2893355

Parameter	Units	10427477002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	37.1	37.2	34.5J	109	93	293	30-125		30	M1
Acenaphthylene	ug/kg	ND	37.1	37.2	43.4J	47.1J	117	127	30-133		30	
Anthracene	ug/kg	ND	37.1	37.2	65.4	180	176	483	30-150	93	30	M1,R1
Benzo(a)anthracene	ug/kg	0.12 mg/kg	37.1	37.2	163	365	117	662	30-150	77	30	M1,R1
Benzo(a)pyrene	ug/kg	0.14 mg/kg	37.1	37.2	179	374	114	638	30-150	71	30	M1,R1
Benzo(b)fluoranthene	ug/kg	0.16 mg/kg	37.1	37.2	212	478	152	868	30-150	77	30	M1,R1
Benzo(g,h,i)perylene	ug/kg	0.13 mg/kg	37.1	37.2	173	316	125	509	30-150	58	30	M1,R1
Benzo(k)fluoranthene	ug/kg	0.068 mg/kg	37.1	37.2	78.1	176	26	290	30-150	77	30	M1,R1
Chrysene	ug/kg	0.11 mg/kg	37.1	37.2	158	365	120	676	30-150	79	30	M1,R1
Dibenz(a,h)anthracene	ug/kg	ND	37.1	37.2	96.2	128	259	344	30-131	28	30	M1
Fluoranthene	ug/kg	0.24 mg/kg	37.1	37.2	291	825	134	1570	30-150	96	30	M1,R1
Fluorene	ug/kg	ND	37.1	37.2	40.2J	92.1	108	248	30-147		30	M1
Indeno(1,2,3-cd)pyrene	ug/kg	0.077 mg/kg	37.1	37.2	119	234	113	422	30-150	65	30	M1,R1
Naphthalene	ug/kg	ND	37.1	37.2	28.2J	47J	76	126	30-131		30	
Phenanthrene	ug/kg	0.12 mg/kg	37.1	37.2	160	618	113	1340	30-150	118	30	M1,R1
Pyrene	ug/kg	0.22 mg/kg	37.1	37.2	276	691	145	1260	30-150	86	30	M1,R1
2-Fluorobiphenyl (S)	%.						81	84	42-125			D3
p-Terphenyl-d14 (S)	%.						94	98	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 532497 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2891856 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	04/19/18 17:29	
n-Triacontane (S)	%.	110	50-150	04/19/18 17:29	

LABORATORY CONTROL SAMPLE & LCSD: 2891857 2891858

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	77.3	77.6	97	97	70-120	0	20	
n-Triacontane (S)	%.				104	99	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 438492 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 2026403 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/24/18 13:00	

LABORATORY CONTROL SAMPLE: 2026404

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1010	924	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2026421 2026422

Parameter	Units	10427291008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1080	1150	839	962	77	84	75-125	14	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2026423 2026424

Parameter	Units	10427291008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	42.9	42.7	28.6	29.2	67	68	75-125	2	20	M3

SAMPLE DUPLICATE: 2026425

Parameter	Units	10427354004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 286553 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 1676305 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/20/18 13:32	

LABORATORY CONTROL SAMPLE: 1676306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1676307 1676308

Parameter	Units	40167646001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.10J	2.22	2.34	2.3	2.4	98	99	80-120	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1676309 1676310

Parameter	Units	10427291004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.67	3.98	3.65	4.2	3.7	88	82	80-120	12	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

QC Batch: 140842 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

METHOD BLANK: 557419 Matrix: Solid
Associated Lab Samples: 10427354001, 10427354002, 10427354003, 10427354004, 10427354005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.99	04/19/18 16:14	

LABORATORY CONTROL SAMPLE: 557418

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	50.3	52.6	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 557420 557421

Parameter	Units	10427291004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	1.4	49.8	49.8	12.1	12.9	21	23	80-120	7	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 557422 557423

Parameter	Units	10427291008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	49.7	49	35.4	35.5	69	71	80-120	0	20	M1

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QUALIFIERS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

1M	Sample was black in color and slightly viscous.
2M	Sample was black in color and viscous. Sample was centrifuged and decanted prior to analysis.
3M	Sample was black in color.
4M	Sample was dark brown in color.
5M	Sample was yellow in color.
6M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALIFIERS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

ANALYTE QUALIFIERS

M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
MN	The reporting limit has been raised in accordance with Minnesota Statutes 4740.2100 Subpart 8. C, D. Reporting Limit Evaluation Rule.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427354001	**TS-SB-04 (7-15 WM)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427354004	**TS-SB-07 (15.18.5)**	EPA 1630 (1998)	141622	EPA 1630 (1998)	141625
10427354005	**TS-SB-08 (10-20WM)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427354001	**TS-SB-04 (7-15 WM)**	EPA 3550	532491	EPA 8081B	532802
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 3550	532491	EPA 8081B	532802
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 3550	532491	EPA 8081B	532802
10427354004	**TS-SB-07 (15.18.5)**	EPA 3550	532491	EPA 8081B	532802
10427354005	**TS-SB-08 (10-20WM)**	EPA 3550	532491	EPA 8081B	532802
10427354001	**TS-SB-04 (7-15 WM)**	EPA 3550	532605	EPA 8082A	532864
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 3550	532605	EPA 8082A	532864
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 3550	532605	EPA 8082A	532864
10427354004	**TS-SB-07 (15.18.5)**	EPA 3550	532605	EPA 8082A	532864
10427354005	**TS-SB-08 (10-20WM)**	EPA 3550	532605	EPA 8082A	532864
10427354001	**TS-SB-04 (7-15 WM)**	WI MOD DRO	532497	WI MOD DRO	532700
10427354002	**TS-SB-05 (5-7.5 WM)**	WI MOD DRO	532497	WI MOD DRO	532700
10427354003	**TS-SB-06 (8-12.5WM)**	WI MOD DRO	532497	WI MOD DRO	532700
10427354004	**TS-SB-07 (15.18.5)**	WI MOD DRO	532497	WI MOD DRO	532700
10427354005	**TS-SB-08 (10-20WM)**	WI MOD DRO	532497	WI MOD DRO	532700
10427354001	**TS-SB-04 (7-15 WM)**	EPA 5030 Medium Soil	534067	WI MOD GRO	534264
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 5030 Medium Soil	534067	WI MOD GRO	534264
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 5030 Medium Soil	534067	WI MOD GRO	534264
10427354004	**TS-SB-07 (15.18.5)**	EPA 5030 Medium Soil	534067	WI MOD GRO	534264
10427354005	**TS-SB-08 (10-20WM)**	EPA 5030 Medium Soil	534067	WI MOD GRO	534264
10427354001	**TS-SB-04 (7-15 WM)**	EPA 3050	532662	EPA 6010C	532713
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 3050	532662	EPA 6010C	532713
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 3050	532662	EPA 6010C	532713
10427354004	**TS-SB-07 (15.18.5)**	EPA 3050	532662	EPA 6010C	532713
10427354005	**TS-SB-08 (10-20WM)**	EPA 3050	532662	EPA 6010C	532713
10427354001	**TS-SB-04 (7-15 WM)**	EPA 3050B	437531	EPA 6020	438359
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 3050B	437531	EPA 6020	438359
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 3050B	437531	EPA 6020	438359
10427354004	**TS-SB-07 (15.18.5)**	EPA 3050B	437531	EPA 6020	438359
10427354005	**TS-SB-08 (10-20WM)**	EPA 3050B	437531	EPA 6020	438359
10427354001	**TS-SB-04 (7-15 WM)**	EPA 3050	532660	EPA 6020A	532720
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 3050	532660	EPA 6020A	532720
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 3050	532660	EPA 6020A	532720
10427354004	**TS-SB-07 (15.18.5)**	EPA 3050	532660	EPA 6020A	532720
10427354005	**TS-SB-08 (10-20WM)**	EPA 3050	532660	EPA 6020A	532720
10427354001	**TS-SB-04 (7-15 WM)**	EPA 7471	533671	EPA 7471	533807
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 7471	533671	EPA 7471	533807
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 7471	533671	EPA 7471	533807
10427354004	**TS-SB-07 (15.18.5)**	EPA 7471	533671	EPA 7471	533807

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10427354

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427354005	**TS-SB-08 (10-20WM)**	EPA 7471	533671	EPA 7471	533807
10427354001	**TS-SB-04 (7-15 WM)**	ASTM D2974	533197		
10427354002	**TS-SB-05 (5-7.5 WM)**	ASTM D2974	533197		
10427354003	**TS-SB-06 (8-12.5WM)**	ASTM D2974	533197		
10427354004	**TS-SB-07 (15.18.5)**	ASTM D2974	533197		
10427354005	**TS-SB-08 (10-20WM)**	ASTM D2974	533197		
10427354001	**TS-SB-04 (7-15 WM)**	EPA 3550	533361	EPA 8270D	533537
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 3550	533361	EPA 8270D	533537
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 3550	533361	EPA 8270D	533537
10427354004	**TS-SB-07 (15.18.5)**	EPA 3550	533361	EPA 8270D	533537
10427354005	**TS-SB-08 (10-20WM)**	EPA 3550	533361	EPA 8270D	533537
10427354001	**TS-SB-04 (7-15 WM)**	EPA 3550	532788	EPA 8270D by SIM	532973
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 3550	532788	EPA 8270D by SIM	532973
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 3550	532788	EPA 8270D by SIM	532973
10427354004	**TS-SB-07 (15.18.5)**	EPA 3550	532788	EPA 8270D by SIM	532973
10427354005	**TS-SB-08 (10-20WM)**	EPA 3550	532788	EPA 8270D by SIM	532973
10427354001	**TS-SB-04 (7-15 WM)**	EPA 5035/5030B	534064	EPA 8260B	534331
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 5035/5030B	534064	EPA 8260B	534331
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 5035/5030B	534064	EPA 8260B	534331
10427354004	**TS-SB-07 (15.18.5)**	EPA 5035/5030B	534064	EPA 8260B	534331
10427354005	**TS-SB-08 (10-20WM)**	EPA 5035/5030B	534064	EPA 8260B	534331
10427354001	**TS-SB-04 (7-15 WM)**	EPA 3060A	438492	EPA 7196A	438766
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 3060A	438492	EPA 7196A	438766
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 3060A	438492	EPA 7196A	438766
10427354004	**TS-SB-07 (15.18.5)**	EPA 3060A	438492	EPA 7196A	438766
10427354005	**TS-SB-08 (10-20WM)**	EPA 3060A	438492	EPA 7196A	438766
10427354001	**TS-SB-04 (7-15 WM)**	Trivalent Chromium Calculation	439198		
10427354002	**TS-SB-05 (5-7.5 WM)**	Trivalent Chromium Calculation	439198		
10427354003	**TS-SB-06 (8-12.5WM)**	Trivalent Chromium Calculation	439198		
10427354004	**TS-SB-07 (15.18.5)**	Trivalent Chromium Calculation	439198		
10427354005	**TS-SB-08 (10-20WM)**	Trivalent Chromium Calculation	439198		
10427354001	**TS-SB-04 (7-15 WM)**	EPA 9012A	286553	EPA 9012	286614
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 9012A	286553	EPA 9012	286614
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 9012A	286553	EPA 9012	286614
10427354004	**TS-SB-07 (15.18.5)**	EPA 9012A	286553	EPA 9012	286614
10427354005	**TS-SB-08 (10-20WM)**	EPA 9012A	286553	EPA 9012	286614
10427354001	**TS-SB-04 (7-15 WM)**	EPA 300.0	140842	EPA 9056A	140851
10427354002	**TS-SB-05 (5-7.5 WM)**	EPA 300.0	140842	EPA 9056A	140851
10427354003	**TS-SB-06 (8-12.5WM)**	EPA 300.0	140842	EPA 9056A	140851
10427354004	**TS-SB-07 (15.18.5)**	EPA 300.0	140842	EPA 9056A	140851
10427354005	**TS-SB-08 (10-20WM)**	EPA 300.0	140842	EPA 9056A	140851

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

WO# : 10427354

10427354

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number: | COC Type: | Page: 1 of

Turnaround Time: | COC ID:

FOR LAB USE ONLY

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MPCA-Freeway LF solids	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA - Freeway LF solids	Project Task Code:	Address: 18-00383
Project Manager:			EPIC Profile #38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, ~~feet~~ / ~~inches~~	End Depth, ~~feet~~ / ~~inches~~ / meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: see attached for solids (-Dioxins)	+Dioxins	Lab Sample No.	#
TS-SB-04 (7-15 wm)	S	4/13/18	0940			C	SO				13		X		001	1
TS-SB-03 (21-24.5)	S	4/13/18	1010			C	SO				13		X	X		2
																3
TS-SB-05 (5-7.5 wm)	S	4/13/18	1010			C	SO				13		X	X	002	4
TS-SB-06 (8-12.5 wm)	S	4/13/18	1105			C	SO				13		X		003	5
TS-SB-07 (15-19.5)	S	4/13/18	1220			C	SO				13		X	X	004	6
TS-SB-08 (10-26 wm)	S	4/13/18	1440			C	SO				13		X		005	7
																8
																9
																10

D JA 4/13/18

Sampled By: David Anderson | Sampler's Signature: David Anderson | Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/13/18/1630	Matt Pace	4/13/18 1630

T=3.8 ⑥

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MN POLLUTION AGENCY

Project #: **WO# : 10427354**

PM: JMA **Due Date: 04/27/18**

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 3.6 **Cooler Temp Corrected (°C):** 3.8 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** AT 4/13/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☑ Yes	☐ No		2.
Chain of Custody Relinquished?	☑ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☑ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☑ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☒ Yes	☐ No		12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 04/16/2018

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

pdf "red" revision comments: BGJ-Pace 3/23/18

March 22, 2018

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*)	
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Chain of Custody

WO#: 12107162

12107162

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427354 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 4/13/2018 Results Requested By: 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Fluoride by method 9056	LAB USE ONLY
1	TS-SB-04 (7-15 WM)	PS	4/13/2018 09:00	10427354001	Solid	1	X	
2	TS-SB-05 (5-7.5 WM)	PS	4/13/2018 10:10	10427354002	Solid	1	X	
3	TS-SB-06 (8-12.5WM)	PS	4/13/2018 11:05	10427354003	Solid	1	X	
4	TS-SB-07 (15.18.5)	PS	4/13/2018 12:20	10427354004	Solid	1	X	
5	TS-SB-08 (10-20WM)	PS	4/13/2018 14:10	10427354005	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible] PACE	4/16/18 1715	C3	4/16/18 1715
2	C3	4/16/18 2130	B. Mathews	4/17/18 0700
3				

Comments

Cooler Temperature on Receipt 5.6 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace - Mpls. Project #: WO#: 12107162

PM: HRZ Due Date: 04/27/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 5.3 Cooler Temp Corrected °C: 5.6 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 4/20/18 CG

Comments: BM 4/17/18

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Angela Lee **Date:** 4/17/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

40167541

Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427354 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 4/13/2018 Results Requested By: 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Total Cyanide by 9012	LAB USE ONLY
1	TS-SB-04 (7-15 WM) 001	PS	4/13/2018 09:00	10427354001	Solid	1	X	
2	TS-SB-05 (5-7.5 WM) 002	PS	4/13/2018 10:10	10427354002	Solid	1	X	
3	TS-SB-06 (8-12.5WM) 003	PS	4/13/2018 11:05	10427354003	Solid	1	X	
4	TS-SB-07 (15.18.5) 004	PS	4/13/2018 12:20	10427354004	Solid	1	X	
5	TS-SB-08 (10-20WM) 005	PS	4/13/2018 14:10	10427354005	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/16/18 1700		
2	[signature]	4/17/18 0900	[signature] Pace	4/17/18 0901
3				

Comments

Cooler Temperature on Receipt 2 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Pace MN

Project # 40167541

All containers needing preservation have been checked and noted below: □Yes □No ☑N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/ Time:

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001																																	
002																					1												2.5 / 5 / 10
003																					1												2.5 / 5 / 10
004																					1												2.5 / 5 / 10
005																					1												2.5 / 5 / 10
006																					1												2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : □Yes □No ☑N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace MN

Project #: WO#: 40167541

40167541

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other:

Tracking #: 1693529-1

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 75 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 2 /Corr: 2

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 4/17/18
Initials: SSM

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☒N/A	4. TRUO SSM 4/17/18
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☒No ☐N/A	7.
Sufficient Volume: ☒Yes ☐No ☐N/A MS/MSD	☐Yes ☐No ☒N/A	8.
Correct Containers Used:	☒Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☐No ☒N/A	
-Pace IR Containers Used:	☒Yes ☐No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☐Yes ☒No ☐N/A	12. client label has no collect times SSM 4/17/18
-Includes date/time/ID/Analysis Matrix: 6		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: CLA **Date:** 4/17/18

Chain of Custody

WO#: 12107162

PM: HRZ **Due Date: 04/27/18**

CLIENT: PACE MPLS

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427354 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 4/13/2018 Results Requested By: 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury by 1630	LAB USE ONLY
1	TS-SB-04 (7-15 WM)	PS	4/13/2018 09:00	10427354001	Solid	1	X	
2	TS-SB-05 (5-7.5 WM)	PS	4/13/2018 10:10	10427354002	Solid	1	X	
3	TS-SB-06 (8-12.5WM)	PS	4/13/2018 11:05	10427354003	Solid	1	X	
4	TS-SB-07 (15.18.5)	PS	4/13/2018 12:20	10427354004	Solid	1	X	
5	TS-SB-08 (10-20WM)	PS	4/13/2018 14:10	10427354005	Solid	1	X	

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	Pace	4/16/18 1700	CB	4/16/18 17:15
2	CB	4/17/18 1515		4/17/18 15:15
3				

Cooler Temperature on Receipt ____ °C **Custody Seal Y or N** **Received on Ice Y or N** **Samples Intact Y or N**

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: PACE MPLS

Project #: **WO#: 12107162**

PM: HRZ Due Date: 04/27/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: Temp Blank? ☐ Yes ☑ No

Thermometer Used: ☑ 01339252/1710 ☐ IR-1 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 5.9 Cooler Temp Corrected °C: 5.9 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: 0.0 Date and Initials of Person Examining Contents: 4/17/18 GP

If temperature is ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☑ NA

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☑ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☑ Yes	☐ No	☐ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Date:

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427354 **Workorder Name:** 18-00383 MPCA Freeway LF Solid **Owner Received Date:** 4/13/2018 **Results Requested By:** 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Chromium III	Chromium VI	Total Cr by 6020	LAB USE ONLY
1	TS-SB-04 (7-15 WM)	PS	4/13/2018 09:00	10427354001	Solid	1	X	X	X	
2	TS-SB-05 (5-7.5 WM)	PS	4/13/2018 10:10	10427354002	Solid	1	X	X	X	
3	TS-SB-06 (8-12.5WM)	PS	4/13/2018 11:05	10427354003	Solid	1	X	X	X	
4	TS-SB-07 (15.18.5)	PS	4/13/2018 12:20	10427354004	Solid	1	X	X	X	
5	TS-SB-08 (10-20WM)	PS	4/13/2018 14:10	10427354005	Solid	1	X	X	X	

S01945 68

Transfers	Released By	Date/Time	Received By	Date/Time
1	FEDEX	4/16/18 1630	FEDEX	
2				4/17/18 0830
3				

Comments

Cooler Temperature on Receipt 2.3 °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50194568

Date/Time and Initials of person examining contents: [illegible] 4/12/18 0945

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9832 1940

Custody Seal on Cooler/Box Present: ☑ Yes ☐ No Seals Intact: ☑ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer: ☑ 2 3 4 5 6 A B C D E F Ice Type: ☑ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☑ N

Cooler Temperature: 2.1/2.3 Ice Visible in Sample Containers?: ☐ Yes ☑ No ☐ N

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☑ N

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		✓	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			✓
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		✓				
Chain of Custody Present:	✓		Dissolved Metals field filtered?:			✓
Chain of Custody Filled Out:	✓		Headspace Wisconsin Sulfide			✓
Short Hold Time Analysis (<72hr)?: **Analysis:**		✓				
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			✓
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			✓
Rush TAT Requested:		✓	Headspace in VOA Vials (>6mm):			✓
Containers Intact?:	✓		Trip Blank Present?:		✓	
Sample Labels Match COC?: Except TCs, which only require sample ID	✓		Trip Blank Custody Seals?:		✓	

Comments:

Sample Container Count

WO# : 50194568

50194568

CLIENT: PACE MN

COC PAGE 1 of 1

COC ID#

Project # 50194568

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	SBS DI Bulk Kit R				Matrix SI/W (Soil/Water) Aqueous Li	pH <2	pH >9	pH>1
1							1														SL			
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic	BP3U	250mL unpreserved plastic
BP1N	1 liter HNO3 plastic	BP3Z	250mL NaOH, Zn Ac plastic
BP1S	1 liter H2SO4 plastic		
BP1U	1 liter unpreserved plastic	AF	Air Filter
BP1Z	1 liter NaOH, Zn, Ac	C	Air Cassettes
BP2A	500mL NaOH, Asc Acid plastic	R	Terra core kit
BP2N	500mL HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
BP2O	500mL NaOH plastic	U	Summa Can
BP2S	500mL H2SO4 plastic	ZPLC	Ziploc Bag
BP2U	500mL unpreserved plastic		
BP2Z	500mL NaOH, Zn Ac		
BP3B	250mL NaOH plastic		
BP3N	250mL HNO3 plastic		
BP3S	250mL H2SO4 plastic		

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April 25, 2018

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: 18-00383 MPCA Freeway LF Solid - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/17/2018.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jessica Esser

Project Manager

Certification List			Expires
ADEQ	Arkansas Department of Environmental Quality	17-065-0	09/26/2018
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2019
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2018
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2018
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2018
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2018
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2017-154	08/31/2018
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2018
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2018

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427354
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TS-SB-04 (7-15 WM) (10427354001)	A181608-01	Solid	04/13/2018	04/17/2018
TS-SB-05 (5-7.5 WM) (10427354002)	A181608-02	Solid	04/13/2018	04/17/2018
TS-SB-06 (8-12.5WM) (10427354003)	A181608-03	Solid	04/13/2018	04/17/2018
TS-SB-07 (15.18.5) (10427354004)	A181608-04	Solid	04/13/2018	04/17/2018
TS-SB-08 (10-20WM) (10427354005)	A181608-05	Solid	04/13/2018	04/17/2018

CASE NARRATIVE

Sample Receipt Information:
5 samples were received on 04/17/2018. Samples were received at 4.8 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Additional Comments:
Sample A181608-05 had to be run at an initial dilution factor of 1:50 for the MDA List II analysis, due to the sample matrix. The reporting limits have been raised accordingly.

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

TS-SB-04 (7-15 WM) (10427354001)

A181608-01 (Solid)

Date Sampled
04/13/2018 09:00

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804172**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 09:38	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:36	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:36	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:36	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:36	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:36	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:36	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:36	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:36	EPA 8321B	
Surrogate: DCAA		*91.6 %*		*70.8-116*	*04/20/2018*	*04/22/2018 10:36*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804164**			
% Solids	**86.5**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

TS-SB-05 (5-7.5 WM) (10427354002)

A181608-02 (Solid)

Date Sampled
04/13/2018 10:10

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804172**			
2,4-D	**0.30**	0.10	mg/kg dry	1	04/20/2018	04/22/2018 11:43	EPA 8321B	P
2,4-DB	**0.45**	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:44	EPA 8321B	P
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:44	EPA 8321B	
2,4,5-TP	**0.13**	0.10	mg/kg dry	1	04/20/2018	04/22/2018 11:43	EPA 8321B	P
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 11:43	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:44	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 11:43	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 11:43	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 10:44	EPA 8321B	
Surrogate: DCAA		*83.0 %*		*70.8-116*	*04/20/2018*	*04/22/2018 11:43*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804164**			
% Solids	**74.5**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

TS-SB-06 (8-12.5WM) (10427354003)

A181608-03 (Solid)

Date Sampled
04/13/2018 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804172**			
2,4-D	**0.29**	0.10	mg/kg dry	1	04/20/2018	04/22/2018 12:51	EPA 8321B	P
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 12:51	EPA 8321B	
2,4,5-T	**0.18**	0.10	mg/kg dry	1	04/20/2018	04/22/2018 12:51	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 12:51	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 12:51	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 12:51	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 12:51	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 12:51	EPA 8321B	
Triclopyr	**0.22**	0.10	mg/kg dry	1	04/20/2018	04/22/2018 12:51	EPA 8321B	
Surrogate: DCAA		*90.8 %*		*70.8-116*	*04/20/2018*	*04/22/2018 12:51*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804164**			
% Solids	**82.7**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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TS-SB-07 (15.18.5) (10427354004)

A181608-04 (Solid)

Date Sampled
04/13/2018 12:20

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804172**			
2,4-D	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 02:47	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 02:47	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 02:47	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 02:47	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 01:57	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 02:47	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 02:47	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 02:47	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/20/2018	04/22/2018 02:47	EPA 8321B	
Surrogate: DCAA		*98.1 %*		*70.8-116*	*04/20/2018*	*04/22/2018 02:47*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804164**			
% Solids	**92.7**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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1700 Elm Street, Suite 200	Project Number: 10427354
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

TS-SB-08 (10-20WM) (10427354005)

A181608-05 (Solid)

Date Sampled
04/13/2018 14:10

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804172**			
2,4-D	ND	4.0	mg/kg dry	50	04/20/2018	04/22/2018 14:09	EPA 8321B	
2,4-DB	ND	4.0	mg/kg dry	50	04/20/2018	04/22/2018 14:09	EPA 8321B	
2,4,5-T	ND	4.0	mg/kg dry	50	04/20/2018	04/22/2018 14:09	EPA 8321B	
2,4,5-TP	ND	4.0	mg/kg dry	50	04/20/2018	04/22/2018 14:09	EPA 8321B	
Bentazon	ND	2.0	mg/kg dry	50	04/20/2018	04/22/2018 14:09	EPA 8321B	
Dicamba	ND	4.0	mg/kg dry	50	04/20/2018	04/22/2018 14:09	EPA 8321B	
MCPA	ND	5.0	mg/kg dry	50	04/20/2018	04/22/2018 14:09	EPA 8321B	
Picloram	ND	2.0	mg/kg dry	50	04/20/2018	04/22/2018 14:09	EPA 8321B	
Triclopyr	ND	4.0	mg/kg dry	50	04/20/2018	04/22/2018 14:09	EPA 8321B	
Surrogate: DCAA [2C]			*%*	*62.3-114*	*04/20/2018*	*04/22/2018 14:09*	*EPA 8321B*	*DO*
Classical Chemistry Parameters					**Preparation Batch: A804164**			
% Solids	**56.6**	0.00	% by Weight	1	04/18/2018	04/19/2018 11:20	SM 2540B	

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1700 Elm Street, Suite 200	Project Number: 10427354
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804172 - EPA 3570										
Blank (A804172-BLK1)				Prepared: 04/20/2018 Analyzed: 04/22/2018 01:40						
2,4-D	ND	0.10	mg/kg wet							
2,4-D [2C]	ND	0.10	mg/kg wet							
2,4-DB	ND	0.10	mg/kg wet							
2,4-DB [2C]	ND	0.10	mg/kg wet							
2,4,5-T	ND	0.10	mg/kg wet							
2,4,5-T [2C]	ND	0.10	mg/kg wet							
2,4,5-TP	ND	0.10	mg/kg wet							
2,4,5-TP [2C]	ND	0.10	mg/kg wet							
Bentazon	ND	0.10	mg/kg wet							
Bentazon [2C]	ND	0.10	mg/kg wet							
Dicamba	ND	0.10	mg/kg wet							
Dicamba [2C]	ND	0.10	mg/kg wet							
MCPA	ND	0.10	mg/kg wet							
MCPA [2C]	ND	0.10	mg/kg wet							
Picloram	ND	0.10	mg/kg wet							
Picloram [2C]	ND	0.10	mg/kg wet							
Triclopyr	ND	0.10	mg/kg wet							
Triclopyr [2C]	ND	0.10	mg/kg wet							
Surrogate: DCAA	*20.0*		*mg/kg wet*	*20.00*		*99.9*	*70.8-116*			
Surrogate: DCAA [2C]	*19.0*		*mg/kg wet*	*20.00*		*95.1*	*62.3-114*			
LCS (A804172-BS1)				Prepared: 04/20/2018 Analyzed: 04/22/2018 00:33						
2,4-D	1.88	0.10	mg/kg wet	2.000		94.2	81.6-107			
2,4-D [2C]	1.80	0.10	mg/kg wet	2.000		90.0	71.8-120			
2,4-DB	1.78	0.10	mg/kg wet	2.000		89.2	76.4-107			
2,4-DB [2C]	1.67	0.10	mg/kg wet	2.000		83.4	62.2-129			
2,4,5-T	1.95	0.10	mg/kg wet	2.000		97.3	81.2-110			
2,4,5-T [2C]	1.79	0.10	mg/kg wet	2.000		89.7	70.6-125			
2,4,5-TP	1.85	0.10	mg/kg wet	2.000		92.5	79.1-106			
2,4,5-TP [2C]	1.65	0.10	mg/kg wet	2.000		82.5	68.2-118			
Bentazon	1.00	0.10	mg/kg wet	1.000		100	82.5-119			
Bentazon [2C]	1.06	0.10	mg/kg wet	1.000		106	73.3-125			
Dicamba	1.90	0.10	mg/kg wet	2.000		95.2	85.1-108			
Dicamba [2C]	1.84	0.10	mg/kg wet	2.000		91.8	71.4-115			
Picloram	0.967	0.10	mg/kg wet	1.000		96.7	86.1-106			
Picloram [2C]	0.860	0.10	mg/kg wet	1.000		86.0	74.5-114			
Triclopyr	1.85	0.10	mg/kg wet	2.000		92.6	78.6-106			
Triclopyr [2C]	1.69	0.10	mg/kg wet	2.000		84.6	69.4-118			
Surrogate: DCAA	*20.3*		*mg/kg wet*	*20.00*		*101*	*70.8-116*			
Surrogate: DCAA [2C]	*17.8*		*mg/kg wet*	*20.00*		*89.2*	*62.3-114*			
LCS (A804172-BS2)				Prepared: 04/20/2018 Analyzed: 04/21/2018 23:26						
MCPA	2.15	0.10	mg/kg wet	2.000		108	79.4-116			
MCPA [2C]	1.90	0.10	mg/kg wet	2.000		95.1	77-123			

Pace Analytical
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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427354
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804172 - EPA 3570										
LCS (A804172-BS2)				Prepared: 04/20/2018 Analyzed: 04/21/2018 23:26						
Surrogate: DCAA	*20.6*		*mg/kg wet*	*20.00*		*103*	*70.8-116*			
Surrogate: DCAA [2C]	*21.6*		*mg/kg wet*	*20.00*		*108*	*62.3-114*			
Matrix Spike (A804172-MS1)		**Source: A181608-04**		Prepared: 04/20/2018 Analyzed: 04/22/2018 03:54						
2,4-D	1.96	0.10	mg/kg dry	2.158	ND	90.7	71.4-105			
2,4-D [2C]	2.00	0.10	mg/kg dry	2.158	ND	92.9	50.5-123			
2,4-DB	1.84	0.10	mg/kg dry	2.158	ND	85.4	46.4-117			
2,4-DB [2C]	1.93	0.10	mg/kg dry	2.158	ND	89.3	44.5-121			
2,4,5-T	2.00	0.10	mg/kg dry	2.158	ND	92.7	66.2-110			
2,4,5-T [2C]	1.96	0.10	mg/kg dry	2.158	ND	90.8	43.6-126			
2,4,5-TP	1.93	0.10	mg/kg dry	2.158	ND	89.3	52.4-114			
2,4,5-TP [2C]	1.72	0.10	mg/kg dry	2.158	ND	79.9	47.6-117			
Bentazon	1.04	0.10	mg/kg dry	1.079	0.0620	90.6	61.5-117			
Bentazon [2C]	1.19	0.10	mg/kg dry	1.079	ND	110	50.7-127			
Dicamba	1.69	0.10	mg/kg dry	2.158	ND	78.4	48.4-111			
Dicamba [2C]	1.71	0.10	mg/kg dry	2.158	ND	79.3	43.3-108			
Picloram	0.711	0.10	mg/kg dry	1.079	ND	65.9	26.7-110			
Picloram [2C]	0.433	0.10	mg/kg dry	1.079	0.00608	39.5	10.8-110			
Triclopyr	1.95	0.10	mg/kg dry	2.158	ND	90.5	56-113			
Triclopyr [2C]	1.81	0.10	mg/kg dry	2.158	ND	84.0	47.9-120			
Surrogate: DCAA	*21.0*		*mg/kg dry*	*21.58*		*97.1*	*70.8-116*			
Surrogate: DCAA [2C]	*19.2*		*mg/kg dry*	*21.58*		*88.8*	*62.3-114*			
Matrix Spike (A804172-MS2)		**Source: A181608-04**		Prepared: 04/20/2018 Analyzed: 04/22/2018 08:22						
MCPA	2.20	0.10	mg/kg dry	2.158	ND	102	74.2-114			
MCPA [2C]	2.15	0.10	mg/kg dry	2.158	ND	99.8	60.9-122			
Surrogate: DCAA	*21.4*		*mg/kg dry*	*21.58*		*99.3*	*70.8-116*			
Surrogate: DCAA [2C]	*21.4*		*mg/kg dry*	*21.58*		*99.0*	*62.3-114*			
Matrix Spike Dup (A804172-MSD1)		**Source: A181608-04**		Prepared: 04/20/2018 Analyzed: 04/22/2018 05:01						
2,4-D	1.96	0.10	mg/kg dry	2.158	ND	90.6	71.4-105	0.123	20	
2,4-D [2C]	2.07	0.10	mg/kg dry	2.158	ND	95.9	50.5-123	3.23	20	
2,4-DB	1.86	0.10	mg/kg dry	2.158	ND	86.3	46.4-117	1.04	20	
2,4-DB [2C]	1.91	0.10	mg/kg dry	2.158	ND	88.4	44.5-121	1.02	20	
2,4,5-T	2.02	0.10	mg/kg dry	2.158	ND	93.4	66.2-110	0.787	20	
2,4,5-T [2C]	1.93	0.10	mg/kg dry	2.158	ND	89.3	43.6-126	1.68	20	
2,4,5-TP	1.94	0.10	mg/kg dry	2.158	ND	90.1	52.4-114	0.957	20	
2,4,5-TP [2C]	1.75	0.10	mg/kg dry	2.158	ND	81.2	47.6-117	1.62	20	
Bentazon	1.05	0.10	mg/kg dry	1.079	0.0620	91.5	61.5-117	0.899	20	
Bentazon [2C]	1.22	0.10	mg/kg dry	1.079	ND	113	50.7-127	2.11	20	
Dicamba	1.71	0.10	mg/kg dry	2.158	ND	79.3	48.4-111	1.10	20	
Dicamba [2C]	1.77	0.10	mg/kg dry	2.158	ND	82.0	43.3-108	3.39	20	
Picloram	0.697	0.10	mg/kg dry	1.079	ND	64.6	26.7-110	2.08	20	
Picloram [2C]	0.462	0.10	mg/kg dry	1.079	0.00608	42.2	10.8-110	6.45	20	

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1700 Elm Street, Suite 200	Project Number: 10427354
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804172 - EPA 3570										
Matrix Spike Dup (A804172-MSD1)	**Source: A181608-04**			Prepared: 04/20/2018 Analyzed: 04/22/2018 05:01						
Triclopyr	1.96	0.10	mg/kg dry	2.158	ND	90.8	56-113	0.393	20	
Triclopyr [2C]	1.83	0.10	mg/kg dry	2.158	ND	84.8	47.9-120	0.917	20	
Surrogate: DCAA	*20.9*		*mg/kg dry*	*21.58*		*96.9*	*70.8-116*			
Surrogate: DCAA [2C]	*18.9*		*mg/kg dry*	*21.58*		*87.7*	*62.3-114*			
Matrix Spike Dup (A804172-MSD2)	**Source: A181608-04**			Prepared: 04/20/2018 Analyzed: 04/22/2018 09:29						
MCPA	2.26	0.10	mg/kg dry	2.158	ND	105	74.2-114	2.48	20	
MCPA [2C]	2.20	0.10	mg/kg dry	2.158	ND	102	60.9-122	2.11	20	
Surrogate: DCAA	*21.6*		*mg/kg dry*	*21.58*		*100*	*70.8-116*			
Surrogate: DCAA [2C]	*22.9*		*mg/kg dry*	*21.58*		*106*	*62.3-114*			

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427354
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Classical Chemistry Parameters - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804164 - % Solids										
Duplicate (A804164-DUP1)		**Source: A181613-14**		Prepared: 04/18/2018 Analyzed: 04/19/2018 11:20						
% Solids	93.3	0.00	% by Weight		97.0			3.88	20	

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1700 Elm Street, Suite 200	Project Number: 10427354
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

P	The difference in the concentrations between the primary and confirmation column was > 40%.
LC	Results may be biased low because of low continuing calibration verification (CCV).
DO	Diluted out.
D	Data reported from a dilution
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A181608

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427354 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 4/13/2018 Results Requested By: 4/27/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	MDA List II	LAB USE ONLY
1	TS-SB-04 (7-15 WM)	PS	4/13/2018 09:00	10427354001	Solid	1	X	01
2	TS-SB-05 (5-7.5 WM)	PS	4/13/2018 10:10	10427354002	Solid	1	X	02
3	TS-SB-06 (8-12.5WM)	PS	4/13/2018 11:05	10427354003	Solid	1	X	03
4	TS-SB-07 (15.18.5)	PS	4/13/2018 12:20	10427354004	Solid	1	X	04
5	TS-SB-08 (10-20WM)	PS	4/13/2018 14:10	10427354005	Solid	1	X	05

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible] PACE	4/16/18 1630	Kari-Ann Kiltie	4/17/18 0940
2				
3				

Comments

Cooler Temperature on Receipt 4.8 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

1601423274
exp 7/12/18

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Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10427356
Sample Receipt Date: 04/13/2018
Client Project #: 18-00383
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

April 27, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
April 27, 2018

Report of Laboratory Analysis

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The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
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DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 31-72%. Except for one low value, which was flagged "R" on the results table, the labeled internal standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 104%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

WO# : 10427356

10427356

Report No....10427356_8290TCDD_DFR

Page 5 of 12

study Form

Work Order Number: | COC Type: | Page: 1 of

Turnaround Time: | COC ID:

Control Agency	PROJECT/CLIENT INFO	LABORATORY	FOR LAB USE ONLY
Facility Code:	MPCA-Freeway LF solids	Program Code (MDH Lab Only):	Lab Name:	
Project Name:	MPCA - Freeway LF solids	Project Task Code:	Address: 18-00383
Project Manager:			Epic Profile #38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wt=Ground=Groundwater; Wt-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, ft/in / meters	End Depth, ft/in / meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: see attached for soil/waste (-dioxins)	ANALYSIS: +dioxins	Lab Sample No.	#
~~TS-SB-04~~ (7-7.5 wm)	S	4/13/18	0920			C	SD				13		X		~~001~~	1
~~TS-SB-05~~ (21-24 S)	S	4/13/18	1010			C	SD				13		X	X		2
TS-SB-05 (5-7.5 wm)	S	4/13/18	1010			C	SD				13		X	X		3
TS-SB-06 (8-8.5 wm)	S	4/13/18	1105			C	SD				13		X		~~002~~ 001	4
TS-SB-07 (15-15.5)	S	4/13/18	1220			C	SD				13		X	X	~~003~~ 002	5
TS-SB-09 (10-20 wm)	S	4/13/18	1410			C	SD				13		X		002	6
																7
																8
																9
																10

~~001~~ 4/13/18 ~~002~~ 4/13/18

Sampled By: David Anderson | Sampler's Signature: David Anderson | Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/13/18/1630	Matt Pace	4/13/18 1630
			T=3.8 (5)

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MN Pollution Agency

Project #: WO#: 10427356

PM: SCU Due Date: 04/27/18

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842

Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 3.6 **Cooler Temp Corrected (°C):** 3.8 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** 4/13/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☑ Yes	☐ No		2.
Chain of Custody Relinquished?	☑ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☑ Yes	☐ No		8.
Correct Containers Used?	☑ Yes	☐ No		9.
-Pace Containers Used?	☑ Yes	☐ No		
Containers Intact?	☑ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☑ Yes	☐ No		12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 4/16/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical Services, LLC
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Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	TS-SB-05 (5-7.5WM)		
Lab Sample ID	10427356001		
Filename	U180423A_05		
Injected By	BAL		
Total Amount Extracted	13.8 g	Matrix	Solid
% Moisture	31.9	Dilution	NA
Dry Weight Extracted	9.40 g	Collected	04/13/2018 10:10
ICAL ID	U180405	Received	04/13/2018 16:35
CCal Filename(s)	U180422B_15 & U180423A_10	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/23/2018 05:32

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	31 R
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	27

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	TS-SB-07 (15-18.5)		
Lab Sample ID	10427356002		
Filename	U180423A_06		
Injected By	BAL		
Total Amount Extracted	12.6 g	Matrix	Solid
% Moisture	7.2	Dilution	NA
Dry Weight Extracted	11.7 g	Collected	04/13/2018 12:20
ICAL ID	U180405	Received	04/13/2018 16:35
CCal Filename(s)	U180422B_15 & U180423A_10	Extracted	04/17/2018 15:45
Method Blank ID	BLANK-61774	Analyzed	04/23/2018 06:20

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	72
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	70

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61774	Matrix	Solid
Filename	Y180422A_04	Dilution	NA
Total Amount Extracted	79.7 g	Extracted	04/17/2018 15:45
ICAL ID	Y180204	Analyzed	04/22/2018 16:10
CCal Filename(s)	Y180421B_16 & Y180422A_12	Injected By	BAL

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	63

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

Tel: 612-607-1700
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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61775		
Filename	Y180422A_01	Matrix	Solid
Total Amount Extracted	75.1 g	Dilution	NA
ICAL ID	Y180204	Extracted	04/17/2018 15:45
CCal Filename(s)	Y180421B_16 & Y180422A_12	Analyzed	04/22/2018 13:59
Method Blank ID	BLANK-61774	Injected By	BAL

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.21	104	2,3,7,8-TCDD-13C	2.0	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	62

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10427641
Sample Receipt Date: 04/17/2018
Client Project #: 18-00383
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

May 07, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
May 7, 2018

Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on three samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. The samples were received above the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 50-58%. All of the labeled internal standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 104%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

WO#: 10427641

10427641

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number: | COC Type:

Turnaround Time: | COC ID:

FOR LAB USE ONLY

PROJECT/CLIENT INFO

Facility Code: MPCA-Freeway LF solids | Program Code (MDH Lab Only):

Project Name: MPCA-Freeway LF solids | Project Task Code:

Project Manager:

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name:

Address: 18-00383 Epic Profile #38716

Phone No:

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, ~~in feet~~ meters	End Depth, ~~in feet~~ meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: see attached list (soils/waste - dioxins)	ANALYSIS: +Dioxins					Lab Sample No.	#
FD-TT-09	S	4/17/18	9:30	4'	12'	C	SD	WM			13		X	X					001	1
~~FD-TT-10 (2-12' WM)~~ FD-TT-10 (2-10' WM)	S	4/17/18	12:15	2'	10'	C	SD	WM			13		X							2
FD-TT-11 ~~(4-12' WM)~~		4/17/18	13:24	4'	~~12'~~ 8'	C	SD	WM			13		X	X					002	3
FD-TT-12 ~~(3-12' WM)~~	S	4/17/18	14:37	3'	12'	C	SD	WM			13		X							4
FD-TT-13 ~~(3-12' WM)~~	S	4/17/18	15:30	3'	12'	C	SD	WM			13		X	X					003	5
																				6
																				7
																				8
																				9
																				10

Sampled By:

Sampler's Signature:

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) Matt Rikkonen / Pace	4/17/18 1730	Pace	4/17/18 1730
			T=9.6

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** MN Pollution Control **Project #:** WO#: 10427641

PM: SCU Due Date: 05/02/18

CLIENT: LOST UNFILED

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: **Temp Blank?** ☒ Yes ☐ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 9.4 **Cooler Temp Corrected (°C):** 9.6 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** ET 4/17/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (international, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	☒ Yes ☐ No	1.
Chain of Custody Filled Out? 4/17/18 SD	☒ Yes ☐ No	2. No "list" included
Chain of Custody Relinquished?	☒ Yes ☐ No	3.
Sampler Name and/or Signature on COC?	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes ☐ No	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No	6.
Rush Turn Around Time Requested?	☐ Yes ☒ No	7.
Sufficient Volume?	☒ Yes ☐ No	8.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☐ No ☒ Yes ☐ No	9.
Containers Intact?	☒ Yes ☐ No	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes ☐ No ☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes ☐ No	12.
All containers needing acid/base preservation have been checked? All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes ☐ No ☒ N/A ☐ Yes ☐ No ☒ N/A ☐ Yes ☐ No ☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N Sample # Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present? Trip Blank Custody Seals Present? Pace Trip Blank Lot # (if purchased):	☐ Yes ☒ No ☐ N/A ☐ Yes ☐ No ☒ N/A	15.

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 04/18/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical Services, LLC
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Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-TT-09 (4-12 WM)		
Lab Sample ID	10427641001		
Filename	U180505A_02		
Injected By	BAL		
Total Amount Extracted	13.8 g	Matrix	Solid
% Moisture	22.0	Dilution	NA
Dry Weight Extracted	10.8 g	Collected	04/17/2018 09:20
ICAL ID	U180405	Received	04/17/2018 17:30
CCal Filename(s)	U180504B_15 & U180505A_10	Extracted	04/24/2018 14:55
Method Blank ID	BLANK-61921	Analyzed	05/05/2018 06:41

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	56
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	55

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-TT-11 (4-12 WM)		
Lab Sample ID	10427641002		
Filename	U180505A_03		
Injected By	BAL		
Total Amount Extracted	12.5 g	Matrix	Solid
% Moisture	20.8	Dilution	NA
Dry Weight Extracted	9.90 g	Collected	04/17/2018 13:24
ICAL ID	U180405	Received	04/17/2018 17:30
CCal Filename(s)	U180504B_15 & U180505A_10	Extracted	04/24/2018 14:55
Method Blank ID	BLANK-61921	Analyzed	05/05/2018 07:28

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	58
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	65

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-TT-13 (3-12)		
Lab Sample ID	10427641003		
Filename	U180505A_04		
Injected By	BAL		
Total Amount Extracted	13.7 g	Matrix	Solid
% Moisture	66.6	Dilution	NA
Dry Weight Extracted	4.58 g	Collected	04/17/2018 15:30
ICAL ID	U180405	Received	04/17/2018 17:30
CCal Filename(s)	U180504B_15 & U180505A_10	Extracted	04/24/2018 14:55
Method Blank ID	BLANK-61921	Analyzed	05/05/2018 08:16

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	3.3	-----	1.0	2,3,7,8-TCDD-13C	2.00	50
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	50

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61921	Matrix	Solid
Filename	F180429A_04	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	04/24/2018 14:55
ICAL ID	F180405	Analyzed	04/29/2018 13:19
CCal Filename(s)	F180428A_14 & F180429A_17	Injected By	BAL

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	63
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	62

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61922		
Filename	F180429A_02	Matrix	Solid
Total Amount Extracted	10.0 g	Dilution	NA
ICAL ID	F180405	Extracted	04/24/2018 14:55
CCal Filename(s)	F180428A_14 & F180429A_17	Analyzed	04/29/2018 11:50
Method Blank ID	BLANK-61921	Injected By	BAL

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.21	104	2,3,7,8-TCDD-13C	2.0	68
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	67

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 02, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 17, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6451
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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1700 Elm Street - Suite 200
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(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
California Certification #2973
California Certification #2973
Alaska Certification UST-107
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Montana DHHS Certification #: CERT0102
Minnesota Dept of Health Certification #: 1382680
Nevada DCNR Certification #: MN000372018-1
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10427642001	**FD-TT-09 (4-12 WM)**	Solid	04/17/18 09:20	04/17/18 17:30
10427642002	**FD-TT-10 (2'-10' WM)**	Solid	04/17/18 12:15	04/17/18 17:30
10427642003	**FD-TT-11 (4-12 WM)**	Solid	04/17/18 13:24	04/17/18 17:30
10427642004	**FD-TT-12 (3-12)**	Solid	04/17/18 14:37	04/17/18 17:30
10427642005	**FD-TT-13 (3-12)**	Solid	04/17/18 15:30	04/17/18 17:30

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10427642001	**FD-TT-09 (4-12 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427642003	**FD-TT-11 (4-12 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427642004	**FD-TT-12 (3-12)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427642005	**FD-TT-13 (3-12)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-09 (4-12 WM) **Lab ID: 10427642001** Collected: 04/17/18 09:20 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.3	1	04/25/18 10:56	04/30/18 14:13	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	309-00-2	
alpha-BHC	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	319-84-6	
beta-BHC	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	319-85-7	
delta-BHC	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	58-89-9	
Chlordane (Technical)	ND	ug/kg	427	20	04/19/18 13:04	04/27/18 01:07	57-74-9	
alpha-Chlordane	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	5103-71-9	
gamma-Chlordane	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	5103-74-2	
4,4'-DDD	ND	ug/kg	85.2	20	04/19/18 13:04	04/27/18 01:07	72-54-8	
4,4'-DDE	ND	ug/kg	85.2	20	04/19/18 13:04	04/27/18 01:07	72-55-9	
4,4'-DDT	ND	ug/kg	85.2	20	04/19/18 13:04	04/27/18 01:07	50-29-3	
Dieldrin	ND	ug/kg	85.2	20	04/19/18 13:04	04/27/18 01:07	60-57-1	
Endosulfan I	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	959-98-8	
Endosulfan II	ND	ug/kg	85.2	20	04/19/18 13:04	04/27/18 01:07	33213-65-9	
Endosulfan sulfate	ND	ug/kg	85.2	20	04/19/18 13:04	04/27/18 01:07	1031-07-8	
Endrin	ND	ug/kg	85.2	20	04/19/18 13:04	04/27/18 01:07	72-20-8	
Endrin aldehyde	ND	ug/kg	85.2	20	04/19/18 13:04	04/27/18 01:07	7421-93-4	
Endrin ketone	ND	ug/kg	85.2	20	04/19/18 13:04	04/27/18 01:07	53494-70-5	
Heptachlor	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	76-44-8	
Heptachlor epoxide	ND	ug/kg	42.7	20	04/19/18 13:04	04/27/18 01:07	1024-57-3	
Methoxychlor	ND	ug/kg	427	20	04/19/18 13:04	04/27/18 01:07	72-43-5	
Toxaphene	ND	ug/kg	1280	20	04/19/18 13:04	04/27/18 01:07	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	04/19/18 13:04	04/27/18 01:07	877-09-8	4M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	04/19/18 13:04	04/27/18 01:07	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	11141-16-5	
PCB-1242 (Aroclor 1242)	**406**	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	12672-29-6	
PCB-1254 (Aroclor 1254)	**139**	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	11100-14-4	
PCB, Total	**545**	ug/kg	42.2	1	04/19/18 13:39	04/23/18 17:33	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	80	%.	48-125	1	04/19/18 13:39	04/23/18 17:33	877-09-8	
Decachlorobiphenyl (S)	115	%.	30-134	1	04/19/18 13:39	04/23/18 17:33	2051-24-3	CH

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-09 (4-12 WM) **Lab ID: 10427642001** Collected: 04/17/18 09:20 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**65.0**	mg/kg	11.0	1	04/19/18 14:54	04/20/18 16:04		T6
Surrogates								
n-Triacontane (S)	91	%.	50-150	1	04/19/18 14:54	04/20/18 16:04	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	14.1	1	04/27/18 16:39	05/01/18 04:30		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/27/18 16:39	05/01/18 04:30	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**10100**	mg/kg	12.6	1	04/20/18 05:22	04/23/18 11:28	7429-90-5	
Barium	**204**	mg/kg	0.63	1	04/20/18 05:22	04/23/18 11:28	7440-39-3	
Boron	**75.3**	mg/kg	9.4	1	04/20/18 05:22	04/23/18 11:28	7440-42-8	
Copper	**75.0**	mg/kg	0.63	1	04/20/18 05:22	04/23/18 11:28	7440-50-8	
Iron	**33200**	mg/kg	15.7	5	04/20/18 05:22	04/23/18 12:38	7439-89-6	
Manganese	**328**	mg/kg	0.31	1	04/20/18 05:22	04/23/18 11:28	7439-96-5	
Nickel	**24.7**	mg/kg	1.3	1	04/20/18 05:22	04/23/18 11:28	7440-02-0	
Silver	ND	mg/kg	0.63	1	04/20/18 05:22	04/23/18 11:28	7440-22-4	
Tin	**48.6**	mg/kg	4.7	1	04/20/18 05:22	04/23/18 11:28	7440-31-5	
Titanium	**333**	mg/kg	1.6	1	04/20/18 05:22	04/23/18 11:28	7440-32-6	
Zinc	**214**	mg/kg	1.3	1	04/20/18 05:22	04/23/18 11:28	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**5.4**	mg/kg	0.24	1	04/25/18 09:25	04/26/18 02:47	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.9**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:29	7440-36-0	
Arsenic	**12.7**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:29	7440-38-2	
Beryllium	**1.0**	mg/kg	0.24	20	04/20/18 06:41	04/21/18 04:29	7440-41-7	
Cadmium	**2.5**	mg/kg	0.097	20	04/20/18 06:41	04/21/18 04:29	7440-43-9	
Cobalt	**7.5**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:29	7440-48-4	
Lead	**173**	mg/kg	0.12	20	04/20/18 06:41	04/21/18 04:29	7439-92-1	
Lithium	**6.8**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:29	7439-93-2	
Selenium	**2.3**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:29	7782-49-2	
Strontium	**56.0**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:29	7440-24-6	
Vanadium	**42.0**	mg/kg	1.2	20	04/20/18 06:41	04/21/18 04:29	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.24**	mg/kg	0.026	1	04/20/18 04:53	04/22/18 16:23	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**22.0**	%	0.10	1		04/24/18 13:48		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-09 (4-12 WM) **Lab ID: 10427642001** Collected: 04/17/18 09:20 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	208-96-8	
Anthracene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	120-12-7	
Benzo(a)anthracene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	56-55-3	
Benzo(a)pyrene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	101-55-3	
Butylbenzylphthalate	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	85-68-7	
Carbazole	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	59-50-7	
4-Chloroaniline	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	108-60-1	
2-Chloronaphthalene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	91-58-7	
2-Chlorophenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	7005-72-3	
Chrysene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	53-70-3	
Dibenzofuran	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	120-83-2	
Diethylphthalate	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	105-67-9	
Dimethylphthalate	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	131-11-3	
Di-n-butylphthalate	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2180	1	04/19/18 19:31	04/23/18 22:30	534-52-1	M1
2,4-Dinitrophenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	51-28-5	M1
2,4-Dinitrotoluene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	606-20-2	
Di-n-octylphthalate	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	117-81-7	
Fluoranthene	**565**	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	206-44-0	
Fluorene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	87-68-3	
Hexachlorobenzene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	118-74-1	
Hexachloroethane	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	193-39-5	
Isophorone	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	78-59-1	
1-Methylnaphthalene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	90-12-0	
2-Methylnaphthalene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	91-57-6	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-09 (4-12 WM) **Lab ID: 10427642001** Collected: 04/17/18 09:20 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	845	1	04/19/18 19:31	04/23/18 22:30		
Naphthalene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	91-20-3	
2-Nitroaniline	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	88-74-4	
3-Nitroaniline	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	99-09-2	
4-Nitroaniline	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	100-01-6	
Nitrobenzene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	98-95-3	
2-Nitrophenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	88-75-5	
4-Nitrophenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	86-30-6	
Pentachlorophenol	ND	ug/kg	858	1	04/19/18 19:31	04/23/18 22:30	87-86-5	
Phenanthrene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	85-01-8	
Phenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	108-95-2	
Pyrene	**511**	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	423	1	04/19/18 19:31	04/23/18 22:30	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	51	%.	43-125	1	04/19/18 19:31	04/23/18 22:30	4165-60-0	
2-Fluorobiphenyl (S)	45	%.	30-132	1	04/19/18 19:31	04/23/18 22:30	321-60-8	
p-Terphenyl-d14 (S)	66	%.	62-125	1	04/19/18 19:31	04/23/18 22:30	1718-51-0	
Phenol-d6 (S)	55	%.	48-125	1	04/19/18 19:31	04/23/18 22:30	13127-88-3	
2-Fluorophenol (S)	56	%.	40-125	1	04/19/18 19:31	04/23/18 22:30	367-12-4	
2,4,6-Tribromophenol (S)	59	%.	60-125	1	04/19/18 19:31	04/23/18 22:30	118-79-6	S0
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	83-32-9	
Acenaphthylene	ND	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	208-96-8	
Anthracene	**66.4**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	120-12-7	
Benzo(a)anthracene	**252**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	56-55-3	
Benzo(a)pyrene	**300**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	50-32-8	
Benzo(b)fluoranthene	**397**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	205-99-2	
Benzo(g,h,i)perylene	**205**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	191-24-2	
Benzo(k)fluoranthene	**146**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	207-08-9	
Chrysene	**262**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	53-70-3	
Fluoranthene	**501**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	206-44-0	
Fluorene	ND	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	86-73-7	
Indeno(1,2,3-cd)pyrene	**170**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	193-39-5	
Naphthalene	ND	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	91-20-3	
Phenanthrene	**231**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	85-01-8	
Pyrene	**434**	ug/kg	64.0	5	04/19/18 18:12	04/20/18 17:07	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	86	%.	42-125	5	04/19/18 18:12	04/20/18 17:07	321-60-8	D3

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-09 (4-12 WM) **Lab ID: 10427642001** Collected: 04/17/18 09:20 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	92	%.	57-125	5	04/19/18 18:12	04/20/18 17:07	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1390	1	04/26/18 10:20	04/26/18 14:02	67-64-1	
Allyl chloride	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	107-05-1	
Benzene	ND	ug/kg	27.8	1	04/26/18 10:20	04/26/18 14:02	71-43-2	
Bromobenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	108-86-1	
Bromochloromethane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	74-97-5	
Bromodichloromethane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	75-27-4	
Bromoform	ND	ug/kg	695	1	04/26/18 10:20	04/26/18 14:02	75-25-2	
Bromomethane	ND	ug/kg	695	1	04/26/18 10:20	04/26/18 14:02	74-83-9	
2-Butanone (MEK)	ND	ug/kg	347	1	04/26/18 10:20	04/26/18 14:02	78-93-3	
n-Butylbenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	104-51-8	
sec-Butylbenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	135-98-8	
tert-Butylbenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	98-06-6	
Carbon tetrachloride	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	56-23-5	
Chlorobenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	108-90-7	
Chloroethane	ND	ug/kg	695	1	04/26/18 10:20	04/26/18 14:02	75-00-3	
Chloroform	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	67-66-3	
Chloromethane	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	74-87-3	
2-Chlorotoluene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	95-49-8	
4-Chlorotoluene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	695	1	04/26/18 10:20	04/26/18 14:02	96-12-8	
Dibromochloromethane	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	106-93-4	
Dibromomethane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	75-71-8	
1,1-Dichloroethane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	75-34-3	
1,2-Dichloroethane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	107-06-2	
1,1-Dichloroethene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	156-60-5	
Dichlorofluoromethane	ND	ug/kg	695	1	04/26/18 10:20	04/26/18 14:02	75-43-4	
1,2-Dichloropropane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	78-87-5	
1,3-Dichloropropane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	142-28-9	
2,2-Dichloropropane	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	594-20-7	
1,1-Dichloropropene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	60-29-7	M0
Ethylbenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	347	1	04/26/18 10:20	04/26/18 14:02	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-09 (4-12 WM) **Lab ID: 10427642001** Collected: 04/17/18 09:20 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	98-82-8	
p-Isopropyltoluene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	99-87-6	
Methylene Chloride	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	75-09-2	L2
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	347	1	04/26/18 10:20	04/26/18 14:02	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	1634-04-4	
Naphthalene	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	91-20-3	
n-Propylbenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	103-65-1	
Styrene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	79-34-5	
Tetrachloroethene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	127-18-4	
Tetrahydrofuran	ND	ug/kg	2780	1	04/26/18 10:20	04/26/18 14:02	109-99-9	
Toluene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	79-00-5	
Trichloroethene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	79-01-6	
Trichlorofluoromethane	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	278	1	04/26/18 10:20	04/26/18 14:02	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	69.5	1	04/26/18 10:20	04/26/18 14:02	108-67-8	
Vinyl chloride	ND	ug/kg	27.8	1	04/26/18 10:20	04/26/18 14:02	75-01-4	
Xylene (Total)	ND	ug/kg	208	1	04/26/18 10:20	04/26/18 14:02	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%.	75-125	1	04/26/18 10:20	04/26/18 14:02	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	04/26/18 10:20	04/26/18 14:02	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	04/26/18 10:20	04/26/18 14:02	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	49.3	20	04/23/18 11:09	04/24/18 13:55	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**5.4**	mg/kg	1.0	1		05/02/18 08:16	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.52**	mg/kg	0.50	1	04/25/18 11:00	04/25/18 13:32	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	04/25/18 14:45	04/26/18 03:47	16984-48-8	M1

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-10 (2'-10' WM) **Lab ID: 10427642002** Collected: 04/17/18 12:15 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.5	1	04/25/18 10:56	04/30/18 14:19	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	309-00-2	
alpha-BHC	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	319-84-6	
beta-BHC	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	319-85-7	
delta-BHC	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	58-89-9	
Chlordane (Technical)	ND	ug/kg	419	20	04/19/18 13:04	04/27/18 00:49	57-74-9	
alpha-Chlordane	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	5103-71-9	
gamma-Chlordane	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	5103-74-2	
4,4'-DDD	**185**	ug/kg	83.5	20	04/19/18 13:04	04/27/18 00:49	72-54-8	
4,4'-DDE	ND	ug/kg	83.5	20	04/19/18 13:04	04/27/18 00:49	72-55-9	
4,4'-DDT	**216**	ug/kg	83.5	20	04/19/18 13:04	04/27/18 00:49	50-29-3	
Dieldrin	ND	ug/kg	83.5	20	04/19/18 13:04	04/27/18 00:49	60-57-1	
Endosulfan I	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	959-98-8	
Endosulfan II	ND	ug/kg	83.5	20	04/19/18 13:04	04/27/18 00:49	33213-65-9	
Endosulfan sulfate	ND	ug/kg	83.5	20	04/19/18 13:04	04/27/18 00:49	1031-07-8	
Endrin	ND	ug/kg	83.5	20	04/19/18 13:04	04/27/18 00:49	72-20-8	
Endrin aldehyde	ND	ug/kg	83.5	20	04/19/18 13:04	04/27/18 00:49	7421-93-4	
Endrin ketone	ND	ug/kg	83.5	20	04/19/18 13:04	04/27/18 00:49	53494-70-5	
Heptachlor	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	76-44-8	
Heptachlor epoxide	ND	ug/kg	41.9	20	04/19/18 13:04	04/27/18 00:49	1024-57-3	
Methoxychlor	ND	ug/kg	419	20	04/19/18 13:04	04/27/18 00:49	72-43-5	
Toxaphene	ND	ug/kg	1250	20	04/19/18 13:04	04/27/18 00:49	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	20	04/19/18 13:04	04/27/18 00:49	877-09-8	4M,D4, S4
Decachlorobiphenyl (S)	0	%.	30-150	20	04/19/18 13:04	04/27/18 00:49	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	11100-14-4	
PCB, Total	ND	ug/kg	41.5	1	04/19/18 13:39	04/23/18 19:56	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	81	%.	48-125	1	04/19/18 13:39	04/23/18 19:56	877-09-8	
Decachlorobiphenyl (S)	105	%.	30-134	1	04/19/18 13:39	04/23/18 19:56	2051-24-3	CH

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-10 (2'-10' WM) **Lab ID: 10427642002** Collected: 04/17/18 12:15 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**159**	mg/kg	12.4	1	04/19/18 14:54	04/20/18 15:42		T6
Surrogates								
n-Triacontane (S)	106	%.	50-150	1	04/19/18 14:54	04/20/18 15:42	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	17.4	1	04/27/18 16:39	05/01/18 04:54		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/27/18 16:39	05/01/18 04:54	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**8740**	mg/kg	12.4	1	04/20/18 05:22	04/23/18 11:37	7429-90-5	
Barium	**122**	mg/kg	0.62	1	04/20/18 05:22	04/23/18 11:37	7440-39-3	
Boron	**74.9**	mg/kg	9.3	1	04/20/18 05:22	04/23/18 11:37	7440-42-8	
Copper	**36.3**	mg/kg	0.62	1	04/20/18 05:22	04/23/18 11:37	7440-50-8	
Iron	**22800**	mg/kg	15.6	5	04/20/18 05:22	04/23/18 12:47	7439-89-6	
Manganese	**293**	mg/kg	0.31	1	04/20/18 05:22	04/23/18 11:37	7439-96-5	
Nickel	**21.3**	mg/kg	1.2	1	04/20/18 05:22	04/23/18 11:37	7440-02-0	
Silver	ND	mg/kg	0.62	1	04/20/18 05:22	04/23/18 11:37	7440-22-4	
Tin	ND	mg/kg	4.7	1	04/20/18 05:22	04/23/18 11:37	7440-31-5	
Titanium	**335**	mg/kg	1.6	1	04/20/18 05:22	04/23/18 11:37	7440-32-6	
Zinc	**235**	mg/kg	1.2	1	04/20/18 05:22	04/23/18 11:37	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**7.4**	mg/kg	0.23	1	04/25/18 09:25	04/26/18 03:19	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.1**	mg/kg	0.61	20	04/20/18 06:41	04/23/18 20:00	7440-36-0	
Arsenic	**13.6**	mg/kg	0.61	20	04/20/18 06:41	04/23/18 20:00	7440-38-2	
Beryllium	**1.7**	mg/kg	0.24	20	04/20/18 06:41	04/23/18 20:00	7440-41-7	
Cadmium	**1.6**	mg/kg	0.098	20	04/20/18 06:41	04/23/18 20:00	7440-43-9	
Cobalt	**6.6**	mg/kg	0.61	20	04/20/18 06:41	04/23/18 20:00	7440-48-4	
Lead	**89.5**	mg/kg	0.12	20	04/20/18 06:41	04/23/18 20:00	7439-92-1	
Lithium	**8.1**	mg/kg	0.61	20	04/20/18 06:41	04/23/18 20:00	7439-93-2	
Selenium	**1.7**	mg/kg	0.61	20	04/20/18 06:41	04/23/18 20:00	7782-49-2	
Strontium	**52.3**	mg/kg	0.61	20	04/20/18 06:41	04/23/18 20:00	7440-24-6	
Vanadium	**63.3**	mg/kg	1.2	20	04/20/18 06:41	04/23/18 20:00	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.18**	mg/kg	0.024	1	04/20/18 04:53	04/22/18 16:25	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**20.4**	%	0.10	1		04/24/18 13:48		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-10 (2'-10' WM) **Lab ID: 10427642002** Collected: 04/17/18 12:15 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	208-96-8	
Anthracene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	120-12-7	
Benzo(a)anthracene	**1010**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	56-55-3	
Benzo(a)pyrene	**974**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	50-32-8	
Benzo(b)fluoranthene	**1370**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	205-99-2	
Benzo(g,h,i)perylene	**711**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	191-24-2	
Benzo(k)fluoranthene	**526**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	101-55-3	
Butylbenzylphthalate	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	85-68-7	
Carbazole	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	59-50-7	
4-Chloroaniline	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	108-60-1	
2-Chloronaphthalene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	91-58-7	
2-Chlorophenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	7005-72-3	
Chrysene	**1090**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	53-70-3	
Dibenzofuran	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	120-83-2	
Diethylphthalate	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	105-67-9	
Dimethylphthalate	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	131-11-3	
Di-n-butylphthalate	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2130	1	04/19/18 19:31	04/23/18 23:55	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	606-20-2	
Di-n-octylphthalate	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	117-81-7	
Fluoranthene	**2170**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	206-44-0	
Fluorene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	87-68-3	
Hexachlorobenzene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	118-74-1	
Hexachloroethane	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	67-72-1	
Indeno(1,2,3-cd)pyrene	**599**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	193-39-5	
Isophorone	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	78-59-1	
1-Methylnaphthalene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	90-12-0	
2-Methylnaphthalene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-10 (2'-10' WM) **Lab ID: 10427642002** Collected: 04/17/18 12:15 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	826	1	04/19/18 19:31	04/23/18 23:55		
Naphthalene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	91-20-3	
2-Nitroaniline	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	88-74-4	
3-Nitroaniline	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	99-09-2	
4-Nitroaniline	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	100-01-6	
Nitrobenzene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	98-95-3	
2-Nitrophenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	88-75-5	
4-Nitrophenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	86-30-6	
Pentachlorophenol	ND	ug/kg	839	1	04/19/18 19:31	04/23/18 23:55	87-86-5	
Phenanthrene	**1250**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	85-01-8	
Phenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	108-95-2	
Pyrene	**2040**	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	413	1	04/19/18 19:31	04/23/18 23:55	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	61	%.	43-125	1	04/19/18 19:31	04/23/18 23:55	4165-60-0	
2-Fluorobiphenyl (S)	61	%.	30-132	1	04/19/18 19:31	04/23/18 23:55	321-60-8	
p-Terphenyl-d14 (S)	88	%.	62-125	1	04/19/18 19:31	04/23/18 23:55	1718-51-0	
Phenol-d6 (S)	67	%.	48-125	1	04/19/18 19:31	04/23/18 23:55	13127-88-3	
2-Fluorophenol (S)	64	%.	40-125	1	04/19/18 19:31	04/23/18 23:55	367-12-4	
2,4,6-Tribromophenol (S)	78	%.	60-125	1	04/19/18 19:31	04/23/18 23:55	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**237**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	83-32-9	
Acenaphthylene	ND	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	208-96-8	
Anthracene	**615**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	120-12-7	
Benzo(a)anthracene	**1430**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	56-55-3	
Benzo(a)pyrene	**1520**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	50-32-8	
Benzo(b)fluoranthene	**2080**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	205-99-2	
Benzo(g,h,i)perylene	**991**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	191-24-2	
Benzo(k)fluoranthene	**702**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	207-08-9	
Chrysene	**1610**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	218-01-9	
Dibenz(a,h)anthracene	**243**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	53-70-3	
Fluoranthene	**3640**	ug/kg	126	10	04/19/18 18:12	04/23/18 17:42	206-44-0	
Fluorene	**264**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	86-73-7	
Indeno(1,2,3-cd)pyrene	**804**	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	193-39-5	
Naphthalene	ND	ug/kg	62.8	5	04/19/18 18:12	04/20/18 17:28	91-20-3	
Phenanthrene	**2520**	ug/kg	126	10	04/19/18 18:12	04/23/18 17:42	85-01-8	
Pyrene	**2860**	ug/kg	126	10	04/19/18 18:12	04/23/18 17:42	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	84	%.	42-125	5	04/19/18 18:12	04/20/18 17:28	321-60-8	D3

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-10 (2'-10' WM) **Lab ID: 10427642002** Collected: 04/17/18 12:15 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	91	%.	57-125	5	04/19/18 18:12	04/20/18 17:28	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1660	1	04/26/18 10:20	04/26/18 16:33	67-64-1	
Allyl chloride	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	107-05-1	
Benzene	**37.4**	ug/kg	33.2	1	04/26/18 10:20	04/26/18 16:33	71-43-2	
Bromobenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	108-86-1	
Bromochloromethane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	74-97-5	
Bromodichloromethane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	75-27-4	
Bromoform	ND	ug/kg	831	1	04/26/18 10:20	04/26/18 16:33	75-25-2	
Bromomethane	ND	ug/kg	831	1	04/26/18 10:20	04/26/18 16:33	74-83-9	
2-Butanone (MEK)	ND	ug/kg	416	1	04/26/18 10:20	04/26/18 16:33	78-93-3	
n-Butylbenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	104-51-8	
sec-Butylbenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	135-98-8	
tert-Butylbenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	98-06-6	
Carbon tetrachloride	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	56-23-5	
Chlorobenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	108-90-7	
Chloroethane	ND	ug/kg	831	1	04/26/18 10:20	04/26/18 16:33	75-00-3	
Chloroform	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	67-66-3	
Chloromethane	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	74-87-3	
2-Chlorotoluene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	95-49-8	
4-Chlorotoluene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	831	1	04/26/18 10:20	04/26/18 16:33	96-12-8	
Dibromochloromethane	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	106-93-4	
Dibromomethane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	75-71-8	
1,1-Dichloroethane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	75-34-3	
1,2-Dichloroethane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	107-06-2	
1,1-Dichloroethene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	156-60-5	
Dichlorofluoromethane	ND	ug/kg	831	1	04/26/18 10:20	04/26/18 16:33	75-43-4	
1,2-Dichloropropane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	78-87-5	
1,3-Dichloropropane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	142-28-9	
2,2-Dichloropropane	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	594-20-7	
1,1-Dichloropropene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	60-29-7	
Ethylbenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	416	1	04/26/18 10:20	04/26/18 16:33	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-10 (2'-10' WM) **Lab ID: 10427642002** Collected: 04/17/18 12:15 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	98-82-8	
p-Isopropyltoluene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	99-87-6	
Methylene Chloride	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	75-09-2	L2
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	416	1	04/26/18 10:20	04/26/18 16:33	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	1634-04-4	
Naphthalene	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	91-20-3	
n-Propylbenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	103-65-1	
Styrene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	79-34-5	
Tetrachloroethene	**422**	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	127-18-4	
Tetrahydrofuran	ND	ug/kg	3320	1	04/26/18 10:20	04/26/18 16:33	109-99-9	
Toluene	**159**	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	79-00-5	
Trichloroethene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	79-01-6	
Trichlorofluoromethane	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	332	1	04/26/18 10:20	04/26/18 16:33	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	83.1	1	04/26/18 10:20	04/26/18 16:33	108-67-8	
Vinyl chloride	ND	ug/kg	33.2	1	04/26/18 10:20	04/26/18 16:33	75-01-4	
Xylene (Total)	ND	ug/kg	249	1	04/26/18 10:20	04/26/18 16:33	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	04/26/18 10:20	04/26/18 16:33	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	04/26/18 10:20	04/26/18 16:33	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	75-125	1	04/26/18 10:20	04/26/18 16:33	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	25.3	10	04/28/18 10:30	04/30/18 14:42	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**7.4**	mg/kg	1.0	1		05/02/18 08:16	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.45	1	04/25/18 11:00	04/25/18 13:33	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.3**	mg/kg	1.0	1	04/25/18 14:45	04/26/18 01:11	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-11 (4-12 WM) **Lab ID: 10427642003** Collected: 04/17/18 13:24 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	10.6	1	04/25/18 10:56	04/30/18 14:59	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	309-00-2	
alpha-BHC	ND	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	319-84-6	
beta-BHC	ND	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	319-85-7	
delta-BHC	ND	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	58-89-9	
Chlordane (Technical)	ND	ug/kg	1050	50	04/19/18 13:04	04/27/18 00:12	57-74-9	
alpha-Chlordane	ND	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	5103-71-9	
gamma-Chlordane	**130**	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	5103-74-2	
4,4'-DDD	ND	ug/kg	210	50	04/19/18 13:04	04/27/18 00:12	72-54-8	
4,4'-DDE	ND	ug/kg	210	50	04/19/18 13:04	04/27/18 00:12	72-55-9	
4,4'-DDT	ND	ug/kg	210	50	04/19/18 13:04	04/27/18 00:12	50-29-3	
Dieldrin	ND	ug/kg	210	50	04/19/18 13:04	04/27/18 00:12	60-57-1	
Endosulfan I	ND	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	959-98-8	
Endosulfan II	ND	ug/kg	210	50	04/19/18 13:04	04/27/18 00:12	33213-65-9	
Endosulfan sulfate	ND	ug/kg	210	50	04/19/18 13:04	04/27/18 00:12	1031-07-8	
Endrin	ND	ug/kg	210	50	04/19/18 13:04	04/27/18 00:12	72-20-8	
Endrin aldehyde	ND	ug/kg	210	50	04/19/18 13:04	04/27/18 00:12	7421-93-4	
Endrin ketone	ND	ug/kg	210	50	04/19/18 13:04	04/27/18 00:12	53494-70-5	
Heptachlor	**145**	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	76-44-8	
Heptachlor epoxide	**256**	ug/kg	105	50	04/19/18 13:04	04/27/18 00:12	1024-57-3	
Methoxychlor	ND	ug/kg	1050	50	04/19/18 13:04	04/27/18 00:12	72-43-5	
Toxaphene	ND	ug/kg	3160	50	04/19/18 13:04	04/27/18 00:12	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	50	04/19/18 13:04	04/27/18 00:12	877-09-8	2M,D4, S4
Decachlorobiphenyl (S)	0	%.	30-150	50	04/19/18 13:04	04/27/18 00:12	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	41.6	1	04/19/18 13:39	04/23/18 19:24	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	41.6	1	04/19/18 13:39	04/23/18 19:24	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	41.6	1	04/19/18 13:39	04/23/18 19:24	11141-16-5	
PCB-1242 (Aroclor 1242)	**54600**	ug/kg	2080	50	04/19/18 13:39	04/24/18 10:57	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	41.6	1	04/19/18 13:39	04/23/18 19:24	12672-29-6	
PCB-1254 (Aroclor 1254)	**6580**	ug/kg	2080	50	04/19/18 13:39	04/24/18 10:57	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	41.6	1	04/19/18 13:39	04/23/18 19:24	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	41.6	1	04/19/18 13:39	04/23/18 19:24	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	41.6	1	04/19/18 13:39	04/23/18 19:24	11100-14-4	
PCB, Total	**61100**	ug/kg	2080	50	04/19/18 13:39	04/24/18 10:57	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	82	%.	48-125	1	04/19/18 13:39	04/23/18 19:24	877-09-8	
Decachlorobiphenyl (S)	107	%.	30-134	1	04/19/18 13:39	04/23/18 19:24	2051-24-3	CH

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-11 (4-12 WM) **Lab ID: 10427642003** Collected: 04/17/18 13:24 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**485**	mg/kg	129	10	04/19/18 14:54	04/20/18 15:35		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/19/18 14:54	04/20/18 15:35	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	15.7	1	04/27/18 16:39	05/01/18 05:19		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	04/27/18 16:39	05/01/18 05:19	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**9820**	mg/kg	11.8	1	04/20/18 05:22	04/23/18 11:39	7429-90-5	
Barium	**282**	mg/kg	0.59	1	04/20/18 05:22	04/23/18 11:39	7440-39-3	
Boron	**65.4**	mg/kg	8.9	1	04/20/18 05:22	04/23/18 11:39	7440-42-8	
Copper	**43.0**	mg/kg	0.59	1	04/20/18 05:22	04/23/18 11:39	7440-50-8	
Iron	**27800**	mg/kg	14.8	5	04/20/18 05:22	04/23/18 12:49	7439-89-6	
Manganese	**238**	mg/kg	0.30	1	04/20/18 05:22	04/23/18 11:39	7439-96-5	
Nickel	**22.0**	mg/kg	1.2	1	04/20/18 05:22	04/23/18 11:39	7440-02-0	
Silver	ND	mg/kg	0.59	1	04/20/18 05:22	04/23/18 11:39	7440-22-4	
Tin	**6.3**	mg/kg	4.4	1	04/20/18 05:22	04/23/18 11:39	7440-31-5	
Titanium	**411**	mg/kg	1.5	1	04/20/18 05:22	04/23/18 11:39	7440-32-6	
Zinc	**209**	mg/kg	1.2	1	04/20/18 05:22	04/23/18 11:39	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**11.7**	mg/kg	0.23	1	04/25/18 09:25	04/26/18 03:24	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**4.1**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:48	7440-36-0	
Arsenic	**13.6**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:48	7440-38-2	
Beryllium	**1.1**	mg/kg	0.24	20	04/20/18 06:41	04/21/18 04:48	7440-41-7	
Cadmium	**1.9**	mg/kg	0.096	20	04/20/18 06:41	04/21/18 04:48	7440-43-9	
Cobalt	**7.7**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:48	7440-48-4	
Lead	**6520**	mg/kg	1.2	200	04/20/18 06:41	04/23/18 20:05	7439-92-1	
Lithium	**6.8**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:48	7439-93-2	
Selenium	**1.7**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:48	7782-49-2	
Strontium	**87.5**	mg/kg	0.60	20	04/20/18 06:41	04/21/18 04:48	7440-24-6	
Vanadium	**49.0**	mg/kg	1.2	20	04/20/18 06:41	04/21/18 04:48	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.13**	mg/kg	0.022	1	04/20/18 04:53	04/22/18 16:27	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**20.8**	%	0.10	1		04/24/18 13:48		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	**780**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	83-32-9	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-11 (4-12 WM) **Lab ID: 10427642003** Collected: 04/17/18 13:24 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	208-96-8	
Anthracene	**1990**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	120-12-7	
Benzo(a)anthracene	**4470**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	56-55-3	
Benzo(a)pyrene	**3890**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	50-32-8	
Benzo(b)fluoranthene	**4850**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	205-99-2	
Benzo(g,h,i)perylene	**2680**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	191-24-2	
Benzo(k)fluoranthene	**2190**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	101-55-3	
Butylbenzylphthalate	**423**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	85-68-7	
Carbazole	**984**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	59-50-7	
4-Chloroaniline	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	108-60-1	
2-Chloronaphthalene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	91-58-7	
2-Chlorophenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	7005-72-3	
Chrysene	**4660**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	53-70-3	
Dibenzofuran	**482**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	120-83-2	
Diethylphthalate	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	105-67-9	
Dimethylphthalate	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	131-11-3	
Di-n-butylphthalate	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2140	1	04/19/18 19:31	04/25/18 23:03	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	606-20-2	
Di-n-octylphthalate	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	117-81-7	
Fluoranthene	**9750**	ug/kg	832	2	04/19/18 19:31	04/26/18 15:42	206-44-0	
Fluorene	**887**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	87-68-3	
Hexachlorobenzene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	118-74-1	
Hexachloroethane	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	67-72-1	
Indeno(1,2,3-cd)pyrene	**2290**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	193-39-5	
Isophorone	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	78-59-1	
1-Methylnaphthalene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	90-12-0	
2-Methylnaphthalene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-11 (4-12 WM) **Lab ID: 10427642003** Collected: 04/17/18 13:24 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	832	1	04/19/18 19:31	04/25/18 23:03		
Naphthalene	**792**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	91-20-3	
2-Nitroaniline	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	88-74-4	
3-Nitroaniline	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	99-09-2	
4-Nitroaniline	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	100-01-6	
Nitrobenzene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	98-95-3	
2-Nitrophenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	88-75-5	
4-Nitrophenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	86-30-6	
Pentachlorophenol	ND	ug/kg	844	1	04/19/18 19:31	04/25/18 23:03	87-86-5	
Phenanthrene	**6610**	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	85-01-8	
Phenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	108-95-2	
Pyrene	**9500**	ug/kg	832	2	04/19/18 19:31	04/26/18 15:42	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	416	1	04/19/18 19:31	04/25/18 23:03	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	53	%.	43-125	1	04/19/18 19:31	04/25/18 23:03	4165-60-0	
2-Fluorobiphenyl (S)	55	%.	30-132	1	04/19/18 19:31	04/25/18 23:03	321-60-8	
p-Terphenyl-d14 (S)	74	%.	62-125	1	04/19/18 19:31	04/25/18 23:03	1718-51-0	
Phenol-d6 (S)	59	%.	48-125	1	04/19/18 19:31	04/25/18 23:03	13127-88-3	
2-Fluorophenol (S)	53	%.	40-125	1	04/19/18 19:31	04/25/18 23:03	367-12-4	
2,4,6-Tribromophenol (S)	68	%.	60-125	1	04/19/18 19:31	04/25/18 23:03	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**163**	ug/kg	63.0	5	04/19/18 18:12	04/20/18 17:49	83-32-9	
Acenaphthylene	**444**	ug/kg	63.0	5	04/19/18 18:12	04/20/18 17:49	208-96-8	
Anthracene	**954**	ug/kg	63.0	5	04/19/18 18:12	04/20/18 17:49	120-12-7	
Benzo(a)anthracene	**3260**	ug/kg	315	25	04/19/18 18:12	04/23/18 19:06	56-55-3	
Benzo(a)pyrene	**3110**	ug/kg	315	25	04/19/18 18:12	04/23/18 19:06	50-32-8	
Benzo(b)fluoranthene	**3520**	ug/kg	315	25	04/19/18 18:12	04/23/18 19:06	205-99-2	
Benzo(g,h,i)perylene	**1650**	ug/kg	63.0	5	04/19/18 18:12	04/20/18 17:49	191-24-2	
Benzo(k)fluoranthene	**1140**	ug/kg	63.0	5	04/19/18 18:12	04/20/18 17:49	207-08-9	
Chrysene	**2790**	ug/kg	315	25	04/19/18 18:12	04/23/18 19:06	218-01-9	
Dibenz(a,h)anthracene	**457**	ug/kg	63.0	5	04/19/18 18:12	04/20/18 17:49	53-70-3	
Fluoranthene	**5790**	ug/kg	315	25	04/19/18 18:12	04/23/18 19:06	206-44-0	
Fluorene	**237**	ug/kg	63.0	5	04/19/18 18:12	04/20/18 17:49	86-73-7	
Indeno(1,2,3-cd)pyrene	**1370**	ug/kg	63.0	5	04/19/18 18:12	04/20/18 17:49	193-39-5	
Naphthalene	**416**	ug/kg	63.0	5	04/19/18 18:12	04/20/18 17:49	91-20-3	
Phenanthrene	**2730**	ug/kg	315	25	04/19/18 18:12	04/23/18 19:06	85-01-8	
Pyrene	**6120**	ug/kg	315	25	04/19/18 18:12	04/23/18 19:06	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	84	%.	42-125	5	04/19/18 18:12	04/20/18 17:49	321-60-8	D3

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-11 (4-12 WM) **Lab ID: 10427642003** Collected: 04/17/18 13:24 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	89	%.	57-125	5	04/19/18 18:12	04/20/18 17:49	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1450	1	04/26/18 10:20	04/26/18 16:50	67-64-1	
Allyl chloride	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	107-05-1	
Benzene	ND	ug/kg	29.0	1	04/26/18 10:20	04/26/18 16:50	71-43-2	
Bromobenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	108-86-1	
Bromochloromethane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	74-97-5	
Bromodichloromethane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	75-27-4	
Bromoform	ND	ug/kg	726	1	04/26/18 10:20	04/26/18 16:50	75-25-2	
Bromomethane	ND	ug/kg	726	1	04/26/18 10:20	04/26/18 16:50	74-83-9	
2-Butanone (MEK)	ND	ug/kg	363	1	04/26/18 10:20	04/26/18 16:50	78-93-3	
n-Butylbenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	104-51-8	
sec-Butylbenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	135-98-8	
tert-Butylbenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	98-06-6	
Carbon tetrachloride	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	56-23-5	
Chlorobenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	108-90-7	
Chloroethane	ND	ug/kg	726	1	04/26/18 10:20	04/26/18 16:50	75-00-3	
Chloroform	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	67-66-3	
Chloromethane	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	74-87-3	
2-Chlorotoluene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	95-49-8	
4-Chlorotoluene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	726	1	04/26/18 10:20	04/26/18 16:50	96-12-8	
Dibromochloromethane	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	106-93-4	
Dibromomethane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	75-71-8	
1,1-Dichloroethane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	75-34-3	
1,2-Dichloroethane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	107-06-2	
1,1-Dichloroethene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	156-60-5	
Dichlorofluoromethane	ND	ug/kg	726	1	04/26/18 10:20	04/26/18 16:50	75-43-4	
1,2-Dichloropropane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	78-87-5	
1,3-Dichloropropane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	142-28-9	
2,2-Dichloropropane	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	594-20-7	
1,1-Dichloropropene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	60-29-7	
Ethylbenzene	**73.6**	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	363	1	04/26/18 10:20	04/26/18 16:50	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-11 (4-12 WM) **Lab ID: 10427642003** Collected: 04/17/18 13:24 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	98-82-8	
p-Isopropyltoluene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	99-87-6	
Methylene Chloride	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	75-09-2	L2
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	363	1	04/26/18 10:20	04/26/18 16:50	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	1634-04-4	
Naphthalene	**558**	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	91-20-3	
n-Propylbenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	103-65-1	
Styrene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	79-34-5	
Tetrachloroethene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	127-18-4	
Tetrahydrofuran	ND	ug/kg	2900	1	04/26/18 10:20	04/26/18 16:50	109-99-9	
Toluene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	79-00-5	
Trichloroethene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	79-01-6	
Trichlorofluoromethane	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	290	1	04/26/18 10:20	04/26/18 16:50	76-13-1	
1,2,4-Trimethylbenzene	**73.5**	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	72.6	1	04/26/18 10:20	04/26/18 16:50	108-67-8	
Vinyl chloride	ND	ug/kg	29.0	1	04/26/18 10:20	04/26/18 16:50	75-01-4	
Xylene (Total)	ND	ug/kg	218	1	04/26/18 10:20	04/26/18 16:50	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%.	75-125	1	04/26/18 10:20	04/26/18 16:50	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	04/26/18 10:20	04/26/18 16:50	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	04/26/18 10:20	04/26/18 16:50	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	49.5	20	04/28/18 10:30	04/30/18 14:42	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**11.7**	mg/kg	1.0	1		05/02/18 08:16	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.48	1	04/25/18 11:00	04/25/18 13:37	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.98	1	04/25/18 14:45	04/25/18 23:53	16984-48-8	M1

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-12 (3-12) **Lab ID: 10427642004** Collected: 04/17/18 14:37 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	14.1	1	04/25/18 10:56	04/30/18 15:06	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	309-00-2	
alpha-BHC	ND	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	319-84-6	
beta-BHC	ND	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	319-85-7	
delta-BHC	ND	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	58-89-9	
Chlordane (Technical)	ND	ug/kg	116	5	04/19/18 13:04	04/26/18 23:17	57-74-9	
alpha-Chlordane	**19.0**	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	5103-71-9	
gamma-Chlordane	**15.1**	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	5103-74-2	
4,4'-DDD	ND	ug/kg	23.0	5	04/19/18 13:04	04/26/18 23:17	72-54-8	
4,4'-DDE	ND	ug/kg	23.0	5	04/19/18 13:04	04/26/18 23:17	72-55-9	
4,4'-DDT	ND	ug/kg	23.0	5	04/19/18 13:04	04/26/18 23:17	50-29-3	
Dieldrin	ND	ug/kg	23.0	5	04/19/18 13:04	04/26/18 23:17	60-57-1	
Endosulfan I	ND	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	959-98-8	
Endosulfan II	ND	ug/kg	23.0	5	04/19/18 13:04	04/26/18 23:17	33213-65-9	
Endosulfan sulfate	ND	ug/kg	23.0	5	04/19/18 13:04	04/26/18 23:17	1031-07-8	
Endrin	ND	ug/kg	23.0	5	04/19/18 13:04	04/26/18 23:17	72-20-8	
Endrin aldehyde	ND	ug/kg	23.0	5	04/19/18 13:04	04/26/18 23:17	7421-93-4	
Endrin ketone	ND	ug/kg	23.0	5	04/19/18 13:04	04/26/18 23:17	53494-70-5	
Heptachlor	ND	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	76-44-8	
Heptachlor epoxide	ND	ug/kg	11.6	5	04/19/18 13:04	04/26/18 23:17	1024-57-3	
Methoxychlor	ND	ug/kg	116	5	04/19/18 13:04	04/26/18 23:17	72-43-5	
Toxaphene	ND	ug/kg	346	5	04/19/18 13:04	04/26/18 23:17	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	84	%.	30-150	5	04/19/18 13:04	04/26/18 23:17	877-09-8	5M,D4
Decachlorobiphenyl (S)	91	%.	30-150	5	04/19/18 13:04	04/26/18 23:17	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	11141-16-5	
PCB-1242 (Aroclor 1242)	**604**	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	12672-29-6	
PCB-1254 (Aroclor 1254)	**155**	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	11100-14-4	
PCB, Total	**759**	ug/kg	45.6	1	04/19/18 13:39	04/23/18 18:21	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	69	%.	48-125	1	04/19/18 13:39	04/23/18 18:21	877-09-8	
Decachlorobiphenyl (S)	107	%.	30-134	1	04/19/18 13:39	04/23/18 18:21	2051-24-3	CH
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**222**	mg/kg	13.2	1	04/19/18 14:54	04/20/18 15:49		T6

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-12 (3-12) **Lab ID: 10427642004** Collected: 04/17/18 14:37 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	73	%.	50-150	1	04/19/18 14:54	04/20/18 15:49	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**37.5**	mg/kg	15.8	1	04/27/18 16:39	05/01/18 05:43		
Surrogates								
a,a,a-Trifluorotoluene (S)	97	%.	80-150	1	04/27/18 16:39	05/01/18 05:43	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**10900**	mg/kg	13.2	1	04/20/18 05:22	04/23/18 11:42	7429-90-5	
Barium	**109**	mg/kg	0.66	1	04/20/18 05:22	04/23/18 11:42	7440-39-3	
Boron	**198**	mg/kg	9.9	1	04/20/18 05:22	04/23/18 11:42	7440-42-8	
Copper	**31.6**	mg/kg	0.66	1	04/20/18 05:22	04/23/18 11:42	7440-50-8	
Iron	**38800**	mg/kg	16.5	5	04/20/18 05:22	04/23/18 12:52	7439-89-6	
Manganese	**145**	mg/kg	0.33	1	04/20/18 05:22	04/23/18 11:42	7439-96-5	
Nickel	**27.4**	mg/kg	1.3	1	04/20/18 05:22	04/23/18 11:42	7440-02-0	
Silver	ND	mg/kg	0.66	1	04/20/18 05:22	04/23/18 11:42	7440-22-4	
Tin	ND	mg/kg	5.0	1	04/20/18 05:22	04/23/18 11:42	7440-31-5	
Titanium	**478**	mg/kg	1.7	1	04/20/18 05:22	04/23/18 11:42	7440-32-6	
Zinc	**171**	mg/kg	1.3	1	04/20/18 05:22	04/23/18 11:42	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**11.4**	mg/kg	0.26	1	04/25/18 09:25	04/26/18 03:28	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.2**	mg/kg	0.67	20	04/20/18 06:41	04/23/18 20:09	7440-36-0	
Arsenic	**17.3**	mg/kg	0.67	20	04/20/18 06:41	04/23/18 20:09	7440-38-2	
Beryllium	**2.9**	mg/kg	0.27	20	04/20/18 06:41	04/23/18 20:09	7440-41-7	
Cadmium	**1.9**	mg/kg	0.11	20	04/20/18 06:41	04/23/18 20:09	7440-43-9	
Cobalt	**7.2**	mg/kg	0.67	20	04/20/18 06:41	04/23/18 20:09	7440-48-4	
Lead	**28.5**	mg/kg	0.13	20	04/20/18 06:41	04/23/18 20:09	7439-92-1	
Lithium	**10.8**	mg/kg	0.67	20	04/20/18 06:41	04/23/18 20:09	7439-93-2	
Selenium	**5.4**	mg/kg	0.67	20	04/20/18 06:41	04/23/18 20:09	7782-49-2	
Strontium	**66.6**	mg/kg	0.67	20	04/20/18 06:41	04/23/18 20:09	7440-24-6	
Vanadium	**81.3**	mg/kg	1.3	20	04/20/18 06:41	04/23/18 20:09	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.14**	mg/kg	0.026	1	04/20/18 04:53	04/22/18 16:29	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**27.9**	%	0.10	1		04/24/18 13:49		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	83-32-9	
Acenaphthylene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-12 (3-12) **Lab ID: 10427642004** Collected: 04/17/18 14:37 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	120-12-7	
Benzo(a)anthracene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	56-55-3	
Benzo(a)pyrene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	101-55-3	
Butylbenzylphthalate	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	85-68-7	
Carbazole	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	59-50-7	
4-Chloroaniline	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	108-60-1	
2-Chloronaphthalene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	91-58-7	
2-Chlorophenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	7005-72-3	
Chrysene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	53-70-3	
Dibenzofuran	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	120-83-2	
Diethylphthalate	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	105-67-9	
Dimethylphthalate	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	131-11-3	
Di-n-butylphthalate	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2350	1	04/19/18 19:31	04/25/18 19:42	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	606-20-2	
Di-n-octylphthalate	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	117-81-7	
Fluoranthene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	206-44-0	
Fluorene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	87-68-3	
Hexachlorobenzene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	118-74-1	
Hexachloroethane	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	193-39-5	
Isophorone	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	78-59-1	
1-Methylnaphthalene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	90-12-0	
2-Methylnaphthalene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-12 (3-12) **Lab ID: 10427642004** Collected: 04/17/18 14:37 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	914	1	04/19/18 19:31	04/25/18 19:42		
Naphthalene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	91-20-3	
2-Nitroaniline	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	88-74-4	
3-Nitroaniline	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	99-09-2	
4-Nitroaniline	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	100-01-6	
Nitrobenzene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	98-95-3	
2-Nitrophenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	88-75-5	
4-Nitrophenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	86-30-6	
Pentachlorophenol	ND	ug/kg	928	1	04/19/18 19:31	04/25/18 19:42	87-86-5	
Phenanthrene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	85-01-8	
Phenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	108-95-2	
Pyrene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	457	1	04/19/18 19:31	04/25/18 19:42	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	42	%.	43-125	1	04/19/18 19:31	04/25/18 19:42	4165-60-0	S0
2-Fluorobiphenyl (S)	49	%.	30-132	1	04/19/18 19:31	04/25/18 19:42	321-60-8	
p-Terphenyl-d14 (S)	64	%.	62-125	1	04/19/18 19:31	04/25/18 19:42	1718-51-0	
Phenol-d6 (S)	48	%.	48-125	1	04/19/18 19:31	04/25/18 19:42	13127-88-3	
2-Fluorophenol (S)	45	%.	40-125	1	04/19/18 19:31	04/25/18 19:42	367-12-4	
2,4,6-Tribromophenol (S)	63	%.	60-125	1	04/19/18 19:31	04/25/18 19:42	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**49.1**	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	83-32-9	M1
Acenaphthylene	ND	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	208-96-8	
Anthracene	**94.1**	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	120-12-7	M1,R1
Benzo(a)anthracene	**660**	ug/kg	69.3	5	04/19/18 18:12	04/23/18 18:45	56-55-3	M1
Benzo(a)pyrene	**680**	ug/kg	69.3	5	04/19/18 18:12	04/23/18 18:45	50-32-8	M1,R1
Benzo(b)fluoranthene	**879**	ug/kg	69.3	5	04/19/18 18:12	04/23/18 18:45	205-99-2	M1,R1
Benzo(g,h,i)perylene	**358**	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	191-24-2	M1
Benzo(k)fluoranthene	**293**	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	207-08-9	M1
Chrysene	**570**	ug/kg	69.3	5	04/19/18 18:12	04/23/18 18:45	218-01-9	M1
Dibenz(a,h)anthracene	**88.8**	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	53-70-3	M1
Fluoranthene	**1040**	ug/kg	69.3	5	04/19/18 18:12	04/23/18 18:45	206-44-0	M1,R1
Fluorene	**43.3**	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	86-73-7	M1
Indeno(1,2,3-cd)pyrene	**308**	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	193-39-5	M1
Naphthalene	**106**	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	91-20-3	M1
Phenanthrene	**318**	ug/kg	13.9	1	04/19/18 18:12	04/20/18 15:44	85-01-8	M1
Pyrene	**872**	ug/kg	69.3	5	04/19/18 18:12	04/23/18 18:45	129-00-0	M1,R1
Surrogates								
2-Fluorobiphenyl (S)	86	%.	42-125	1	04/19/18 18:12	04/20/18 15:44	321-60-8	
p-Terphenyl-d14 (S)	92	%.	57-125	1	04/19/18 18:12	04/20/18 15:44	1718-51-0	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-12 (3-12) **Lab ID: 10427642004** Collected: 04/17/18 14:37 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1480	1	04/26/18 10:20	04/26/18 17:07	67-64-1	
Allyl chloride	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	107-05-1	
Benzene	**73.8**	ug/kg	29.6	1	04/26/18 10:20	04/26/18 17:07	71-43-2	
Bromobenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	108-86-1	
Bromochloromethane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	74-97-5	
Bromodichloromethane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	75-27-4	
Bromoform	ND	ug/kg	740	1	04/26/18 10:20	04/26/18 17:07	75-25-2	
Bromomethane	ND	ug/kg	740	1	04/26/18 10:20	04/26/18 17:07	74-83-9	
2-Butanone (MEK)	ND	ug/kg	370	1	04/26/18 10:20	04/26/18 17:07	78-93-3	
n-Butylbenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	104-51-8	
sec-Butylbenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	135-98-8	
tert-Butylbenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	98-06-6	
Carbon tetrachloride	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	56-23-5	
Chlorobenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	108-90-7	
Chloroethane	ND	ug/kg	740	1	04/26/18 10:20	04/26/18 17:07	75-00-3	
Chloroform	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	67-66-3	
Chloromethane	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	74-87-3	
2-Chlorotoluene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	95-49-8	
4-Chlorotoluene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	740	1	04/26/18 10:20	04/26/18 17:07	96-12-8	
Dibromochloromethane	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	106-93-4	
Dibromomethane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	75-71-8	
1,1-Dichloroethane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	75-34-3	
1,2-Dichloroethane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	107-06-2	
1,1-Dichloroethene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	156-60-5	
Dichlorofluoromethane	ND	ug/kg	740	1	04/26/18 10:20	04/26/18 17:07	75-43-4	
1,2-Dichloropropane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	78-87-5	
1,3-Dichloropropane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	142-28-9	
2,2-Dichloropropane	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	594-20-7	
1,1-Dichloropropene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	60-29-7	
Ethylbenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	370	1	04/26/18 10:20	04/26/18 17:07	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	98-82-8	
p-Isopropyltoluene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	99-87-6	
Methylene Chloride	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	75-09-2	L2
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	370	1	04/26/18 10:20	04/26/18 17:07	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-12 (3-12) **Lab ID: 10427642004** Collected: 04/17/18 14:37 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	1634-04-4	
Naphthalene	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	91-20-3	
n-Propylbenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	103-65-1	
Styrene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	79-34-5	
Tetrachloroethene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	127-18-4	
Tetrahydrofuran	ND	ug/kg	2960	1	04/26/18 10:20	04/26/18 17:07	109-99-9	
Toluene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	79-00-5	
Trichloroethene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	79-01-6	
Trichlorofluoromethane	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	296	1	04/26/18 10:20	04/26/18 17:07	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	74.0	1	04/26/18 10:20	04/26/18 17:07	108-67-8	
Vinyl chloride	ND	ug/kg	29.6	1	04/26/18 10:20	04/26/18 17:07	75-01-4	
Xylene (Total)	ND	ug/kg	222	1	04/26/18 10:20	04/26/18 17:07	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	04/26/18 10:20	04/26/18 17:07	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1	04/26/18 10:20	04/26/18 17:07	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	75-125	1	04/26/18 10:20	04/26/18 17:07	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	27.4	10	04/28/18 10:30	04/30/18 14:43	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**11.4**	mg/kg	1.0	1		05/02/18 08:16	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.51	1	04/25/18 11:00	04/25/18 13:37	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**1.9**	mg/kg	0.99	1	04/25/18 14:45	04/26/18 01:31	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-13 (3-12) **Lab ID: 10427642005** Collected: 04/17/18 15:30 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	30.3	1	04/25/18 10:56	04/30/18 15:13	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	309-00-2	
alpha-BHC	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	319-84-6	
beta-BHC	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	319-85-7	
delta-BHC	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	58-89-9	
Chlordane (Technical)	ND	ug/kg	500	10	04/19/18 13:04	04/26/18 22:59	57-74-9	
alpha-Chlordane	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	5103-71-9	
gamma-Chlordane	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	5103-74-2	
4,4'-DDD	ND	ug/kg	99.7	10	04/19/18 13:04	04/26/18 22:59	72-54-8	
4,4'-DDE	ND	ug/kg	99.7	10	04/19/18 13:04	04/26/18 22:59	72-55-9	
4,4'-DDT	ND	ug/kg	99.7	10	04/19/18 13:04	04/26/18 22:59	50-29-3	
Dieldrin	ND	ug/kg	99.7	10	04/19/18 13:04	04/26/18 22:59	60-57-1	
Endosulfan I	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	959-98-8	
Endosulfan II	ND	ug/kg	99.7	10	04/19/18 13:04	04/26/18 22:59	33213-65-9	
Endosulfan sulfate	ND	ug/kg	99.7	10	04/19/18 13:04	04/26/18 22:59	1031-07-8	
Endrin	ND	ug/kg	99.7	10	04/19/18 13:04	04/26/18 22:59	72-20-8	
Endrin aldehyde	ND	ug/kg	99.7	10	04/19/18 13:04	04/26/18 22:59	7421-93-4	
Endrin ketone	ND	ug/kg	99.7	10	04/19/18 13:04	04/26/18 22:59	53494-70-5	
Heptachlor	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	76-44-8	
Heptachlor epoxide	ND	ug/kg	50.0	10	04/19/18 13:04	04/26/18 22:59	1024-57-3	
Methoxychlor	ND	ug/kg	500	10	04/19/18 13:04	04/26/18 22:59	72-43-5	
Toxaphene	ND	ug/kg	1500	10	04/19/18 13:04	04/26/18 22:59	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	10	04/19/18 13:04	04/26/18 22:59	877-09-8	6M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	10	04/19/18 13:04	04/26/18 22:59	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	98.5	1	04/19/18 13:39	04/23/18 18:37	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	98.5	1	04/19/18 13:39	04/23/18 18:37	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	98.5	1	04/19/18 13:39	04/23/18 18:37	11141-16-5	
PCB-1242 (Aroclor 1242)	**33000**	ug/kg	985	10	04/19/18 13:39	04/24/18 10:10	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	98.5	1	04/19/18 13:39	04/23/18 18:37	12672-29-6	
PCB-1254 (Aroclor 1254)	**11200**	ug/kg	985	10	04/19/18 13:39	04/24/18 10:10	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	98.5	1	04/19/18 13:39	04/23/18 18:37	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	98.5	1	04/19/18 13:39	04/23/18 18:37	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	98.5	1	04/19/18 13:39	04/23/18 18:37	11100-14-4	
PCB, Total	**44200**	ug/kg	985	10	04/19/18 13:39	04/24/18 10:10	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	99	%.	48-125	1	04/19/18 13:39	04/23/18 18:37	877-09-8	
Decachlorobiphenyl (S)	95	%.	30-134	1	04/19/18 13:39	04/23/18 18:37	2051-24-3	CH

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-13 (3-12) **Lab ID: 10427642005** Collected: 04/17/18 15:30 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**3790**	mg/kg	609	20	04/19/18 14:54	04/21/18 09:58		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	04/19/18 14:54	04/21/18 09:58	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**854**	mg/kg	34.4	1	04/27/18 16:39	05/01/18 06:07		
Surrogates								
a,a,a-Trifluorotoluene (S)	96	%.	80-150	1	04/27/18 16:39	05/01/18 06:07	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**7360**	mg/kg	28.0	1	04/20/18 05:22	04/23/18 11:45	7429-90-5	
Barium	**289**	mg/kg	1.4	1	04/20/18 05:22	04/23/18 11:45	7440-39-3	
Boron	**167**	mg/kg	21.0	1	04/20/18 05:22	04/23/18 11:45	7440-42-8	
Copper	**96.5**	mg/kg	1.4	1	04/20/18 05:22	04/23/18 11:45	7440-50-8	
Iron	**72600**	mg/kg	35.0	5	04/20/18 05:22	04/23/18 12:55	7439-89-6	
Manganese	**806**	mg/kg	0.70	1	04/20/18 05:22	04/23/18 11:45	7439-96-5	
Nickel	**23.8**	mg/kg	2.8	1	04/20/18 05:22	04/23/18 11:45	7440-02-0	
Silver	ND	mg/kg	1.4	1	04/20/18 05:22	04/23/18 11:45	7440-22-4	
Tin	**33.1**	mg/kg	10.5	1	04/20/18 05:22	04/23/18 11:45	7440-31-5	
Titanium	**193**	mg/kg	3.5	1	04/20/18 05:22	04/23/18 11:45	7440-32-6	
Zinc	**553**	mg/kg	2.8	1	04/20/18 05:22	04/23/18 11:45	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**12.6**	mg/kg	0.57	1	04/25/18 09:25	04/26/18 03:33	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**5.0**	mg/kg	1.4	20	04/20/18 06:41	04/23/18 20:14	7440-36-0	
Arsenic	**5.8**	mg/kg	1.4	20	04/20/18 06:41	04/23/18 20:14	7440-38-2	
Beryllium	ND	mg/kg	0.57	20	04/20/18 06:41	04/23/18 20:14	7440-41-7	
Cadmium	**2.4**	mg/kg	0.23	20	04/20/18 06:41	04/23/18 20:14	7440-43-9	
Cobalt	**3.5**	mg/kg	1.4	20	04/20/18 06:41	04/23/18 20:14	7440-48-4	
Lead	**94.3**	mg/kg	0.29	20	04/20/18 06:41	04/23/18 20:14	7439-92-1	
Lithium	**2.1**	mg/kg	1.4	20	04/20/18 06:41	04/23/18 20:14	7439-93-2	
Selenium	ND	mg/kg	1.4	20	04/20/18 06:41	04/23/18 20:14	7782-49-2	
Strontium	**41.3**	mg/kg	1.4	20	04/20/18 06:41	04/23/18 20:14	7440-24-6	
Vanadium	**22.1**	mg/kg	2.9	20	04/20/18 06:41	04/23/18 20:14	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.75**	mg/kg	0.053	1	04/20/18 04:53	04/22/18 16:31	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**66.6**	%	0.10	1		04/24/18 13:49		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	83-32-9	

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-13 (3-12) **Lab ID: 10427642005** Collected: 04/17/18 15:30 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	208-96-8	
Anthracene	**3520**	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	120-12-7	
Benzo(a)anthracene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	56-55-3	
Benzo(a)pyrene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	101-55-3	
Butylbenzylphthalate	**1490**	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	85-68-7	
Carbazole	**1430**	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	59-50-7	
4-Chloroaniline	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	108-60-1	
2-Chloronaphthalene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	91-58-7	
2-Chlorophenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	7005-72-3	
Chrysene	**993**	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	53-70-3	
Dibenzofuran	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	120-83-2	
Diethylphthalate	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	105-67-9	
Dimethylphthalate	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	131-11-3	
Di-n-butylphthalate	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	5080	1	04/19/18 19:31	04/26/18 15:08	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	606-20-2	
Di-n-octylphthalate	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	122-66-7	
bis(2-Ethylhexyl)phthalate	**125000**	ug/kg	9850	10	04/19/18 19:31	04/26/18 16:40	117-81-7	
Fluoranthene	**2730**	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	206-44-0	
Fluorene	**1390**	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	87-68-3	
Hexachlorobenzene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	118-74-1	
Hexachloroethane	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	193-39-5	
Isophorone	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	78-59-1	
1-Methylnaphthalene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	90-12-0	
2-Methylnaphthalene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	91-57-6	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-13 (3-12) **Lab ID: 10427642005** Collected: 04/17/18 15:30 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1970	1	04/19/18 19:31	04/26/18 15:08		
Naphthalene	**1650**	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	91-20-3	
2-Nitroaniline	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	88-74-4	
3-Nitroaniline	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	99-09-2	
4-Nitroaniline	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	100-01-6	
Nitrobenzene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	98-95-3	
2-Nitrophenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	88-75-5	
4-Nitrophenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	86-30-6	
Pentachlorophenol	ND	ug/kg	2000	1	04/19/18 19:31	04/26/18 15:08	87-86-5	
Phenanthrene	**4060**	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	85-01-8	
Phenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	108-95-2	
Pyrene	**1890**	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	985	1	04/19/18 19:31	04/26/18 15:08	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	43	%.	43-125	1	04/19/18 19:31	04/26/18 15:08	4165-60-0	
2-Fluorobiphenyl (S)	48	%.	30-132	1	04/19/18 19:31	04/26/18 15:08	321-60-8	
p-Terphenyl-d14 (S)	60	%.	62-125	1	04/19/18 19:31	04/26/18 15:08	1718-51-0	S5
Phenol-d6 (S)	50	%.	48-125	1	04/19/18 19:31	04/26/18 15:08	13127-88-3	
2-Fluorophenol (S)	45	%.	40-125	1	04/19/18 19:31	04/26/18 15:08	367-12-4	
2,4,6-Tribromophenol (S)	55	%.	60-125	1	04/19/18 19:31	04/26/18 15:08	118-79-6	S5
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**887**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	83-32-9	
Acenaphthylene	ND	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	208-96-8	
Anthracene	**5550**	ug/kg	299	10	04/19/18 18:12	04/23/18 18:03	120-12-7	
Benzo(a)anthracene	**643**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	56-55-3	
Benzo(a)pyrene	**317**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	50-32-8	
Benzo(b)fluoranthene	**507**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	205-99-2	
Benzo(g,h,i)perylene	**150**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	191-24-2	
Benzo(k)fluoranthene	**207**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	207-08-9	
Chrysene	**1130**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	53-70-3	
Fluoranthene	**2760**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	206-44-0	
Fluorene	**1560**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	193-39-5	
Naphthalene	**2480**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	91-20-3	
Phenanthrene	**4450**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	85-01-8	
Pyrene	**1860**	ug/kg	149	5	04/19/18 18:12	04/20/18 18:09	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	88	%.	42-125	5	04/19/18 18:12	04/20/18 18:09	321-60-8	D3

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-13 (3-12) **Lab ID: 10427642005** Collected: 04/17/18 15:30 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	93	%.	57-125	5	04/19/18 18:12	04/20/18 18:09	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	3030	1	04/26/18 10:20	04/26/18 14:19	67-64-1	
Allyl chloride	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	107-05-1	
Benzene	ND	ug/kg	60.6	1	04/26/18 10:20	04/26/18 14:19	71-43-2	
Bromobenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	108-86-1	
Bromochloromethane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	74-97-5	
Bromodichloromethane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	75-27-4	
Bromoform	ND	ug/kg	1520	1	04/26/18 10:20	04/26/18 14:19	75-25-2	
Bromomethane	ND	ug/kg	1520	1	04/26/18 10:20	04/26/18 14:19	74-83-9	
2-Butanone (MEK)	ND	ug/kg	758	1	04/26/18 10:20	04/26/18 14:19	78-93-3	
n-Butylbenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	104-51-8	
sec-Butylbenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	135-98-8	
tert-Butylbenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	98-06-6	
Carbon tetrachloride	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	56-23-5	
Chlorobenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	108-90-7	
Chloroethane	ND	ug/kg	1520	1	04/26/18 10:20	04/26/18 14:19	75-00-3	
Chloroform	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	67-66-3	
Chloromethane	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	74-87-3	
2-Chlorotoluene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	95-49-8	
4-Chlorotoluene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1520	1	04/26/18 10:20	04/26/18 14:19	96-12-8	
Dibromochloromethane	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	106-93-4	
Dibromomethane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	75-71-8	
1,1-Dichloroethane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	75-34-3	
1,2-Dichloroethane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	107-06-2	
1,1-Dichloroethene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1520	1	04/26/18 10:20	04/26/18 14:19	75-43-4	
1,2-Dichloropropane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	78-87-5	
1,3-Dichloropropane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	142-28-9	
2,2-Dichloropropane	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	594-20-7	
1,1-Dichloropropene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	60-29-7	
Ethylbenzene	**435**	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	100-41-4	D6
Hexachloro-1,3-butadiene	ND	ug/kg	758	1	04/26/18 10:20	04/26/18 14:19	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Sample: FD-TT-13 (3-12) **Lab ID: 10427642005** Collected: 04/17/18 15:30 Received: 04/17/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	98-82-8	
p-Isopropyltoluene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	99-87-6	
Methylene Chloride	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	75-09-2	L2
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	758	1	04/26/18 10:20	04/26/18 14:19	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	1634-04-4	
Naphthalene	**972**	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	91-20-3	D6
n-Propylbenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	103-65-1	
Styrene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	79-34-5	
Tetrachloroethene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	127-18-4	
Tetrahydrofuran	ND	ug/kg	6060	1	04/26/18 10:20	04/26/18 14:19	109-99-9	
Toluene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	79-00-5	
Trichloroethene	ND	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	79-01-6	
Trichlorofluoromethane	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	606	1	04/26/18 10:20	04/26/18 14:19	76-13-1	
1,2,4-Trimethylbenzene	**538**	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	95-63-6	D6
1,3,5-Trimethylbenzene	**156**	ug/kg	152	1	04/26/18 10:20	04/26/18 14:19	108-67-8	D6
Vinyl chloride	ND	ug/kg	60.6	1	04/26/18 10:20	04/26/18 14:19	75-01-4	
Xylene (Total)	**1350**	ug/kg	455	1	04/26/18 10:20	04/26/18 14:19	1330-20-7	D6
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	04/26/18 10:20	04/26/18 14:19	17060-07-0	1M
Toluene-d8 (S)	96	%.	75-125	1	04/26/18 10:20	04/26/18 14:19	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1	04/26/18 10:20	04/26/18 14:19	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	60.6	10	04/28/18 10:30	04/30/18 14:43	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**12.6**	mg/kg	1.0	1		05/02/18 08:16	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**2.4**	mg/kg	1.7	1	04/25/18 11:00	04/25/18 13:40	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	04/25/18 14:45	04/26/18 00:52	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 141683 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 560161 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.05	04/30/18 13:39	N3

METHOD BLANK: 560162 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	2.98	04/30/18 13:46	N3

METHOD BLANK: 560163 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.04	04/30/18 13:53	N3

LABORATORY CONTROL SAMPLE: 560164

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	104	119	115	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 560165 560166

Parameter	Units	10427354001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	357	357	354	388	99	108	65-135	9	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 534800 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2905429 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	04/30/18 21:12	
a,a,a-Trifluorotoluene (S)	%.	98	80-150	04/30/18 21:12	

LABORATORY CONTROL SAMPLE & LCSD: 2905430 2905431

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	42.8	41.3	86	83	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%.				98	97	80-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2905441 2905442

Parameter	Units	10428528007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	57.9	56.1	49.4	46.5	85	83	80-120	6	20	
a,a,a-Trifluorotoluene (S)	%.						99	99	80-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 533419 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2897699 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	04/22/18 15:58	

LABORATORY CONTROL SAMPLE: 2897700

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.48	0.53	110	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897701 2897702

Parameter	Units	10426879001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	<0.018	.47	.5	0.48	0.46	103	93	80-120	4	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 533415 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2897683 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	10.0	04/23/18 10:48	
Barium	mg/kg	ND	0.50	04/23/18 10:48	
Boron	mg/kg	ND	7.5	04/23/18 10:48	
Copper	mg/kg	ND	0.50	04/23/18 10:48	
Iron	mg/kg	ND	2.5	04/23/18 10:48	
Manganese	mg/kg	ND	0.25	04/23/18 10:48	
Nickel	mg/kg	ND	1.0	04/23/18 10:48	
Silver	mg/kg	ND	0.50	04/23/18 10:48	
Tin	mg/kg	ND	3.8	04/23/18 10:48	
Titanium	mg/kg	ND	1.2	04/23/18 10:48	
Zinc	mg/kg	ND	1.0	04/23/18 10:48	

LABORATORY CONTROL SAMPLE: 2897684

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	1000	997	100	80-120	
Barium	mg/kg	50	51.0	102	80-120	
Boron	mg/kg	50	46.7	93	80-120	
Copper	mg/kg	50	49.1	98	80-120	
Iron	mg/kg	1000	1010	101	80-120	
Manganese	mg/kg	50	50.9	102	80-120	
Nickel	mg/kg	50	49.8	100	80-120	
Silver	mg/kg	25	23.5	94	80-120	
Tin	mg/kg	50	49.4	99	80-120	
Titanium	mg/kg	50	49.8	100	80-120	
Zinc	mg/kg	50	48.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897685 2897686

Parameter	Units	10427793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	34800	990	952	35400	35400	64	61	75-125	0	20	P6
Barium	mg/kg	1320	49.5	47.6	1320	1320	-1	0	75-125	0	20	P6
Boron	mg/kg	43.3	49.5	47.6	87.4	85.7	89	89	75-125	2	20	
Copper	mg/kg	2140	49.5	47.6	2090	2100	-85	-66	75-125	1	20	P6
Iron	mg/kg	31500	990	952	31000	31000	-51	-51	75-125	0	20	P6
Manganese	mg/kg	8040	49.5	47.6	7800	8030	-469	-22	75-125	3	20	P6
Nickel	mg/kg	113	49.5	47.6	148	147	70	71	75-125	1	20	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897685 2897686

Parameter	Units	10427793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	18.5	24.8	23.8	48.7	49.0	122	128	75-125	1	20	M1
Tin	mg/kg	94.8	49.5	47.6	127	127	66	67	75-125	1	20	M1
Titanium	mg/kg	1650	49.5	47.6	1620	1690	-64	67	75-125	4	20	P6
Zinc	mg/kg	1960	49.5	47.6	1950	1930	-21	-53	75-125	1	20	P6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 438855 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2027873 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.19	04/26/18 02:38	N2

LABORATORY CONTROL SAMPLE: 2027874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.9	106	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2027875 2027876

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	5.4	4.87	4.87	7.0	6.1	34	15	75-125	14	20	M0,N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 533412 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2897671 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.48	04/21/18 02:51	
Arsenic	mg/kg	ND	0.48	04/21/18 02:51	
Beryllium	mg/kg	ND	0.19	04/21/18 02:51	
Cadmium	mg/kg	ND	0.076	04/21/18 02:51	
Cobalt	mg/kg	ND	0.48	04/21/18 02:51	
Lead	mg/kg	ND	0.095	04/23/18 17:49	
Lithium	mg/kg	ND	0.48	04/21/18 02:51	
Selenium	mg/kg	ND	0.48	04/21/18 02:51	
Strontium	mg/kg	ND	0.48	04/21/18 02:51	
Vanadium	mg/kg	ND	0.95	04/21/18 02:51	

LABORATORY CONTROL SAMPLE: 2897672

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	47.6	47.6	100	80-120	
Arsenic	mg/kg	47.6	47.9	101	80-120	
Beryllium	mg/kg	47.6	47.3	99	80-120	
Cadmium	mg/kg	47.6	47.1	99	80-120	
Cobalt	mg/kg	47.6	49.3	104	80-120	
Lead	mg/kg	47.6	48.7	102	80-120	
Lithium	mg/kg	47.6	45.4	95	80-120	
Selenium	mg/kg	47.6	47.6	100	80-120	
Strontium	mg/kg	47.6	47.2	99	80-120	
Vanadium	mg/kg	47.6	47.7	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897673 2897674

Parameter	Units	10427861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	0.59	49.5	48.5	21.6	20.0	42	40	75-125	8	20	M6
Arsenic	mg/kg	18.4	49.5	48.5	70.6	64.2	105	94	75-125	9	20	
Beryllium	mg/kg	0.60	49.5	48.5	46.4	44.0	92	90	75-125	5	20	
Cadmium	mg/kg	0.45	49.5	48.5	51.2	46.6	103	95	75-125	9	20	
Cobalt	mg/kg	6.1	49.5	48.5	59.2	53.9	107	99	75-125	9	20	
Lead	mg/kg	39.8	49.5	48.5	87.6	85.0	97	93	75-125	3	20	
Lithium	mg/kg	11.0	49.5	48.5	55.2	54.2	89	89	75-125	2	20	
Selenium	mg/kg	1.0	49.5	48.5	49.9	46.1	99	93	75-125	8	20	
Strontium	mg/kg	136	49.5	48.5	199	177	127	85	75-125	11	20	M6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897673 2897674

Parameter	Units	10427861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vanadium	mg/kg	22.3	49.5	48.5	76.0	68.8	108	96	75-125	10	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 534034 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

SAMPLE DUPLICATE: 2901166

Parameter	Units	10428311003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.7	14.8	8	30	

SAMPLE DUPLICATE: 2901255

Parameter	Units	10427906006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.4	21.5	0	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 534461 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2903647 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	04/26/18 13:11	
1,1,1-Trichloroethane	ug/kg	ND	50.0	04/26/18 13:11	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	04/26/18 13:11	
1,1,2-Trichloroethane	ug/kg	ND	50.0	04/26/18 13:11	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	04/26/18 13:11	
1,1-Dichloroethane	ug/kg	ND	50.0	04/26/18 13:11	
1,1-Dichloroethene	ug/kg	ND	50.0	04/26/18 13:11	
1,1-Dichloropropene	ug/kg	ND	50.0	04/26/18 13:11	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	04/26/18 13:11	
1,2,3-Trichloropropane	ug/kg	ND	200	04/26/18 13:11	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	04/26/18 13:11	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	04/26/18 13:11	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	04/26/18 13:11	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	04/26/18 13:11	
1,2-Dichlorobenzene	ug/kg	ND	50.0	04/26/18 13:11	
1,2-Dichloroethane	ug/kg	ND	50.0	04/26/18 13:11	
1,2-Dichloropropane	ug/kg	ND	50.0	04/26/18 13:11	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	04/26/18 13:11	
1,3-Dichlorobenzene	ug/kg	ND	50.0	04/26/18 13:11	
1,3-Dichloropropane	ug/kg	ND	50.0	04/26/18 13:11	
1,4-Dichlorobenzene	ug/kg	ND	50.0	04/26/18 13:11	
2,2-Dichloropropane	ug/kg	ND	200	04/26/18 13:11	
2-Butanone (MEK)	ug/kg	ND	250	04/26/18 13:11	
2-Chlorotoluene	ug/kg	ND	50.0	04/26/18 13:11	
4-Chlorotoluene	ug/kg	ND	50.0	04/26/18 13:11	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	04/26/18 13:11	
Acetone	ug/kg	ND	1000	04/26/18 13:11	
Allyl chloride	ug/kg	ND	200	04/26/18 13:11	
Benzene	ug/kg	ND	20.0	04/26/18 13:11	
Bromobenzene	ug/kg	ND	50.0	04/26/18 13:11	
Bromochloromethane	ug/kg	ND	50.0	04/26/18 13:11	
Bromodichloromethane	ug/kg	ND	50.0	04/26/18 13:11	
Bromoform	ug/kg	ND	500	04/26/18 13:11	MN
Bromomethane	ug/kg	ND	500	04/26/18 13:11	
Carbon tetrachloride	ug/kg	ND	50.0	04/26/18 13:11	
Chlorobenzene	ug/kg	ND	50.0	04/26/18 13:11	
Chloroethane	ug/kg	ND	500	04/26/18 13:11	
Chloroform	ug/kg	ND	50.0	04/26/18 13:11	
Chloromethane	ug/kg	ND	200	04/26/18 13:11	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	04/26/18 13:11	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	04/26/18 13:11	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

METHOD BLANK: 2903647 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	04/26/18 13:11	
Dibromomethane	ug/kg	ND	50.0	04/26/18 13:11	
Dichlorodifluoromethane	ug/kg	ND	200	04/26/18 13:11	
Dichlorofluoromethane	ug/kg	ND	500	04/26/18 13:11	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	04/26/18 13:11	
Ethylbenzene	ug/kg	ND	50.0	04/26/18 13:11	
Hexachloro-1,3-butadiene	ug/kg	ND	250	04/26/18 13:11	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	04/26/18 13:11	
Methyl-tert-butyl ether	ug/kg	ND	50.0	04/26/18 13:11	
Methylene Chloride	ug/kg	ND	200	04/26/18 13:11	
n-Butylbenzene	ug/kg	ND	50.0	04/26/18 13:11	
n-Propylbenzene	ug/kg	ND	50.0	04/26/18 13:11	
Naphthalene	ug/kg	ND	200	04/26/18 13:11	
p-Isopropyltoluene	ug/kg	ND	50.0	04/26/18 13:11	
sec-Butylbenzene	ug/kg	ND	50.0	04/26/18 13:11	
Styrene	ug/kg	ND	50.0	04/26/18 13:11	
tert-Butylbenzene	ug/kg	ND	50.0	04/26/18 13:11	
Tetrachloroethene	ug/kg	ND	50.0	04/26/18 13:11	
Tetrahydrofuran	ug/kg	ND	2000	04/26/18 13:11	
Toluene	ug/kg	ND	50.0	04/26/18 13:11	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	04/26/18 13:11	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	04/26/18 13:11	
Trichloroethene	ug/kg	ND	50.0	04/26/18 13:11	
Trichlorofluoromethane	ug/kg	ND	200	04/26/18 13:11	
Vinyl chloride	ug/kg	ND	20.0	04/26/18 13:11	
Xylene (Total)	ug/kg	ND	150	04/26/18 13:11	
1,2-Dichloroethane-d4 (S)	%.	95	75-125	04/26/18 13:11	
4-Bromofluorobenzene (S)	%.	96	75-125	04/26/18 13:11	
Toluene-d8 (S)	%.	96	75-125	04/26/18 13:11	

LABORATORY CONTROL SAMPLE & LCSD: 2903648 2903649

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	773	714	77	71	59-125	8	20	
1,1,1-Trichloroethane	ug/kg	1000	816	763	82	76	59-125	7	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	735	660	74	66	58-125	11	20	
1,1,2-Trichloroethane	ug/kg	1000	737	691	74	69	64-125	6	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	733	671	73	67	65-125	9	20	
1,1-Dichloroethane	ug/kg	1000	722	664	72	66	63-125	8	20	
1,1-Dichloroethene	ug/kg	1000	782	703	78	70	59-125	11	20	
1,1-Dichloropropene	ug/kg	1000	805	731	81	73	64-125	10	20	
1,2,3-Trichlorobenzene	ug/kg	1000	724	658	72	66	55-126	10	20	
1,2,3-Trichloropropane	ug/kg	1000	706	646	71	65	62-125	9	20	
1,2,4-Trichlorobenzene	ug/kg	1000	752	672	75	67	62-125	11	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

LABORATORY CONTROL SAMPLE & LCSD: 2903648 2903649

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	737	661	74	66	59-125	11	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	1730	1620	69	65	54-125	7	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	796	745	80	74	64-125	7	20	
1,2-Dichlorobenzene	ug/kg	1000	752	668	75	67	63-125	12	20	
1,2-Dichloroethane	ug/kg	1000	693	643	69	64	57-125	8	20	
1,2-Dichloropropane	ug/kg	1000	716	684	72	68	67-125	5	20	
1,3,5-Trimethylbenzene	ug/kg	1000	751	711	75	71	59-125	6	20	
1,3-Dichlorobenzene	ug/kg	1000	720	663	72	66	64-125	8	20	
1,3-Dichloropropane	ug/kg	1000	732	682	73	68	64-125	7	20	
1,4-Dichlorobenzene	ug/kg	1000	714	654	71	65	63-125	9	20	
2,2-Dichloropropane	ug/kg	1000	778	701	78	70	37-126	10	20	
2-Butanone (MEK)	ug/kg	5000	3310	3010	66	60	48-125	9	20	
2-Chlorotoluene	ug/kg	1000	721	671	72	67	62-125	7	20	
4-Chlorotoluene	ug/kg	1000	738	667	74	67	63-125	10	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	3550	3140	71	63	52-135	12	20	
Acetone	ug/kg	5000	4320	4190	86	84	65-125	3	20	
Allyl chloride	ug/kg	1000	674	607	67	61	52-125	10	20	
Benzene	ug/kg	1000	751	691	75	69	61-125	8	20	
Bromobenzene	ug/kg	1000	766	664	77	66	64-125	14	20	
Bromochloromethane	ug/kg	1000	744	662	74	66	65-125	12	20	
Bromodichloromethane	ug/kg	1000	760	707	76	71	57-125	7	20	
Bromoform	ug/kg	1000	739	662	74	66	57-125	11	20	
Bromomethane	ug/kg	1000	816	783	82	78	60-125	4	20	
Carbon tetrachloride	ug/kg	1000	782	701	78	70	58-125	11	20	
Chlorobenzene	ug/kg	1000	719	681	72	68	66-125	5	20	
Chloroethane	ug/kg	1000	877	797	88	80	62-125	10	20	
Chloroform	ug/kg	1000	701	662	70	66	59-125	6	20	
Chloromethane	ug/kg	1000	802	747	80	75	50-125	7	20	
cis-1,2-Dichloroethene	ug/kg	1000	736	691	74	69	61-125	6	20	
cis-1,3-Dichloropropene	ug/kg	1000	770	735	77	74	61-125	5	20	
Dibromochloromethane	ug/kg	1000	706	663	71	66	60-125	6	20	
Dibromomethane	ug/kg	1000	774	700	77	70	69-125	10	20	
Dichlorodifluoromethane	ug/kg	1000	860	775	86	78	38-125	10	20	
Dichlorofluoromethane	ug/kg	1000	950	917	95	92	67-125	3	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1150	1270	115	127	60-125	10	20	CH,L3,SS
Ethylbenzene	ug/kg	1000	760	699	76	70	62-125	8	20	
Hexachloro-1,3-butadiene	ug/kg	1000	773	692	77	69	56-125	11	20	
Isopropylbenzene (Cumene)	ug/kg	1000	807	746	81	75	65-125	8	20	
Methyl-tert-butyl ether	ug/kg	1000	698	646	70	65	59-125	8	20	
Methylene Chloride	ug/kg	1000	674	594	67	59	64-125	13	20	L2
n-Butylbenzene	ug/kg	1000	776	697	78	70	59-125	11	20	
n-Propylbenzene	ug/kg	1000	740	677	74	68	61-125	9	20	
Naphthalene	ug/kg	1000	740	692	74	69	53-125	7	20	
p-Isopropyltoluene	ug/kg	1000	763	724	76	72	63-125	5	20	
sec-Butylbenzene	ug/kg	1000	750	687	75	69	62-125	9	20	
Styrene	ug/kg	1000	790	695	79	69	66-125	13	20	
tert-Butylbenzene	ug/kg	1000	741	668	74	67	64-125	10	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

LABORATORY CONTROL SAMPLE & LCSD: 2903648 2903649

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	821	741	82	74	67-125	10	20	
Tetrahydrofuran	ug/kg	10000	7750	7440	77	74	62-125	4	20	
Toluene	ug/kg	1000	707	648	71	65	61-125	9	20	
trans-1,2-Dichloroethene	ug/kg	1000	798	730	80	73	64-125	9	20	
trans-1,3-Dichloropropene	ug/kg	1000	791	727	79	73	56-125	8	20	
Trichloroethene	ug/kg	1000	756	699	76	70	67-125	8	20	
Trichlorofluoromethane	ug/kg	1000	999	965	100	97	65-125	3	20	
Vinyl chloride	ug/kg	1000	929	841	93	84	57-125	10	20	
Xylene (Total)	ug/kg	3000	2210	2030	74	68	62-125	8	20	
1,2-Dichloroethane-d4 (S)	%.				95	93	75-125			
4-Bromofluorobenzene (S)	%.				98	101	75-125			
Toluene-d8 (S)	%.				100	101	75-125			

MATRIX SPIKE SAMPLE: 2903650

Parameter	Units	10427642001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	1320	1480	112	64-146	
1,1,1-Trichloroethane	ug/kg	ND	1320	1510	114	56-148	
1,1,2,2-Tetrachloroethane	ug/kg	ND	1320	1470	112	36-150	
1,1,2-Trichloroethane	ug/kg	ND	1320	1430	108	67-148	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	1320	1310	99	60-142	
1,1-Dichloroethane	ug/kg	ND	1320	1370	103	57-140	
1,1-Dichloroethene	ug/kg	ND	1320	1350	102	59-139	
1,1-Dichloropropene	ug/kg	ND	1320	1470	111	61-142	
1,2,3-Trichlorobenzene	ug/kg	ND	1320	1440	109	69-150	
1,2,3-Trichloropropane	ug/kg	ND	1320	1410	107	64-150	
1,2,4-Trichlorobenzene	ug/kg	ND	1320	1490	113	71-149	
1,2,4-Trimethylbenzene	ug/kg	ND	1320	1430	108	67-149	
1,2-Dibromo-3-chloropropane	ug/kg	ND	3310	3600	109	61-150	
1,2-Dibromoethane (EDB)	ug/kg	ND	1320	1540	117	67-147	
1,2-Dichlorobenzene	ug/kg	ND	1320	1430	108	70-142	
1,2-Dichloroethane	ug/kg	ND	1320	1310	99	58-132	
1,2-Dichloropropane	ug/kg	ND	1320	1400	106	64-144	
1,3,5-Trimethylbenzene	ug/kg	ND	1320	1430	108	71-146	
1,3-Dichlorobenzene	ug/kg	ND	1320	1410	107	71-142	
1,3-Dichloropropane	ug/kg	ND	1320	1420	108	68-140	
1,4-Dichlorobenzene	ug/kg	ND	1320	1330	101	68-142	
2,2-Dichloropropane	ug/kg	ND	1320	1470	111	34-150	
2-Butanone (MEK)	ug/kg	ND	6610	7390	112	51-150	
2-Chlorotoluene	ug/kg	ND	1320	1430	108	66-144	
4-Chlorotoluene	ug/kg	ND	1320	1380	104	66-140	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	6610	6890	104	63-150	
Acetone	ug/kg	ND	6610	9080	137	54-150	
Allyl chloride	ug/kg	ND	1320	1250	95	53-135	
Benzene	ug/kg	ND	1320	1420	107	65-135	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

MATRIX SPIKE SAMPLE: 2903650

Parameter	Units	10427642001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/kg	ND	1320	1450	110	71-141	
Bromochloromethane	ug/kg	ND	1320	1340	102	62-145	
Bromodichloromethane	ug/kg	ND	1320	1460	110	59-148	
Bromoform	ug/kg	ND	1320	1380	105	57-145	
Bromomethane	ug/kg	ND	1320	1310	99	51-129	
Carbon tetrachloride	ug/kg	ND	1320	1490	113	55-144	
Chlorobenzene	ug/kg	ND	1320	1400	106	70-142	
Chloroethane	ug/kg	ND	1320	1400	106	61-135	
Chloroform	ug/kg	ND	1320	1340	102	58-135	
Chloromethane	ug/kg	ND	1320	1180	89	37-125	
cis-1,2-Dichloroethene	ug/kg	ND	1320	1410	106	60-138	
cis-1,3-Dichloropropene	ug/kg	ND	1320	1510	114	62-142	
Dibromochloromethane	ug/kg	ND	1320	1390	105	65-141	
Dibromomethane	ug/kg	ND	1320	1420	107	72-150	
Dichlorodifluoromethane	ug/kg	ND	1320	1010	77	30-125	
Dichlorofluoromethane	ug/kg	ND	1320	1510	114	62-148	
Diethyl ether (Ethyl ether)	ug/kg	ND	1320	2970	225	62-135	CH,M0,SS
Ethylbenzene	ug/kg	ND	1320	1460	111	72-138	
Hexachloro-1,3-butadiene	ug/kg	ND	1320	1780	135	38-150	
Isopropylbenzene (Cumene)	ug/kg	ND	1320	1530	116	75-148	
Methyl-tert-butyl ether	ug/kg	ND	1320	1370	104	63-139	
Methylene Chloride	ug/kg	ND	1320	1280	97	58-135	
n-Butylbenzene	ug/kg	ND	1320	1520	115	63-150	
n-Propylbenzene	ug/kg	ND	1320	1430	108	70-146	
Naphthalene	ug/kg	ND	1320	1450	110	63-150	
p-Isopropyltoluene	ug/kg	ND	1320	1520	115	72-150	
sec-Butylbenzene	ug/kg	ND	1320	1440	109	66-150	
Styrene	ug/kg	ND	1320	1480	112	72-146	
tert-Butylbenzene	ug/kg	ND	1320	1470	111	71-148	
Tetrachloroethene	ug/kg	ND	1320	1570	118	70-150	
Tetrahydrofuran	ug/kg	ND	13200	15000	113	62-150	
Toluene	ug/kg	ND	1320	1350	102	65-142	
trans-1,2-Dichloroethene	ug/kg	ND	1320	1470	111	55-141	
trans-1,3-Dichloropropene	ug/kg	ND	1320	1490	113	57-147	
Trichloroethene	ug/kg	ND	1320	1470	111	62-150	
Trichlorofluoromethane	ug/kg	ND	1320	1600	121	51-150	
Vinyl chloride	ug/kg	ND	1320	1330	101	45-132	
Xylene (Total)	ug/kg	ND	3970	4260	107	75-140	
1,2-Dichloroethane-d4 (S)	%.				94	75-125	
4-Bromofluorobenzene (S)	%.				98	75-125	
Toluene-d8 (S)	%.				99	75-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

SAMPLE DUPLICATE: 2903753

Parameter	Units	10427642005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	538	2900	137	30	D6
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	173		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	156	1030	147	30	D6
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	381		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	435	4490	165	30	D6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

SAMPLE DUPLICATE: 2903753

Parameter	Units	10427642005 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	262		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	391		30	
n-Propylbenzene	ug/kg	ND	544		30	
Naphthalene	ug/kg	972	22500	183	30	D6
p-Isopropyltoluene	ug/kg	ND	601		30	
sec-Butylbenzene	ug/kg	ND	289		30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	226		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	127J		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	1350	11900	159	30	D6
1,2-Dichloroethane-d4 (S)	%.	94	94	5		1M
4-Bromofluorobenzene (S)	%.	101	95	1		
Toluene-d8 (S)	%.	96	97	7		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 533317 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2896992 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/26/18 20:33	
4,4'-DDE	ug/kg	ND	3.3	04/26/18 20:33	
4,4'-DDT	ug/kg	ND	3.3	04/26/18 20:33	
Aldrin	ug/kg	ND	1.7	04/26/18 20:33	
alpha-BHC	ug/kg	ND	1.7	04/26/18 20:33	
alpha-Chlordane	ug/kg	ND	1.7	04/26/18 20:33	
beta-BHC	ug/kg	ND	1.7	04/26/18 20:33	
Chlordane (Technical)	ug/kg	ND	16.7	04/26/18 20:33	
delta-BHC	ug/kg	ND	1.7	04/26/18 20:33	
Dieldrin	ug/kg	ND	3.3	04/26/18 20:33	
Endosulfan I	ug/kg	ND	1.7	04/26/18 20:33	
Endosulfan II	ug/kg	ND	3.3	04/26/18 20:33	
Endosulfan sulfate	ug/kg	ND	3.3	04/26/18 20:33	
Endrin	ug/kg	ND	3.3	04/26/18 20:33	
Endrin aldehyde	ug/kg	ND	3.3	04/26/18 20:33	
Endrin ketone	ug/kg	ND	3.3	04/26/18 20:33	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/26/18 20:33	
gamma-Chlordane	ug/kg	ND	1.7	04/26/18 20:33	
Heptachlor	ug/kg	ND	1.7	04/26/18 20:33	
Heptachlor epoxide	ug/kg	ND	1.7	04/26/18 20:33	
Methoxychlor	ug/kg	ND	16.7	04/26/18 20:33	
Toxaphene	ug/kg	ND	50.0	04/26/18 20:33	
Decachlorobiphenyl (S)	%.	98	30-150	04/26/18 20:33	
Tetrachloro-m-xylene (S)	%.	105	30-150	04/26/18 20:33	

LABORATORY CONTROL SAMPLE: 2896993

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	35.6	107	62-127	
4,4'-DDE	ug/kg	33.3	34.8	104	66-125	
4,4'-DDT	ug/kg	33.3	31.8	96	67-128	
Aldrin	ug/kg	16.7	16.5	99	66-125	
alpha-BHC	ug/kg	16.7	17.5	105	64-125	
alpha-Chlordane	ug/kg	16.7	16.7	100	68-125	
beta-BHC	ug/kg	16.7	16.8	101	69-125	
delta-BHC	ug/kg	16.7	14.3	86	42-133	
Dieldrin	ug/kg	33.3	37.3	112	69-126	
Endosulfan I	ug/kg	16.7	16.0	96	63-125	
Endosulfan II	ug/kg	33.3	35.8	107	69-125	
Endosulfan sulfate	ug/kg	33.3	31.8	95	56-137	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

LABORATORY CONTROL SAMPLE: 2896993

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	34.5	103	69-125	
Endrin aldehyde	ug/kg	33.3	34.0	102	65-125	
Endrin ketone	ug/kg	33.3	36.0	108	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	17.4	104	67-125	
gamma-Chlordane	ug/kg	16.7	15.3	92	63-125	
Heptachlor	ug/kg	16.7	16.5	99	69-125	
Heptachlor epoxide	ug/kg	16.7	17.0	102	68-125	
Methoxychlor	ug/kg	167	160	96	65-134	
Decachlorobiphenyl (S)	%.			100	30-150	
Tetrachloro-m-xylene (S)	%.			107	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2896994 2896995

Parameter	Units	10427824001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	43.8	43.8	79J	92J	180	210	56-125		20	M6
4,4'-DDE	ug/kg	ND	43.8	43.8	61.7J	61.2J	141	140	32-150		20	
4,4'-DDT	ug/kg	ND	43.8	43.8	ND	105J	49	239	60-132		20	M6
Aldrin	ug/kg	ND	21.9	21.9	29.1J	43.3J	133	198	56-125		20	M6
alpha-BHC	ug/kg	ND	21.9	21.9	30.3J	25.5J	138	116	54-136		20	M6
alpha-Chlordane	ug/kg	ND	21.9	21.9	43.8J	97.5J	200	445	54-133		20	M6
beta-BHC	ug/kg	ND	21.9	21.9	ND	69.2J	190	315	30-150		20	M6
delta-BHC	ug/kg	ND	21.9	21.9	21.3J	19.8J	97	90	45-145		20	
Dieldrin	ug/kg	ND	43.8	43.8	67.4J	76.3J	154	174	47-150		20	M6
Endosulfan I	ug/kg	ND	21.9	21.9	23.9J	22.6J	109	103	35-145		20	
Endosulfan II	ug/kg	ND	43.8	43.8	53.3J	50.6J	122	115	50-147		20	
Endosulfan sulfate	ug/kg	ND	43.8	43.8	44.3J	43.8J	101	100	54-132		20	
Endrin	ug/kg	ND	43.8	43.8	49.3J	39.3J	113	90	62-125		20	
Endrin aldehyde	ug/kg	ND	43.8	43.8	48.2J	49.1J	110	112	33-150		20	
Endrin ketone	ug/kg	ND	43.8	43.8	83.8J	97.2J	191	222	56-144		20	M6
gamma-BHC (Lindane)	ug/kg	ND	21.9	21.9	26.3J	27.8J	120	127	63-125		20	M6
gamma-Chlordane	ug/kg	ND	21.9	21.9	43.3J	88.3J	198	403	45-132		20	M6
Heptachlor	ug/kg	ND	21.9	21.9	33.4J	24.2J	152	110	51-142		20	M6
Heptachlor epoxide	ug/kg	ND	21.9	21.9	27.4J	27J	125	123	50-142		20	
Methoxychlor	ug/kg	ND	219	219	261J	243J	119	111	58-139		20	
Decachlorobiphenyl (S)	%.						0	0	30-150			S4
Tetrachloro-m-xylene (S)	%.						0	0	30-150			3M, D3, S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 533330 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2897062 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/23/18 17:02	
Decachlorobiphenyl (S)	%.	125	30-134	04/23/18 17:02	CH
Tetrachloro-m-xylene (S)	%.	88	48-125	04/23/18 17:02	

LABORATORY CONTROL SAMPLE: 2897063

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	502	75	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	549	82	62-125	
Decachlorobiphenyl (S)	%.			126	30-134	CH
Tetrachloro-m-xylene (S)	%.			88	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897064 2897065

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	853	852	783	860	92	101	30-150	9	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	853	852	757	747	89	88	30-138	1	30	
Decachlorobiphenyl (S)	%.						110	108	30-134			CH
Tetrachloro-m-xylene (S)	%.						78	75	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 533315 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2896984 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/23/18 16:07	
1,2-Dichlorobenzene	ug/kg	ND	330	04/23/18 16:07	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/23/18 16:07	
1,3-Dichlorobenzene	ug/kg	ND	330	04/23/18 16:07	
1,4-Dichlorobenzene	ug/kg	ND	330	04/23/18 16:07	
1-Methylnaphthalene	ug/kg	ND	330	04/23/18 16:07	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/23/18 16:07	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/23/18 16:07	
2,4-Dichlorophenol	ug/kg	ND	330	04/23/18 16:07	
2,4-Dimethylphenol	ug/kg	ND	330	04/23/18 16:07	
2,4-Dinitrophenol	ug/kg	ND	330	04/23/18 16:07	
2,4-Dinitrotoluene	ug/kg	ND	330	04/23/18 16:07	
2,6-Dinitrotoluene	ug/kg	ND	330	04/23/18 16:07	
2-Chloronaphthalene	ug/kg	ND	330	04/23/18 16:07	
2-Chlorophenol	ug/kg	ND	330	04/23/18 16:07	
2-Methylnaphthalene	ug/kg	ND	330	04/23/18 16:07	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/23/18 16:07	
2-Nitroaniline	ug/kg	ND	330	04/23/18 16:07	
2-Nitrophenol	ug/kg	ND	330	04/23/18 16:07	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/23/18 16:07	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/23/18 16:07	
3-Nitroaniline	ug/kg	ND	330	04/23/18 16:07	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/23/18 16:07	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/23/18 16:07	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/23/18 16:07	
4-Chloroaniline	ug/kg	ND	330	04/23/18 16:07	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/23/18 16:07	
4-Nitroaniline	ug/kg	ND	330	04/23/18 16:07	
4-Nitrophenol	ug/kg	ND	330	04/23/18 16:07	
Acenaphthene	ug/kg	ND	330	04/23/18 16:07	
Acenaphthylene	ug/kg	ND	330	04/23/18 16:07	
Anthracene	ug/kg	ND	330	04/23/18 16:07	
Benzo(a)anthracene	ug/kg	ND	330	04/23/18 16:07	
Benzo(a)pyrene	ug/kg	ND	330	04/23/18 16:07	
Benzo(b)fluoranthene	ug/kg	ND	330	04/23/18 16:07	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/23/18 16:07	
Benzo(k)fluoranthene	ug/kg	ND	330	04/23/18 16:07	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/23/18 16:07	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/23/18 16:07	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/23/18 16:07	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/23/18 16:07	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

METHOD BLANK: 2896984 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/23/18 16:07	
Carbazole	ug/kg	ND	330	04/23/18 16:07	
Chrysene	ug/kg	ND	330	04/23/18 16:07	
Di-n-butylphthalate	ug/kg	ND	330	04/23/18 16:07	
Di-n-octylphthalate	ug/kg	ND	330	04/23/18 16:07	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/23/18 16:07	
Dibenzofuran	ug/kg	ND	330	04/23/18 16:07	
Diethylphthalate	ug/kg	ND	330	04/23/18 16:07	
Dimethylphthalate	ug/kg	ND	330	04/23/18 16:07	
Fluoranthene	ug/kg	ND	330	04/23/18 16:07	
Fluorene	ug/kg	ND	330	04/23/18 16:07	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/23/18 16:07	
Hexachlorobenzene	ug/kg	ND	330	04/23/18 16:07	
Hexachloroethane	ug/kg	ND	330	04/23/18 16:07	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/23/18 16:07	
Isophorone	ug/kg	ND	330	04/23/18 16:07	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/23/18 16:07	
N-Nitrosodimethylamine	ug/kg	ND	330	04/23/18 16:07	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/23/18 16:07	
Naphthalene	ug/kg	ND	330	04/23/18 16:07	
Nitrobenzene	ug/kg	ND	330	04/23/18 16:07	
Pentachlorophenol	ug/kg	ND	670	04/23/18 16:07	
Phenanthrene	ug/kg	ND	330	04/23/18 16:07	
Phenol	ug/kg	ND	330	04/23/18 16:07	
Pyrene	ug/kg	ND	330	04/23/18 16:07	
2,4,6-Tribromophenol (S)	%.	69	60-125	04/23/18 16:07	
2-Fluorobiphenyl (S)	%.	67	30-132	04/23/18 16:07	
2-Fluorophenol (S)	%.	64	40-125	04/23/18 16:07	
Nitrobenzene-d5 (S)	%.	63	43-125	04/23/18 16:07	
p-Terphenyl-d14 (S)	%.	79	62-125	04/23/18 16:07	
Phenol-d6 (S)	%.	63	48-125	04/23/18 16:07	

LABORATORY CONTROL SAMPLE: 2896985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1210	73	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1230	74	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1300	78	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1230	74	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1220	73	39-125	
1-Methylnaphthalene	ug/kg	1670	1320	79	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1340	81	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1310	79	61-125	
2,4-Dichlorophenol	ug/kg	1670	1370	82	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

LABORATORY CONTROL SAMPLE: 2896985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1280	77	51-125	
2,4-Dinitrophenol	ug/kg	1670	1130	68	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1550	93	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1470	88	63-125	
2-Chloronaphthalene	ug/kg	1670	1310	79	61-125	
2-Chlorophenol	ug/kg	1670	1230	74	46-125	
2-Methylnaphthalene	ug/kg	1670	1290	77	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1240	74	50-125	
2-Nitroaniline	ug/kg	1670	1350	81	61-125	
2-Nitrophenol	ug/kg	1670	1340	80	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1290	77	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1370	82	47-125	
3-Nitroaniline	ug/kg	1670	1370	82	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1540J	93	30-141	7M
4-Bromophenylphenyl ether	ug/kg	1670	1340	81	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1420	85	64-125	
4-Chloroaniline	ug/kg	1670	1080	65	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1350	81	64-125	
4-Nitroaniline	ug/kg	1670	1330	80	59-125	
4-Nitrophenol	ug/kg	1670	1240	75	54-125	
Acenaphthene	ug/kg	1670	1310	79	62-125	
Acenaphthylene	ug/kg	1670	1330	80	61-125	
Anthracene	ug/kg	1670	1350	81	66-125	
Benzo(a)anthracene	ug/kg	1670	1430	86	69-125	
Benzo(a)pyrene	ug/kg	1670	1410	85	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1440	87	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1450	87	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1400	84	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1230	74	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1130	68	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	978	59	37-125	7M
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1600	96	69-131	
Butylbenzylphthalate	ug/kg	1670	1550	93	69-129	
Carbazole	ug/kg	1670	1430	86	66-125	
Chrysene	ug/kg	1670	1410	85	68-125	
Di-n-butylphthalate	ug/kg	1670	1520	91	69-125	
Di-n-octylphthalate	ug/kg	1670	1640	98	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1480	89	64-125	
Dibenzofuran	ug/kg	1670	1380	83	65-125	
Diethylphthalate	ug/kg	1670	1420	85	67-125	
Dimethylphthalate	ug/kg	1670	1420	85	67-125	
Fluoranthene	ug/kg	1670	1410	85	66-125	
Fluorene	ug/kg	1670	1370	82	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1190	71	40-125	
Hexachlorobenzene	ug/kg	1670	1370	82	62-125	
Hexachloroethane	ug/kg	1670	1190	72	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1450	87	64-125	

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

LABORATORY CONTROL SAMPLE: 2896985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1260	76	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1220	73	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1330	80	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1410	85	65-125	
Naphthalene	ug/kg	1670	1240	74	48-125	
Nitrobenzene	ug/kg	1670	1200	72	48-125	
Pentachlorophenol	ug/kg	1670	1120	67	41-125	
Phenanthrene	ug/kg	1670	1350	81	66-125	
Phenol	ug/kg	1670	1210	73	46-125	
Pyrene	ug/kg	1670	1460	88	69-125	
2,4,6-Tribromophenol (S)	%.			76	60-125	
2-Fluorobiphenyl (S)	%.			68	30-132	
2-Fluorophenol (S)	%.			61	40-125	
Nitrobenzene-d5 (S)	%.			59	43-125	
p-Terphenyl-d14 (S)	%.			82	62-125	
Phenol-d6 (S)	%.			63	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2896986 2896987

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	2130	2140	1630	1720	77	81	30-127	5	30	
1,2-Dichlorobenzene	ug/kg	ND	2130	2140	1610	1550	76	73	30-125	3	30	
1,2-Diphenylhydrazine	ug/kg	ND	2130	2140	1560	1800	73	84	30-150	15	30	
1,3-Dichlorobenzene	ug/kg	ND	2130	2140	1570	1470	74	69	30-125	7	30	
1,4-Dichlorobenzene	ug/kg	ND	2130	2140	1570	1500	74	70	30-125	5	30	
1-Methylnaphthalene	ug/kg	ND	2130	2140	1740	1900	81	89	42-125	9	30	
2,4,5-Trichlorophenol	ug/kg	ND	2130	2140	1690	1950	80	91	30-150	14	30	
2,4,6-Trichlorophenol	ug/kg	ND	2130	2140	1750	1990	82	93	30-150	13	30	
2,4-Dichlorophenol	ug/kg	ND	2130	2140	1820	1980	85	93	30-135	8	30	
2,4-Dimethylphenol	ug/kg	ND	2130	2140	1770	1930	83	90	30-148	9	30	
2,4-Dinitrophenol	ug/kg	ND	2130	2140	ND	ND	0	0	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	ND	2130	2140	1630	1760	77	82	30-150	7	30	
2,6-Dinitrotoluene	ug/kg	ND	2130	2140	1630	1820	77	85	30-150	11	30	
2-Chloronaphthalene	ug/kg	ND	2130	2140	1700	1930	80	90	30-138	13	30	
2-Chlorophenol	ug/kg	ND	2130	2140	1680	1720	79	80	30-130	2	30	
2-Methylnaphthalene	ug/kg	ND	2130	2140	1700	1860	79	87	46-125	9	30	
2-Methylphenol(o-Cresol)	ug/kg	ND	2130	2140	1720	1840	81	86	30-133	6	30	
2-Nitroaniline	ug/kg	ND	2130	2140	1830	2180	86	102	30-150	17	30	
2-Nitrophenol	ug/kg	ND	2130	2140	1360	1410	64	66	30-134	4	30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	2130	2140	1740	1870	82	88	30-138	7	30	
3,3'-Dichlorobenzidine	ug/kg	ND	2130	2140	1780	1880	84	88	30-149	5	30	
3-Nitroaniline	ug/kg	ND	2130	2140	1680	1930	79	91	30-150	14	30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	2130	2140	259J	ND	12	0	30-133		30	7M,M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2896986 2896987

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	2130	2140	1750	1930	82	90	44-125	9	30	
4-Chloro-3-methylphenol	ug/kg	ND	2130	2140	1910	2070	90	97	30-150	8	30	
4-Chloroaniline	ug/kg	ND	2130	2140	996	1070	47	50	30-125	7	30	
4-Chlorophenylphenyl ether	ug/kg	ND	2130	2140	1710	1990	81	93	44-125	15	30	
4-Nitroaniline	ug/kg	ND	2130	2140	1850	2240	87	105	30-150	19	30	
4-Nitrophenol	ug/kg	ND	2130	2140	1520	1800	71	84	30-150	17	30	
Acenaphthene	ug/kg	ND	2130	2140	1610	1840	73	84	40-125	13	30	
Acenaphthylene	ug/kg	ND	2130	2140	1690	1910	79	90	30-150	13	30	
Anthracene	ug/kg	ND	2130	2140	1760	1990	77	88	30-150	13	30	
Benzo(a)anthracene	ug/kg	ND	2130	2140	2080	2270	85	94	30-150	9	30	
Benzo(a)pyrene	ug/kg	ND	2130	2140	1990	2290	81	95	30-150	14	30	
Benzo(b)fluoranthene	ug/kg	ND	2130	2140	2120	2370	83	95	30-150	11	30	
Benzo(g,h,i)perylene	ug/kg	ND	2130	2140	1920	2210	82	95	30-150	14	30	
Benzo(k)fluoranthene	ug/kg	ND	2130	2140	1940	2190	84	95	30-150	12	30	
bis(2-Chloroethoxy)methane	ug/kg	ND	2130	2140	1670	1760	78	83	30-134	6	30	
bis(2-Chloroethyl) ether	ug/kg	ND	2130	2140	1590	1570	75	74	30-125	1	30	
bis(2-Chloroisopropyl) ether	ug/kg	ND	2130	2140	1300	1290	61	61	30-125	0	30	7M
bis(2-Ethylhexyl)phthalate	ug/kg	ND	2130	2140	2220	2540	98	113	30-150	14	30	
Butylbenzylphthalate	ug/kg	ND	2130	2140	2110	2580	97	119	30-150	20	30	
Carbazole	ug/kg	ND	2130	2140	1800	2040	82	93	41-125	12	30	
Chrysene	ug/kg	ND	2130	2140	2040	2290	83	95	30-150	11	30	
Di-n-butylphthalate	ug/kg	ND	2130	2140	1880	2150	88	101	30-150	14	30	
Di-n-octylphthalate	ug/kg	ND	2130	2140	2090	2370	98	111	30-150	13	30	
Dibenz(a,h)anthracene	ug/kg	ND	2130	2140	1870	2110	88	99	30-150	12	30	
Dibenzofuran	ug/kg	ND	2130	2140	1720	1980	80	92	45-125	14	30	
Diethylphthalate	ug/kg	ND	2130	2140	1760	2070	83	97	30-150	16	30	
Dimethylphthalate	ug/kg	ND	2130	2140	1800	2040	85	96	30-150	12	30	
Fluoranthene	ug/kg	565	2130	2140	2230	2380	78	85	30-150	7	30	
Fluorene	ug/kg	ND	2130	2140	1710	1950	78	89	30-150	13	30	
Hexachloro-1,3-butadiene	ug/kg	ND	2130	2140	1600	1620	75	76	30-128	2	30	
Hexachlorobenzene	ug/kg	ND	2130	2140	1760	1950	83	91	30-150	10	30	
Hexachloroethane	ug/kg	ND	2130	2140	642	673	30	32	30-125	5	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	2130	2140	1930	2210	84	97	30-150	14	30	
Isophorone	ug/kg	ND	2130	2140	1650	1750	78	82	30-140	6	30	
N-Nitroso-di-n-propylamine	ug/kg	ND	2130	2140	1610	1670	76	78	30-147	3	30	
N-Nitrosodimethylamine	ug/kg	ND	2130	2140	1640	1450	77	68	30-125	12	30	
N-Nitrosodiphenylamine	ug/kg	ND	2130	2140	1810	2020	85	94	30-150	11	30	
Naphthalene	ug/kg	ND	2130	2140	1660	1730	78	81	44-125	4	30	
Nitrobenzene	ug/kg	ND	2130	2140	1600	1640	75	77	30-136	2	30	
Pentachlorophenol	ug/kg	ND	2130	2140	1430	1530	67	72	30-150	7	30	
Phenanthrene	ug/kg	ND	2130	2140	1800	2050	67	79	30-150	13	30	
Phenol	ug/kg	ND	2130	2140	1600	1720	75	81	30-129	7	30	
Pyrene	ug/kg	511	2130	2140	2370	2530	87	95	30-150	7	30	
2,4,6-Tribromophenol (S)	%.						69	80	60-125			
2-Fluorobiphenyl (S)	%.						49	53	30-132			
2-Fluorophenol (S)	%.						63	59	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2896986 2896987

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						57	54	43-125			
p-Terphenyl-d14 (S)	%.						76	86	62-125			
Phenol-d6 (S)	%.						64	65	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 533341 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2897115 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/20/18 12:15	
Acenaphthylene	ug/kg	ND	10.0	04/20/18 12:15	
Anthracene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(a)anthracene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(a)pyrene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/20/18 12:15	
Chrysene	ug/kg	ND	10.0	04/20/18 12:15	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/20/18 12:15	
Fluoranthene	ug/kg	ND	10.0	04/20/18 12:15	
Fluorene	ug/kg	ND	10.0	04/20/18 12:15	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/20/18 12:15	
Naphthalene	ug/kg	ND	10.0	04/20/18 12:15	
Phenanthrene	ug/kg	ND	10.0	04/20/18 12:15	
Pyrene	ug/kg	ND	10.0	04/20/18 12:15	
2-Fluorobiphenyl (S)	%.	72	42-125	04/20/18 12:15	
p-Terphenyl-d14 (S)	%.	88	57-125	04/20/18 12:15	

LABORATORY CONTROL SAMPLE: 2897116

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	25.3	76	52-125	
Acenaphthylene	ug/kg	33.3	24.9	75	50-125	
Anthracene	ug/kg	33.3	26.9	81	65-125	
Benzo(a)anthracene	ug/kg	33.3	29.0	87	60-125	
Benzo(a)pyrene	ug/kg	33.3	27.9	84	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	30.3	91	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	29.6	89	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	30.6	92	67-125	
Chrysene	ug/kg	33.3	30.1	90	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	30.5	92	63-125	
Fluoranthene	ug/kg	33.3	29.5	88	75-125	
Fluorene	ug/kg	33.3	25.5	77	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	30.0	90	63-125	
Naphthalene	ug/kg	33.3	24.8	75	49-125	
Phenanthrene	ug/kg	33.3	27.8	83	65-125	
Pyrene	ug/kg	33.3	28.2	85	64-125	
2-Fluorobiphenyl (S)	%.			76	42-125	
p-Terphenyl-d14 (S)	%.			89	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897117 2897118

Parameter	Units	10427642004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	49.1	46	46.2	130	103	177	117	30-125	24	30	M1
Acenaphthylene	ug/kg	ND	46	46.2	37.4	38.8	81	84	30-133	4	30	
Anthracene	ug/kg	94.1	46	46.2	96.2	163	4	149	30-150	51	30	M1,R1
Benzo(a)anthracene	ug/kg	660	46	46.2	111	85.5	-1190	-1250	30-150	25	30	M1
Benzo(a)pyrene	ug/kg	680	46	46.2	109	79.9	-1240	-1300	30-150	31	30	M1,R1
Benzo(b)fluoranthene	ug/kg	879	46	46.2	138	101	-1610	-1690	30-150	31	30	M1,R1
Benzo(g,h,i)perylene	ug/kg	358	46	46.2	81.6	66.3	-599	-632	30-150	21	30	M1
Benzo(k)fluoranthene	ug/kg	293	46	46.2	75.1	59.2	-473	-507	30-150	24	30	M1
Chrysene	ug/kg	570	46	46.2	112	101	-996	-1020	30-150	10	30	M1
Dibenz(a,h)anthracene	ug/kg	88.8	46	46.2	49.0	45.5	-86	-94	30-131	7	30	M1
Fluoranthene	ug/kg	1040	46	46.2	241	169	-1720	-1880	30-150	35	30	M1,R1
Fluorene	ug/kg	43.3	46	46.2	96.7	112	116	148	30-147	14	30	M1
Indeno(1,2,3-cd)pyrene	ug/kg	308	46	46.2	71.6	62.1	-514	-534	30-150	14	30	M1
Naphthalene	ug/kg	106	46	46.2	222	190	252	182	30-131	16	30	M1
Phenanthrene	ug/kg	318	46	46.2	240	256	-169	-135	30-150	6	30	M1
Pyrene	ug/kg	872	46	46.2	191	139	-1480	-1590	30-150	32	30	M1,R1
2-Fluorobiphenyl (S)	%.						81	83	42-125			
p-Terphenyl-d14 (S)	%.						82	90	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 533207 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2896541 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	04/20/18 15:21	
n-Triacontane (S)	%.	90	50-150	04/20/18 15:21	

LABORATORY CONTROL SAMPLE & LCSD: 2896542 2896543

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	72.5	70.0	91	87	70-120	4	20	
n-Triacontane (S)	%.				98	89	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 438492
QC Batch Method: EPA 3060A
Associated Lab Samples: 10427642001

Analysis Method: EPA 7196A
Analysis Description: 7196 Chromium, Hexavalent

METHOD BLANK: 2026403 Matrix: Solid
Associated Lab Samples: 10427642001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/24/18 13:00	

LABORATORY CONTROL SAMPLE: 2026404

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1010	924	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2026421 2026422

Parameter	Units	10427291008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1080	1150	839	962	77	84	75-125	14	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2026423 2026424

Parameter	Units	10427291008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	42.9	42.7	28.6	29.2	67	68	75-125	2	20	M3

SAMPLE DUPLICATE: 2026425

Parameter	Units	10427354004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 439469 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 2030574 Matrix: Solid
Associated Lab Samples: 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/30/18 13:42	

LABORATORY CONTROL SAMPLE: 2030575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1100	980	89	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030576 2030577

Parameter	Units	50194874001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1180	1120	1190	1120	100	100	75-125	6	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030578 2030579

Parameter	Units	50194874001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	46.6	46.4	28.6	26.1	54	49	75-125	9	20	M3

SAMPLE DUPLICATE: 2030580

Parameter	Units	10427642002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 286937 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 1678360 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/25/18 13:16	

LABORATORY CONTROL SAMPLE: 1678361

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.1	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678362 1678363

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.52	3.72	3.72	4.0	4.1	93	97	80-120	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678364 1678365

Parameter	Units	10428096003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.45	2.7	2.6	3.5	2.7	112	87	80-120	25	20	M0,R1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

QC Batch: 141337 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

METHOD BLANK: 559083 Matrix: Solid
Associated Lab Samples: 10427642001, 10427642002, 10427642003, 10427642004, 10427642005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	1.0	04/25/18 23:33	

LABORATORY CONTROL SAMPLE: 559082

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	49.8	55.2	111	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559084 559085

Parameter	Units	10427642003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	49.3	49.7	34.2	29.5	69	59	80-120	15	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559086 559087

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	50.5	49.3	21.2	19.1	42	39	80-120	10	20	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10427642

[1]	Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

ANALYTE QUALIFIERS

1M	Analysis suggests sample and QC sample duplicate are non-homogeneous. Results confirmed by second analysis.
2M	Sample was black in color and slightly viscous. Sample was centrifuged and decanted prior to analysis.
3M	Sample was black in color and viscous. Sample was centrifuged and decanted prior to analysis.
4M	Sample was black in color.
5M	Sample was brown in color.
6M	Sample was dark brown in color.
7M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

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QUALIFIERS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
MN	The reporting limit has been raised in accordance with Minnesota Statutes 4740.2100 Subpart 8. C, D. Reporting Limit Evaluation Rule.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427642001	**FD-TT-09 (4-12 WM)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427642003	**FD-TT-11 (4-12 WM)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427642004	**FD-TT-12 (3-12)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427642005	**FD-TT-13 (3-12)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427642001	**FD-TT-09 (4-12 WM)**	EPA 3550	533317	EPA 8081B	534051
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 3550	533317	EPA 8081B	534051
10427642003	**FD-TT-11 (4-12 WM)**	EPA 3550	533317	EPA 8081B	534051
10427642004	**FD-TT-12 (3-12)**	EPA 3550	533317	EPA 8081B	534051
10427642005	**FD-TT-13 (3-12)**	EPA 3550	533317	EPA 8081B	534051
10427642001	**FD-TT-09 (4-12 WM)**	EPA 3550	533330	EPA 8082A	533720
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 3550	533330	EPA 8082A	533720
10427642003	**FD-TT-11 (4-12 WM)**	EPA 3550	533330	EPA 8082A	533720
10427642004	**FD-TT-12 (3-12)**	EPA 3550	533330	EPA 8082A	533720
10427642005	**FD-TT-13 (3-12)**	EPA 3550	533330	EPA 8082A	533720
10427642001	**FD-TT-09 (4-12 WM)**	WI MOD DRO	533207	WI MOD DRO	533600
10427642002	**FD-TT-10 (2'-10' WM)**	WI MOD DRO	533207	WI MOD DRO	533600
10427642003	**FD-TT-11 (4-12 WM)**	WI MOD DRO	533207	WI MOD DRO	533600
10427642004	**FD-TT-12 (3-12)**	WI MOD DRO	533207	WI MOD DRO	533600
10427642005	**FD-TT-13 (3-12)**	WI MOD DRO	533207	WI MOD DRO	533600
10427642001	**FD-TT-09 (4-12 WM)**	EPA 5030 Medium Soil	534800	WI MOD GRO	534916
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 5030 Medium Soil	534800	WI MOD GRO	534916
10427642003	**FD-TT-11 (4-12 WM)**	EPA 5030 Medium Soil	534800	WI MOD GRO	534916
10427642004	**FD-TT-12 (3-12)**	EPA 5030 Medium Soil	534800	WI MOD GRO	534916
10427642005	**FD-TT-13 (3-12)**	EPA 5030 Medium Soil	534800	WI MOD GRO	534916
10427642001	**FD-TT-09 (4-12 WM)**	EPA 3050	533415	EPA 6010C	533499
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 3050	533415	EPA 6010C	533499
10427642003	**FD-TT-11 (4-12 WM)**	EPA 3050	533415	EPA 6010C	533499
10427642004	**FD-TT-12 (3-12)**	EPA 3050	533415	EPA 6010C	533499
10427642005	**FD-TT-13 (3-12)**	EPA 3050	533415	EPA 6010C	533499
10427642001	**FD-TT-09 (4-12 WM)**	EPA 3050B	438855	EPA 6020	439080
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 3050B	438855	EPA 6020	439080
10427642003	**FD-TT-11 (4-12 WM)**	EPA 3050B	438855	EPA 6020	439080
10427642004	**FD-TT-12 (3-12)**	EPA 3050B	438855	EPA 6020	439080
10427642005	**FD-TT-13 (3-12)**	EPA 3050B	438855	EPA 6020	439080
10427642001	**FD-TT-09 (4-12 WM)**	EPA 3050	533412	EPA 6020A	533510
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 3050	533412	EPA 6020A	533510
10427642003	**FD-TT-11 (4-12 WM)**	EPA 3050	533412	EPA 6020A	533510
10427642004	**FD-TT-12 (3-12)**	EPA 3050	533412	EPA 6020A	533510
10427642005	**FD-TT-13 (3-12)**	EPA 3050	533412	EPA 6020A	533510
10427642001	**FD-TT-09 (4-12 WM)**	EPA 7471	533419	EPA 7471	533655
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 7471	533419	EPA 7471	533655
10427642003	**FD-TT-11 (4-12 WM)**	EPA 7471	533419	EPA 7471	533655
10427642004	**FD-TT-12 (3-12)**	EPA 7471	533419	EPA 7471	533655
10427642005	**FD-TT-13 (3-12)**	EPA 7471	533419	EPA 7471	533655

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427642001	**FD-TT-09 (4-12 WM)**	ASTM D2974	534034		
10427642002	**FD-TT-10 (2'-10' WM)**	ASTM D2974	534034		
10427642003	**FD-TT-11 (4-12 WM)**	ASTM D2974	534034		
10427642004	**FD-TT-12 (3-12)**	ASTM D2974	534034		
10427642005	**FD-TT-13 (3-12)**	ASTM D2974	534034		
10427642001	**FD-TT-09 (4-12 WM)**	EPA 3550	533315	EPA 8270D	533819
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 3550	533315	EPA 8270D	533819
10427642003	**FD-TT-11 (4-12 WM)**	EPA 3550	533315	EPA 8270D	533819
10427642004	**FD-TT-12 (3-12)**	EPA 3550	533315	EPA 8270D	533819
10427642005	**FD-TT-13 (3-12)**	EPA 3550	533315	EPA 8270D	533819
10427642005	**FD-TT-13 (3-12)**	EPA 3550	533315	EPA 8270D	
10427642001	**FD-TT-09 (4-12 WM)**	EPA 3550	533341	EPA 8270D by SIM	533540
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 3550	533341	EPA 8270D by SIM	533540
10427642003	**FD-TT-11 (4-12 WM)**	EPA 3550	533341	EPA 8270D by SIM	533540
10427642004	**FD-TT-12 (3-12)**	EPA 3550	533341	EPA 8270D by SIM	533540
10427642005	**FD-TT-13 (3-12)**	EPA 3550	533341	EPA 8270D by SIM	533540
10427642001	**FD-TT-09 (4-12 WM)**	EPA 5035/5030B	534461	EPA 8260B	534737
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 5035/5030B	534461	EPA 8260B	534737
10427642003	**FD-TT-11 (4-12 WM)**	EPA 5035/5030B	534461	EPA 8260B	534737
10427642004	**FD-TT-12 (3-12)**	EPA 5035/5030B	534461	EPA 8260B	534737
10427642005	**FD-TT-13 (3-12)**	EPA 5035/5030B	534461	EPA 8260B	534737
10427642001	**FD-TT-09 (4-12 WM)**	EPA 3060A	438492	EPA 7196A	438766
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 3060A	439469	EPA 7196A	439714
10427642003	**FD-TT-11 (4-12 WM)**	EPA 3060A	439469	EPA 7196A	439714
10427642004	**FD-TT-12 (3-12)**	EPA 3060A	439469	EPA 7196A	439714
10427642005	**FD-TT-13 (3-12)**	EPA 3060A	439469	EPA 7196A	439714
10427642001	**FD-TT-09 (4-12 WM)**	Trivalent Chromium Calculation	440098		
10427642002	**FD-TT-10 (2'-10' WM)**	Trivalent Chromium Calculation	440098		
10427642003	**FD-TT-11 (4-12 WM)**	Trivalent Chromium Calculation	440098		
10427642004	**FD-TT-12 (3-12)**	Trivalent Chromium Calculation	440098		
10427642005	**FD-TT-13 (3-12)**	Trivalent Chromium Calculation	440098		
10427642001	**FD-TT-09 (4-12 WM)**	EPA 9012A	286937	EPA 9012	286958
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 9012A	286937	EPA 9012	286958
10427642003	**FD-TT-11 (4-12 WM)**	EPA 9012A	286937	EPA 9012	286958
10427642004	**FD-TT-12 (3-12)**	EPA 9012A	286937	EPA 9012	286958
10427642005	**FD-TT-13 (3-12)**	EPA 9012A	286937	EPA 9012	286958
10427642001	**FD-TT-09 (4-12 WM)**	EPA 300.0	141337	EPA 9056A	141349
10427642002	**FD-TT-10 (2'-10' WM)**	EPA 300.0	141337	EPA 9056A	141349
10427642003	**FD-TT-11 (4-12 WM)**	EPA 300.0	141337	EPA 9056A	141349
10427642004	**FD-TT-12 (3-12)**	EPA 300.0	141337	EPA 9056A	141349
10427642005	**FD-TT-13 (3-12)**	EPA 300.0	141337	EPA 9056A	141349

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427642

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch

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WO#: 10427642

10427642

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number:

Turnaround Time:

of

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO

Facility Code: MPCA-Freeway LF solids

Program Code (MDH Lab Only):

Project Name: MPCA-Freeway LF solids

Project Task Code:

Project Manager:

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name:

Address: 18-00383 Epic Profile #38716

Phone No:

SAMPLE DETAILS

ANALYSIS REQUESTED

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

Location Identifier	Sample Type	Date	Time	Start Depth, in feet (~~meters~~)	End Depth, in feet (~~meters~~)	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: see attached for soils/waste (-Dioxins)	ANALYSIS: +Dioxins					Lab Sample No.	#
FD-TT-09 ~~(4-12 WM)~~	S	4/17/18	9:30	4'	12'	C	SD	WM			13		X	X					001	1
FD-TT-10 ~~(2-10' WM)~~	S	4/17/18	12:15	2'	10'	C	SD	WM			13		X						002	2
FD-TT-11 ~~(4-12 WM)~~	S	4/17/18	13:24	4'	~~12~~ 13'	C	SD	WM			13		X	X					003	3
FD-TT-12(3-12)	S	4/17/18	14:37	3'	12'	C	SD	WM			13		X						004	4
FD-TT-13(3-12)	S	4/17/18	15:36	3'	12'	C	SD	WM			13		X	X					005	5
																				6
																				7
																				8
																				9
																				10

Sampled By:

Sampler's Signature:

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) Nate Rietmeier / Pace	4/17/18 1730	Pace	4/17/18 1730

T=9.6

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MN Pollution Control

Project #: WO#: 10427642

PM: JMA Due Date: 05/02/18

CLIENT: ASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☑Pace ☐SpeeDee ☐Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☑No **Seals Intact?** ☐Yes ☑No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☑None ☐Other:_____ **Temp Blank?** ☑Yes ☐No

Thermometer Used: ☐151401163 ☑G87A9155100842 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Cooler Temp Read (°C): 9.4 **Cooler Temp Corrected (°C):** 9.6

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Date and Initials of Person Examining Contents: ET 4/17/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☑No

Did samples originate from a foreign source (international including Hawaii and Puerto Rico)? ☐Yes ☑No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑Yes	☐No		1.
Chain of Custody Filled Out? 4/17/18 JD	☑Yes	☐No		2. No "list" Included
Chain of Custody Relinquished?	☑Yes	☐No		3.
Sampler Name and/or Signature on COC?	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☑Yes	☐No		5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No		6.
Rush Turn Around Time Requested?	☐Yes	☑No		7.
Sufficient Volume?	☑Yes	☐No		8.
Correct Containers Used?	☑Yes	☐No		9.
-Pace Containers Used?	☑Yes	☐No		
Containers Intact?	☑Yes	☐No		10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☑Yes	☐No		12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☑N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☑N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐Yes	☐No	☑N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☑N/A	14. 4/17/18
Trip Blank Present?	☐Yes	☑No	☐N/A	15.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 04/19/2018

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Chain of Custody

WO#: 12107383

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427642 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/17/2018 Results Requested By: 5/2/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Total Fluoride by 9056	LAB USE ONLY
1	FD-TT-09 (4-12 WM)	PS	4/17/2018 09:20	10427642001	Solid	1	X	
2	FD-TT-10 (2'-10' WM)	PS	4/17/2018 12:15	10427642002	Solid	1	X	
3	FD-TT-11 (4-12 WM)	PS	4/17/2018 13:24	10427642003	Solid	1	X	
4	FD-TT-12 (3-12)	PS	4/17/2018 14:37	10427642004	Solid	1	X	
5	FD-TT-13 (3-12)	PS	4/17/2018 15:30	10427642005	Solid	1	X	

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/19/18 1410	[signature]	4.17.18 1930
2	[signature]	4.20.18 0430	B. Mathews	4/20/18 0645
3				

Cooler Temperature on Receipt 3.4 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: **WO#: 12107383**

PM: HRZ Due Date: 05/02/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 5.1 Cooler Temp Corrected °C: 5.4 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 4-20-18 DC

Comments: BM 4/20/18

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Carrie Jen Date: 4/20/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427642 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/17/2018 Results Requested By: 5/2/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

	Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Total Cyanide by 9012	LAB USE ONLY
001	1	FD-TT-09 (4-12 WM)	PS	4/17/2018 09:20	10427642001	Solid	1	X	
002	2	FD-TT-10 (2'-10' WM)	PS	4/17/2018 12:15	10427642002	Solid	1	X	
003	3	FD-TT-11 (4-12 WM)	PS	4/17/2018 13:24	10427642003	Solid	1	X	
004	4	FD-TT-12 (3-12)	PS	4/17/2018 14:37	10427642004	Solid	1	X	
005	5	FD-TT-13 (3-12)	PS	4/17/2018 15:30	10427642005	Solid	1	X	

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] DAEE	4/19/18 1645		
2	Waltco	4/20/18 0840	RBerns pace	4/20/18 0840
3				

Cooler Temperature on Receipt 3.5 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Pace MN Project # 40167733

All containers needing preservation have been checked and noted below: □Yes □No ☑N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

	Glass							Plastic							Vials						Jars			General							
Pace Lab #	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																					1												2.5 / 5 / 10
002																					1												2.5 / 5 / 10
003																					1												2.5 / 5 / 10
004																					1												2.5 / 5 / 10
005																					1												2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : □Yes □No ☑N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: 31Jan2018
	Document No.: **F-GB-C-031-rev.06**	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: **WO# : 40167733**



Client Name: Pace MN

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☑ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: 1697357

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - 66 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3 /Corr: 3.5

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 4/20/18
Initials: DS

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☑N/A	4. IRWU DS 4/20/18
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume: ☑Yes ☐No ☐N/A MS/MSD DS 4/20/18	☐Yes ☐No ☑N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. NO Collect Times on Client labels DS 4/20/18
-Includes date/time/ID/Analysis Matrix: S		
Trip Blank Present:	☐Yes ☑No ☐N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: CKV **Date:** 4/20/18

Chain of Custody

WO#: 12107383
PM: HRZ Due Date: 05/04/18
CLIENT: PACE MPLS
Page 83 of 100

☐ Samples were sent directly to the Subcontracting Laboratory. State Of Origin: MN

Workorder: 10427642 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/17/2018 Results Requested By: 5/2/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury by 1630	LAB USE ONLY
1	FD-TT-09 (4-12 WM)	PS	4/17/2018 09:20	10427642001	Solid	1	X	
2	FD-TT-10 (2'-10' WM)	PS	4/17/2018 12:15	10427642002	Solid	1	X	
3	FD-TT-11 (4-12 WM)	PS	4/17/2018 13:24	10427642003	Solid	1	X	
4	FD-TT-12 (3-12)	PS	4/17/2018 14:37	10427642004	Solid	1	X	
5	FD-TT-13 (3-12)	PS	4/17/2018 15:30	10427642005	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	4/19/18 1720	D Chase	4.19.18 1930
2	D Chase	4-19-18 2315	[signature]	4/20/18 08:00
3				

Comments

Cooler Temperature on Receipt 4.0 °C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: PACE MPLS

Project #: WO#: 12107383

PM: HRZ Due Date: 05/04/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 01339252/1710 ☐ IR-1 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 4.0 Cooler Temp Corrected °C: 4.0 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: 0.0 Date and Initials of Person Examining Contents: 4/20/18 JB

If temperature ≤0°C, is there evidence of ice formation? ☐ Yes ☐ No ☑ NA

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☐ No	☑ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☐ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: **Date:**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427642 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/17/2018 **Results Requested By:** 5/2/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

50194903

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Cr III	Cr VI	Total Cr	LAB USE ONLY
1	FD-TT-09 (4-12 WM)	PS	4/17/2018 09:20	10427642001	Solid	1	X	X	X	001
2	FD-TT-10 (2'-10' WM)	PS	4/17/2018 12:15	10427642002	Solid	1	X	X	X	002
3	FD-TT-11 (4-12 WM)	PS	4/17/2018 13:24	10427642003	Solid	1	X	X	X	003
4	FD-TT-12 (3-12)	PS	4/17/2018 14:37	10427642004	Solid	1	X	X	X	004
5	FD-TT-13 (3-12)	PS	4/17/2018 15:30	10427642005	Solid	1	X	X	X	005

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	4/19/18 1630	fedex	
2	fedex	4-20-18 0820	Jason Hauff	4-20-18 0820
3				

Cooler Temperature on Receipt 2.5 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

SAMPLE CONDITION UPON RECEIPT FORM

Pace Analytical

Project #: 50194903

Date/Time and Initials of person examining contents: JH 4-2018 954

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: 7475 9832 2530

Custody Seal on Cooler/Box Present: ☒ Yes ☐ No **Seals Intact:** ☒ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer: 1 2 (3) 4 5 6 A B C D E F Ice Type: ☒ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☐ Yes ☐ No ☒ N

Cooler Temperature: 2.2/2.5 Ice Visible in Sample Containers?: ☐ Yes ☒ No ☐ N

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☐ Yes ☐ No ☒ N

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		X	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			X
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		X				
Chain of Custody Present:	X		Dissolved Metals field filtered?:			X
Chain of Custody Filled Out:	X		Headspace Wisconsin Sulfide			X
Short Hold Time Analysis (<72hr)?: Analysis:		X		Present	Absent	N/A
Time 5035A TC placed in Freezer or Short Holds To Lab:			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			X
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			X
Rush TAT Requested:		X	Headspace in VOA Vials (>6mm):			X
Containers Intact?:	X		Trip Blank Present?:		X	
Sample Labels Match COC?: Except TCs, which only require sample ID	X		Trip Blank Custody Seals?:		X	

Comments:

Sample Container Count

WO# : 50194903

50194903

CLIENT: Pace MN

COC PAGE ____ of ____

COC ID# _____

Project # 50194903

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	E R				Matrix S (Soil/Wa Aqueous	pH <2	pH >9	pH>1
1							1														SL			
2							1														SL			
3							1														SL			
4							1														SL			
5							1														SL			
6																								
7																								
8																								
9																								
10																								
11																								
12																								

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic	BP3U	250mL unpreserved plastic
BP1N	1 liter HNO3 plastic	BP3Z	250mL NaOH, Zn Ac plastic
BP1S	1 liter H2SO4 plastic		
BP1U	1 liter unpreserved plastic	AF	Air Filter
BP1Z	1 liter NaOH, Zn, Ac	C	Air Cassettes
BP2A	500mL NaOH, Asc Acid plastic	R	Terra core kit
BP2N	500mL HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
BP2O	500mL NaOH plastic	U	Summa Can
BP2S	500mL H2SO4 plastic	ZPLC	Ziploc Bag
BP2U	500mL unpreserved plastic		
BP2Z	500mL NaOH, Zn Ac		
BP3B	250mL NaOH plastic		
BP3N	250mL HNO3 plastic		
BP3S	250mL H2SO4 plastic		

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April 28, 2018

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
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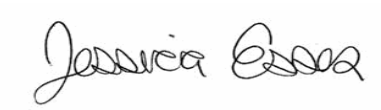
RE: 18-00383 MPCA Freeway LF Solid - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/20/2018.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jessica Esser

Project Manager

Certification List			Expires
ADEQ	Arkansas Department of Environmental Quality	17-065-0	09/26/2018
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2019
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2018
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2018
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2018
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2018
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2017-154	08/31/2018
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2018
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2018

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FD-TT-09 (4-12 WM) (10427642001)	A181623-01	Solid	04/17/2018	04/20/2018
FD-TT-10 (2'-10' WM) (10427642002)	A181623-02	Solid	04/17/2018	04/20/2018
FD-TT-11 (4-12 WM) (10427642003)	A181623-03	Solid	04/17/2018	04/20/2018
FD-TT-12 (3-12) (10427642004)	A181623-04	Solid	04/17/2018	04/20/2018
FD-TT-13 (3-12) (10427642005)	A181623-05	Solid	04/17/2018	04/20/2018

CASE NARRATIVE

Sample Receipt Information:
5 samples were received on 04/20/2018. Samples were received at 2.3 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Laboratory Control Samples (LCS):
The LC footnote on sample A181623-05 states that there was a low CCV recovery for bentazon. The lower control limit is 85% and the lowest recovery was 83.2%.

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FD-TT-09 (4-12 WM) (10427642001)

A181623-01 (Solid)

Date Sampled
04/17/2018 09:20

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Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804178**			
2,4-D	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 08:02	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 08:02	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 08:02	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 08:02	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 08:02	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 08:42	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 08:02	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 08:02	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 08:02	EPA 8321B	
Surrogate: DCAA		*83.5 %*		*70.8-116*	*04/22/2018*	*04/23/2018 08:02*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**67.3**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FD-TT-10 (2'-10' WM) (10427642002)

A181623-02 (Solid)

Date Sampled
04/17/2018 12:15

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804178**			
2,4-D	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 09:10	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 09:48	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 09:10	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 09:10	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 09:10	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 09:10	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 09:10	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 09:10	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 09:10	EPA 8321B	
Surrogate: DCAA		*84.3 %*		*70.8-116*	*04/22/2018*	*04/23/2018 09:10*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**79.1**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FD-TT-11 (4-12 WM) (10427642003)

A181623-03 (Solid)

Date Sampled
04/17/2018 13:24

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804178**			
2,4-D	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 10:54	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 10:17	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 10:17	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 10:54	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 10:17	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 10:17	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 10:17	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 10:17	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 10:17	EPA 8321B	
Surrogate: DCAA		*87.6 %*		*70.8-116*	*04/22/2018*	*04/23/2018 10:17*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**78.3**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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FD-TT-12 (3-12) (10427642004)

A181623-04 (Solid)

Date Sampled
04/17/2018 14:37

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Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804178**			
2,4-D	**0.13**	0.10	mg/kg dry	1	04/22/2018	04/23/2018 12:00	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 12:00	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 11:24	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 11:24	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 11:24	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 11:24	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 11:24	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 11:24	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 11:24	EPA 8321B	
Surrogate: DCAA		*87.5 %*		*70.8-116*	*04/22/2018*	*04/23/2018 11:24*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**72.4**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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FD-TT-13 (3-12) (10427642005)

A181623-05 (Solid)

Date Sampled
04/17/2018 15:30

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Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804178**			
2,4-D	**0.18**	0.10	mg/kg dry	1	04/22/2018	04/23/2018 12:31	EPA 8321B	P
2,4-DB	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 13:06	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 13:06	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 12:31	EPA 8321B	
Bentazon	**0.31**	0.10	mg/kg dry	1	04/22/2018	04/23/2018 13:06	EPA 8321B	LC, P
Dicamba	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 12:31	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 12:31	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 12:31	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 13:06	EPA 8321B	
Surrogate: DCAA		*80.7 %*		*70.8-116*	*04/22/2018*	*04/23/2018 12:31*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**62.5**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804178 - EPA 3570										
Blank (A804178-BLK1)				Prepared: 04/22/2018 Analyzed: 04/22/2018 20:52						
2,4-D	ND	0.10	mg/kg wet							
2,4-D [2C]	ND	0.10	mg/kg wet							
2,4-DB	ND	0.10	mg/kg wet							
2,4-DB [2C]	ND	0.10	mg/kg wet							
2,4,5-T	ND	0.10	mg/kg wet							
2,4,5-T [2C]	ND	0.10	mg/kg wet							
2,4,5-TP	ND	0.10	mg/kg wet							
2,4,5-TP [2C]	ND	0.10	mg/kg wet							
Bentazon	ND	0.10	mg/kg wet							
Bentazon [2C]	ND	0.10	mg/kg wet							
Dicamba	ND	0.10	mg/kg wet							
Dicamba [2C]	ND	0.10	mg/kg wet							
MCPA	ND	0.10	mg/kg wet							
MCPA [2C]	ND	0.10	mg/kg wet							
Picloram	ND	0.10	mg/kg wet							
Picloram [2C]	ND	0.10	mg/kg wet							
Triclopyr	ND	0.10	mg/kg wet							
Triclopyr [2C]	ND	0.10	mg/kg wet							
Surrogate: DCAA	*19.9*		*mg/kg wet*	*20.00*		*99.7*	*70.8-116*			
Surrogate: DCAA [2C]	*17.9*		*mg/kg wet*	*20.00*		*89.4*	*62.3-114*			
LCS (A804178-BS1)				Prepared: 04/22/2018 Analyzed: 04/22/2018 19:45						
2,4-D	1.89	0.10	mg/kg wet	2.000		94.5	81.6-107			
2,4-D [2C]	1.73	0.10	mg/kg wet	2.000		86.5	71.8-120			
2,4-DB	1.77	0.10	mg/kg wet	2.000		88.7	76.4-107			
2,4-DB [2C]	1.66	0.10	mg/kg wet	2.000		82.9	62.2-129			
2,4,5-T	1.96	0.10	mg/kg wet	2.000		98.0	81.2-110			
2,4,5-T [2C]	1.87	0.10	mg/kg wet	2.000		93.6	70.6-125			
2,4,5-TP	1.86	0.10	mg/kg wet	2.000		92.8	79.1-106			
2,4,5-TP [2C]	1.74	0.10	mg/kg wet	2.000		86.9	68.2-118			
Bentazon	1.02	0.10	mg/kg wet	1.000		102	82.5-119			
Bentazon [2C]	0.877	0.10	mg/kg wet	1.000		87.7	73.3-125			
Dicamba	1.93	0.10	mg/kg wet	2.000		96.3	85.1-108			
Dicamba [2C]	1.83	0.10	mg/kg wet	2.000		91.4	71.4-115			
Picloram	0.978	0.10	mg/kg wet	1.000		97.8	86.1-106			
Picloram [2C]	0.846	0.10	mg/kg wet	1.000		84.6	74.5-114			
Triclopyr	1.86	0.10	mg/kg wet	2.000		92.9	78.6-106			
Triclopyr [2C]	1.71	0.10	mg/kg wet	2.000		85.6	69.4-118			
Surrogate: DCAA	*19.8*		*mg/kg wet*	*20.00*		*98.9*	*70.8-116*			
Surrogate: DCAA [2C]	*18.3*		*mg/kg wet*	*20.00*		*91.7*	*62.3-114*			
LCS (A804178-BS2)				Prepared: 04/22/2018 Analyzed: 04/22/2018 18:37						
MCPA	2.14	0.10	mg/kg wet	2.000		107	79.4-116			
MCPA [2C]	1.92	0.10	mg/kg wet	2.000		95.9	77-123			

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804178 - EPA 3570										
LCS (A804178-BS2)				Prepared: 04/22/2018 Analyzed: 04/22/2018 18:37						
Surrogate: DCAA	*19.9*		*mg/kg wet*	*20.00*		*99.4*	*70.8-116*			
Surrogate: DCAA [2C]	*20.2*		*mg/kg wet*	*20.00*		*101*	*62.3-114*			
Matrix Spike (A804178-MS1)	**Source: A181624-02**			Prepared: 04/22/2018 Analyzed: 04/22/2018 23:06						
2,4-D	2.05	0.10	mg/kg dry	2.490	ND	82.5	71.4-105			
2,4-D [2C]	1.94	0.10	mg/kg dry	2.490	0.220	69.1	50.5-123			
2,4-DB	1.91	0.10	mg/kg dry	2.490	0.0501	74.6	46.4-117			
2,4-DB [2C]	1.76	0.10	mg/kg dry	2.490	0.252	60.6	44.5-121			
2,4,5-T	2.16	0.10	mg/kg dry	2.490	ND	86.8	66.2-110			
2,4,5-T [2C]	1.87	0.10	mg/kg dry	2.490	ND	75.2	43.6-126			
2,4,5-TP	2.01	0.10	mg/kg dry	2.490	0.199	72.7	52.4-114			
2,4,5-TP [2C]	1.61	0.10	mg/kg dry	2.490	0.219	55.8	47.6-117			
Bentazon	1.13	0.10	mg/kg dry	1.245	ND	91.0	61.5-117			
Bentazon [2C]	1.20	0.10	mg/kg dry	1.245	ND	96.2	50.7-127			
Dicamba	1.71	0.10	mg/kg dry	2.490	ND	68.7	48.4-111			
Dicamba [2C]	1.86	0.10	mg/kg dry	2.490	0.290	63.1	43.3-108			
Picloram	0.654	0.10	mg/kg dry	1.245	ND	52.6	26.7-110			
Picloram [2C]	0.505	0.10	mg/kg dry	1.245	ND	40.6	10.8-110			
Triclopyr	2.16	0.10	mg/kg dry	2.490	0.182	79.6	56-113			
Triclopyr [2C]	1.70	0.10	mg/kg dry	2.490	0.211	60.0	47.9-120			
Surrogate: DCAA	*21.6*		*mg/kg dry*	*24.89*		*86.8*	*70.8-116*			
Surrogate: DCAA [2C]	*20.6*		*mg/kg dry*	*24.89*		*82.8*	*62.3-114*			
Matrix Spike (A804178-MS2)	**Source: A181624-02**			Prepared: 04/22/2018 Analyzed: 04/23/2018 01:20						
MCPA	2.29	0.10	mg/kg dry	2.490	ND	92.0	74.2-114			
MCPA [2C]	2.16	0.10	mg/kg dry	2.490	ND	86.7	60.9-122			
Surrogate: DCAA	*21.5*		*mg/kg dry*	*24.89*		*86.2*	*70.8-116*			
Surrogate: DCAA [2C]	*22.0*		*mg/kg dry*	*24.89*		*88.3*	*62.3-114*			
Matrix Spike Dup (A804178-MSD1)	**Source: A181624-02**			Prepared: 04/22/2018 Analyzed: 04/23/2018 00:13						
2,4-D	2.10	0.10	mg/kg dry	2.490	ND	84.3	71.4-105	2.19	20	
2,4-D [2C]	2.24	0.10	mg/kg dry	2.490	0.220	81.2	50.5-123	14.4	20	
2,4-DB	1.94	0.10	mg/kg dry	2.490	0.0501	76.1	46.4-117	1.91	20	
2,4-DB [2C]	1.82	0.10	mg/kg dry	2.490	0.252	63.2	44.5-121	3.63	20	
2,4,5-T	2.13	0.10	mg/kg dry	2.490	ND	85.4	66.2-110	1.61	20	
2,4,5-T [2C]	1.69	0.10	mg/kg dry	2.490	ND	67.7	43.6-126	10.5	20	
2,4,5-TP	1.97	0.10	mg/kg dry	2.490	0.199	71.0	52.4-114	2.17	20	
2,4,5-TP [2C]	1.69	0.10	mg/kg dry	2.490	0.219	59.2	47.6-117	5.02	20	
Bentazon	1.13	0.10	mg/kg dry	1.245	ND	90.5	61.5-117	0.559	20	
Bentazon [2C]	1.21	0.10	mg/kg dry	1.245	ND	96.9	50.7-127	0.794	20	
Dicamba	1.70	0.10	mg/kg dry	2.490	ND	68.5	48.4-111	0.297	20	
Dicamba [2C]	2.04	0.10	mg/kg dry	2.490	0.290	70.2	43.3-108	9.07	20	
Picloram	0.591	0.10	mg/kg dry	1.245	ND	47.5	26.7-110	10.2	20	
Picloram [2C]	0.569	0.10	mg/kg dry	1.245	ND	45.7	10.8-110	11.8	20	

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608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427642
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804178 - EPA 3570										
Matrix Spike Dup (A804178-MSD1)	**Source: A181624-02**			Prepared: 04/22/2018 Analyzed: 04/23/2018 00:13						
Triclopyr	2.16	0.10	mg/kg dry	2.490	0.182	79.6	56-113	0.0287	20	
Triclopyr [2C]	2.10	0.10	mg/kg dry	2.490	0.211	76.0	47.9-120	20.9	20	X
Surrogate: DCAA	*21.7*		*mg/kg dry*	*24.89*		*87.1*	*70.8-116*			
Surrogate: DCAA [2C]	*20.6*		*mg/kg dry*	*24.89*		*82.8*	*62.3-114*			
Matrix Spike Dup (A804178-MSD2)	**Source: A181624-02**			Prepared: 04/22/2018 Analyzed: 04/23/2018 02:27						
MCPA	2.35	0.10	mg/kg dry	2.490	ND	94.2	74.2-114	2.42	20	
MCPA [2C]	2.47	0.10	mg/kg dry	2.490	ND	99.2	60.9-122	13.5	20	
Surrogate: DCAA	*21.5*		*mg/kg dry*	*24.89*		*86.3*	*70.8-116*			
Surrogate: DCAA [2C]	*23.4*		*mg/kg dry*	*24.89*		*94.0*	*62.3-114*			

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427642
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Classical Chemistry Parameters - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804195 - % Solids										
Duplicate (A804195-DUP1)		**Source: A181708-01**		Prepared: 04/25/2018 Analyzed: 04/27/2018 09:07						
% Solids	79.2	0.00	% by Weight		79.6			0.516	20	

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427642
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
P	The difference in the concentrations between the primary and confirmation column was > 40%.
LC	Results may be biased low because of low continuing calibration verification (CCV).
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A181623

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www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427642 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/17/2018 Results Requested By: 5/2/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	MDA List II	LAB USE ONLY
1	FD-TT-09 (4-12 WM)	PS	4/17/2018 09:20	10427642001	Solid	1	X	01
2	FD-TT-10 (2'-10' WM)	PS	4/17/2018 12:15	10427642002	Solid	1	X	02
3	FD-TT-11 (4-12 WM)	PS	4/17/2018 13:24	10427642003	Solid	1	X	03
4	FD-TT-12 (3-12)	PS	4/17/2018 14:37	10427642004	Solid	1	X	04
5	FD-TT-13 (3-12)	PS	4/17/2018 15:30	10427642005	Solid	1	X	05

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	4/19/18 1620	Kori Ann Kyllo	4/20/18 10:08
2				
3				

Comments

Cooler Temperature on Receipt 2.3 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

1601423274 exp 7/12/18

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10427823
Sample Receipt Date: 04/18/2018
Client Project #: 18-00383
Client Sub PO #: N/A
State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

May 24, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
May 24, 2018

Report of Laboratory Analysis

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The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 50-67%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained. In cases where the estimated detection limits (EDLs) were above the standard reporting limits, the EDLs were reported and flagged "A".

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 116%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

WO#: 10427823

10427823

Work Order Number: | COC Type: | Page: 1 of

Turnaround Time: | COC ID:

Control Agency	PROJECT/CLIENT INFO	LABORATORY	FOR LAB USE ONLY
Facility Code:	MPCA - Freeway LF Solids	Program Code (MDH Lab Only):	Lab Name:	
Project Name:	MPCA - Freeway LF Solids	Project Task Code:	Address: 18-00383 EPIC Profile #38716	
Project Manager:				Lab Work Order Sticker
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:	

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in Feet or meters	End Depth, in Feet or meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: see attached for soils/waste (-D, Furans)	ANALYSIS: Sum10 +	Lab Sample No.	#
SB-TT-14 (2'-12' WM)	S	4/18/18	9:10	2'	12'	C	SD	WM			13		X	X	001	1
SB-TT-01 (3'-11' WM)	S	4/18/18	12:30	3'	11'	C	SD	WM			13		X	X	002	2
SB-TT-02 (2'-10.5' WM)	S	4/18/18	13:50	2'	10.5	C	SD	WM			13		X			3
																4
																5
																6
																7
																8
																9
																10

NW on 11 4/18/18

Sampled By: Nate Hibbard | Sampler's Signature: Nate Hibbard | Phone #: 612-214-8086

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) Nate Hibbard / Pace	4/18/18 1730	Pace	4/18/18 1730
			T=7.3

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: WO#: 10427823 PM: SCU Due Date: 05/03/18 CLIENT: POST-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☑Pace ☐SpeeDee ☐Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☑No **Seals Intact?** ☐Yes ☑No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☑None ☐Other:_____ **Temp Blank?** ☐Yes ☑No

Thermometer Used: ☐151401163 ☑G87A9155100842 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Cooler Temp Read (°C): 7.1 **Cooler Temp Corrected (°C):** 7.3 **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** MD 4/18/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☑No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☑No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑Yes	☐No		1.
Chain of Custody Filled Out?	☑Yes	☐No		2.
Chain of Custody Relinquished?	☑Yes	☐No		3.
Sampler Name and/or Signature on COC?	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☑Yes	☐No		5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No		6.
Rush Turn Around Time Requested?	☐Yes	☑No		7.
Sufficient Volume?	☑Yes	☐No		8.
Correct Containers Used?	☑Yes	☐No		9.
-Pace Containers Used?	☑Yes	☐No		
Containers Intact?	☑Yes	☐No		10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☐Yes	☑No		12. No times on samples
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☑N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☑N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐Yes	☐No	☑N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☑N/A	14.
Trip Blank Present?	☐Yes	☐No	☑N/A	15.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 04/19/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*) Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FD-TT-14 (2' -12' WM)		
Lab Sample ID	10427823001		
Filename	Y180511A_06		
Injected By	SMT		
Total Amount Extracted	13.5 g	Matrix	Solid
% Moisture	24.2	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	04/18/2018 09:10
ICAL ID	Y180204	Received	04/18/2018 17:30
CCal Filename(s)	Y180510C_16 & Y180511A_17	Extracted	04/24/2018 14:55
Method Blank ID	BLANK-61921	Analyzed	05/11/2018 06:18

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD	ND	-----	1.9	A	2,3,7,8-TCDD-13C	2.00	67
					Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
					Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	120

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
A = Reporting Limit based on signal to noise
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FL-TT-01 (3'-11' WM)		
Lab Sample ID	10427823002		
Filename	U180505A_06		
Injected By	BAL		
Total Amount Extracted	13.6 g	Matrix	Solid
% Moisture	17.9	Dilution	NA
Dry Weight Extracted	11.2 g	Collected	04/18/2018 12:30
ICAL ID	U180405	Received	04/18/2018 17:30
CCal Filename(s)	U180504B_15 & U180505A_10	Extracted	04/24/2018 14:55
Method Blank ID	BLANK-61921	Analyzed	05/05/2018 09:52

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg		**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	2.9	A	2,3,7,8-TCDD-13C	2.00	50
					Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
					Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	54

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
A = Reporting Limit based on signal to noise
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61921	Matrix	Solid
Filename	Y180511A_04	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	04/24/2018 14:55
ICAL ID	Y180204	Analyzed	05/11/2018 04:51
CCal Filename(s)	Y180510C_16 & Y180511A_17	Injected By	SMT

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	59
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	58

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61922		
Filename	Y180511A_01	Matrix	Solid
Total Amount Extracted	10.0 g	Dilution	NA
ICAL ID	Y180204	Extracted	04/24/2018 14:55
CCal Filename(s)	Y180510C_16 & Y180511A_17	Analyzed	05/11/2018 02:41
Method Blank ID	BLANK-61921	Injected By	SMT

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.23	116	2,3,7,8-TCDD-13C	2.0	66
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	69

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 03, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 18, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6451
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
California Certification #2973
California Certification #2973
Alaska Certification UST-107
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Montana DHHS Certification #: CERT0102
Minnesota Dept of Health Certification #: 1382680
Nevada DCNR Certification #: MN000372018-1
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10427824001	**FD-TT-14 (2' -12' WM)**	Solid	04/18/18 09:10	04/18/18 17:30
10427824002	**FL-TT-01 (3'-11' WM)**	Solid	04/18/18 12:30	04/18/18 17:30
10427824003	**FL-TT-02 (2'-10.5' WM)**	Solid	04/18/18 13:50	04/18/18 17:30

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	GDM	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2, GDM	72	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	RJS	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	GDM	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FD-TT-14 (2' -12' WM) **Lab ID: 10427824001** Collected: 04/18/18 09:10 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	12.4	1	04/25/18 10:56	04/30/18 15:19	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	309-00-2	M6
alpha-BHC	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	319-84-6	M6
beta-BHC	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	319-85-7	M6
delta-BHC	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	58-89-9	M6
Chlordane (Technical)	ND	ug/kg	2200	100	04/19/18 13:04	04/26/18 21:09	57-74-9	
alpha-Chlordane	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	5103-71-9	M6
gamma-Chlordane	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	5103-74-2	M6
4,4'-DDD	ND	ug/kg	439	100	04/19/18 13:04	04/26/18 21:09	72-54-8	M6
4,4'-DDE	ND	ug/kg	439	100	04/19/18 13:04	04/26/18 21:09	72-55-9	
4,4'-DDT	ND	ug/kg	439	100	04/19/18 13:04	04/26/18 21:09	50-29-3	M6
Dieldrin	ND	ug/kg	439	100	04/19/18 13:04	04/26/18 21:09	60-57-1	M6
Endosulfan I	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	959-98-8	
Endosulfan II	ND	ug/kg	439	100	04/19/18 13:04	04/26/18 21:09	33213-65-9	
Endosulfan sulfate	ND	ug/kg	439	100	04/19/18 13:04	04/26/18 21:09	1031-07-8	
Endrin	ND	ug/kg	439	100	04/19/18 13:04	04/26/18 21:09	72-20-8	
Endrin aldehyde	ND	ug/kg	439	100	04/19/18 13:04	04/26/18 21:09	7421-93-4	
Endrin ketone	ND	ug/kg	439	100	04/19/18 13:04	04/26/18 21:09	53494-70-5	M6
Heptachlor	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	76-44-8	M6
Heptachlor epoxide	ND	ug/kg	220	100	04/19/18 13:04	04/26/18 21:09	1024-57-3	
Methoxychlor	ND	ug/kg	2200	100	04/19/18 13:04	04/26/18 21:09	72-43-5	
Toxaphene	ND	ug/kg	6590	100	04/19/18 13:04	04/26/18 21:09	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	100	04/19/18 13:04	04/26/18 21:09	877-09-8	2M, D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	100	04/19/18 13:04	04/26/18 21:09	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	43.5	1	04/19/18 13:39	04/23/18 18:52	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	43.5	1	04/19/18 13:39	04/23/18 18:52	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	43.5	1	04/19/18 13:39	04/23/18 18:52	11141-16-5	
PCB-1242 (Aroclor 1242)	**2750**	ug/kg	218	5	04/19/18 13:39	04/24/18 10:26	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	43.5	1	04/19/18 13:39	04/23/18 18:52	12672-29-6	
PCB-1254 (Aroclor 1254)	**546**	ug/kg	43.5	1	04/19/18 13:39	04/23/18 18:52	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	43.5	1	04/19/18 13:39	04/23/18 18:52	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	43.5	1	04/19/18 13:39	04/23/18 18:52	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	43.5	1	04/19/18 13:39	04/23/18 18:52	11100-14-4	
PCB, Total	**3290**	ug/kg	218	5	04/19/18 13:39	04/24/18 10:26	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	101	%.	48-125	1	04/19/18 13:39	04/23/18 18:52	877-09-8	
Decachlorobiphenyl (S)	97	%.	30-134	1	04/19/18 13:39	04/23/18 18:52	2051-24-3	CH

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FD-TT-14 (2' -12' WM) **Lab ID: 10427824001** Collected: 04/18/18 09:10 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**1420**	mg/kg	875	20	04/20/18 17:57	04/22/18 13:07		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	04/20/18 17:57	04/22/18 13:07	638-68-6	P3,S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**98.5**	mg/kg	14.8	1	05/02/18 10:19	05/02/18 14:31		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	05/02/18 10:19	05/02/18 14:31	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**7110**	mg/kg	12.9	1	04/20/18 05:22	04/23/18 11:48	7429-90-5	
Barium	**153**	mg/kg	0.65	1	04/20/18 05:22	04/23/18 11:48	7440-39-3	
Boron	**99.2**	mg/kg	9.7	1	04/20/18 05:22	04/23/18 11:48	7440-42-8	
Copper	**78.8**	mg/kg	0.65	1	04/20/18 05:22	04/23/18 11:48	7440-50-8	
Iron	**31700**	mg/kg	16.2	5	04/20/18 05:22	04/23/18 12:58	7439-89-6	
Manganese	**408**	mg/kg	0.32	1	04/20/18 05:22	04/23/18 11:48	7439-96-5	
Nickel	**66.4**	mg/kg	1.3	1	04/20/18 05:22	04/23/18 11:48	7440-02-0	
Silver	ND	mg/kg	0.65	1	04/20/18 05:22	04/23/18 11:48	7440-22-4	
Tin	**10.9**	mg/kg	4.9	1	04/20/18 05:22	04/23/18 11:48	7440-31-5	
Titanium	**263**	mg/kg	1.6	1	04/20/18 05:22	04/23/18 11:48	7440-32-6	
Zinc	**205**	mg/kg	1.3	1	04/20/18 05:22	04/23/18 11:48	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**10**	mg/kg	0.25	1	04/25/18 09:25	04/26/18 03:37	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.3**	mg/kg	0.65	20	04/20/18 06:41	04/21/18 05:03	7440-36-0	
Arsenic	**12.7**	mg/kg	0.65	20	04/20/18 06:41	04/21/18 05:03	7440-38-2	
Beryllium	**1.4**	mg/kg	0.26	20	04/20/18 06:41	04/21/18 05:03	7440-41-7	
Cadmium	**2.2**	mg/kg	0.10	20	04/20/18 06:41	04/21/18 05:03	7440-43-9	
Cobalt	**8.9**	mg/kg	0.65	20	04/20/18 06:41	04/21/18 05:03	7440-48-4	
Lead	**137**	mg/kg	0.13	20	04/20/18 06:41	04/21/18 05:03	7439-92-1	
Lithium	**7.9**	mg/kg	0.65	20	04/20/18 06:41	04/21/18 05:03	7439-93-2	
Selenium	**2.8**	mg/kg	0.65	20	04/20/18 06:41	04/21/18 05:03	7782-49-2	
Strontium	**70.2**	mg/kg	0.65	20	04/20/18 06:41	04/21/18 05:03	7440-24-6	
Vanadium	**63.1**	mg/kg	1.3	20	04/20/18 06:41	04/21/18 05:03	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.27**	mg/kg	0.023	1	04/20/18 04:53	04/22/18 16:33	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**24.2**	%	0.10	1		04/24/18 13:49		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FD-TT-14 (2' -12' WM) **Lab ID: 10427824001** Collected: 04/18/18 09:10 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	208-96-8	
Anthracene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	120-12-7	
Benzo(a)anthracene	**19200**	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	56-55-3	
Benzo(a)pyrene	**13400**	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	50-32-8	
Benzo(b)fluoranthene	**13900**	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	101-55-3	
Butylbenzylphthalate	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	85-68-7	
Carbazole	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	59-50-7	
4-Chloroaniline	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	108-60-1	
2-Chloronaphthalene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	91-58-7	
2-Chlorophenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	7005-72-3	
Chrysene	**19100**	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	53-70-3	
Dibenzofuran	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	120-83-2	
Diethylphthalate	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	105-67-9	
Dimethylphthalate	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	131-11-3	
Di-n-butylphthalate	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	56000	5	04/19/18 19:31	04/26/18 00:28	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	606-20-2	
Di-n-octylphthalate	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	122-66-7	
bis(2-Ethylhexyl)phthalate	**18400**	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	117-81-7	
Fluoranthene	**31300**	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	206-44-0	
Fluorene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	87-68-3	
Hexachlorobenzene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	118-74-1	
Hexachloroethane	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	193-39-5	
Isophorone	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	78-59-1	
1-Methylnaphthalene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	90-12-0	
2-Methylnaphthalene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FD-TT-14 (2' -12' WM) **Lab ID: 10427824001** Collected: 04/18/18 09:10 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	21700	5	04/19/18 19:31	04/26/18 00:28		
Naphthalene	**12200**	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	91-20-3	
2-Nitroaniline	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	88-74-4	
3-Nitroaniline	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	99-09-2	
4-Nitroaniline	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	100-01-6	
Nitrobenzene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	98-95-3	
2-Nitrophenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	88-75-5	
4-Nitrophenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	86-30-6	
Pentachlorophenol	ND	ug/kg	22100	5	04/19/18 19:31	04/26/18 00:28	87-86-5	
Phenanthrene	**36800**	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	85-01-8	
Phenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	108-95-2	
Pyrene	**44500**	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	10900	5	04/19/18 19:31	04/26/18 00:28	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	5	04/19/18 19:31	04/26/18 00:28	4165-60-0	D3,P3, S4
2-Fluorobiphenyl (S)	0	%.	30-132	5	04/19/18 19:31	04/26/18 00:28	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	62-125	5	04/19/18 19:31	04/26/18 00:28	1718-51-0	S4
Phenol-d6 (S)	0	%.	48-125	5	04/19/18 19:31	04/26/18 00:28	13127-88-3	S4
2-Fluorophenol (S)	0	%.	40-125	5	04/19/18 19:31	04/26/18 00:28	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	60-125	5	04/19/18 19:31	04/26/18 00:28	118-79-6	S4
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**39700**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	83-32-9	
Acenaphthylene	**390**	ug/kg	65.9	5	04/19/18 18:12	04/20/18 18:30	208-96-8	
Anthracene	**30700**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	120-12-7	
Benzo(a)anthracene	**30500**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	56-55-3	
Benzo(a)pyrene	**25600**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	50-32-8	
Benzo(b)fluoranthene	**32200**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	205-99-2	
Benzo(g,h,i)perylene	**12800**	ug/kg	659	50	04/19/18 18:12	04/23/18 20:09	191-24-2	
Benzo(k)fluoranthene	**11200**	ug/kg	659	50	04/19/18 18:12	04/23/18 20:09	207-08-9	
Chrysene	**23700**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	218-01-9	
Dibenz(a,h)anthracene	**3390**	ug/kg	659	50	04/19/18 18:12	04/23/18 20:09	53-70-3	
Fluoranthene	**79500**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	206-44-0	
Fluorene	**37300**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	86-73-7	
Indeno(1,2,3-cd)pyrene	**11300**	ug/kg	659	50	04/19/18 18:12	04/23/18 20:09	193-39-5	
Naphthalene	**14700**	ug/kg	659	50	04/19/18 18:12	04/23/18 20:09	91-20-3	
Phenanthrene	**104000**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	85-01-8	
Pyrene	**60300**	ug/kg	3300	250	04/19/18 18:12	04/23/18 20:30	129-00-0	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FD-TT-14 (2' -12' WM) **Lab ID: 10427824001** Collected: 04/18/18 09:10 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
2-Fluorobiphenyl (S)	52	%.	42-125	5	04/19/18 18:12	04/20/18 18:30	321-60-8	D3
p-Terphenyl-d14 (S)	93	%.	57-125	5	04/19/18 18:12	04/20/18 18:30	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1320	1	04/29/18 13:40	04/29/18 22:34	67-64-1	
Allyl chloride	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	107-05-1	L2
Benzene	ND	ug/kg	26.4	1	04/29/18 13:40	04/29/18 22:34	71-43-2	
Bromobenzene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	108-86-1	
Bromochloromethane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	74-97-5	
Bromodichloromethane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	75-27-4	
Bromoform	ND	ug/kg	659	1	04/29/18 13:40	04/29/18 22:34	75-25-2	
Bromomethane	ND	ug/kg	659	1	04/29/18 13:40	04/29/18 22:34	74-83-9	
2-Butanone (MEK)	ND	ug/kg	330	1	04/29/18 13:40	04/29/18 22:34	78-93-3	
n-Butylbenzene	**542**	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	104-51-8	
sec-Butylbenzene	**343**	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	135-98-8	
tert-Butylbenzene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	98-06-6	
Carbon tetrachloride	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	56-23-5	
Chlorobenzene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	108-90-7	
Chloroethane	ND	ug/kg	659	1	04/29/18 13:40	04/29/18 22:34	75-00-3	
Chloroform	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	67-66-3	
Chloromethane	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	74-87-3	
2-Chlorotoluene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	95-49-8	
4-Chlorotoluene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	659	1	04/29/18 13:40	04/29/18 22:34	96-12-8	
Dibromochloromethane	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	106-93-4	
Dibromomethane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	74-95-3	
1,2-Dichlorobenzene	**169**	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	541-73-1	
1,4-Dichlorobenzene	**194**	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	75-71-8	
1,1-Dichloroethane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	75-34-3	
1,2-Dichloroethane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	107-06-2	
1,1-Dichloroethene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	156-60-5	
Dichlorofluoromethane	ND	ug/kg	659	1	04/29/18 13:40	04/29/18 22:34	75-43-4	
1,2-Dichloropropane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	78-87-5	
1,3-Dichloropropane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	142-28-9	
2,2-Dichloropropane	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	594-20-7	
1,1-Dichloropropene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	60-29-7	
Ethylbenzene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	100-41-4	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FD-TT-14 (2' -12' WM) **Lab ID: 10427824001** Collected: 04/18/18 09:10 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Hexachloro-1,3-butadiene	ND	ug/kg	330	1	04/29/18 13:40	04/29/18 22:34	87-68-3	
Isopropylbenzene (Cumene)	**243**	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	98-82-8	
p-Isopropyltoluene	**70.5**	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	99-87-6	
Methylene Chloride	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	75-09-2	L2
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	330	1	04/29/18 13:40	04/29/18 22:34	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	1634-04-4	
Naphthalene	**6210**	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	91-20-3	
n-Propylbenzene	**468**	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	103-65-1	
Styrene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	79-34-5	
Tetrachloroethene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	127-18-4	
Tetrahydrofuran	ND	ug/kg	2640	1	04/29/18 13:40	04/29/18 22:34	109-99-9	
Toluene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	79-00-5	
Trichloroethene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	79-01-6	
Trichlorofluoromethane	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	264	1	04/29/18 13:40	04/29/18 22:34	76-13-1	
1,2,4-Trimethylbenzene	**471**	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	65.9	1	04/29/18 13:40	04/29/18 22:34	108-67-8	
Vinyl chloride	ND	ug/kg	26.4	1	04/29/18 13:40	04/29/18 22:34	75-01-4	
Xylene (Total)	ND	ug/kg	198	1	04/29/18 13:40	04/29/18 22:34	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	04/29/18 13:40	04/29/18 22:34	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	04/29/18 13:40	04/29/18 22:34	2037-26-5	
4-Bromofluorobenzene (S)	107	%.	75-125	1	04/29/18 13:40	04/29/18 22:34	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	25.7	10	04/28/18 10:35	05/01/18 10:57	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**10.0**	mg/kg	1.0	1		05/03/18 07:26	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.62**	mg/kg	0.53	1	04/25/18 11:00	04/25/18 13:40	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	04/25/18 14:45	04/26/18 03:08	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-01 (3'-11' WM) **Lab ID: 10427824002** Collected: 04/18/18 12:30 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.6	1	04/25/18 10:56	04/30/18 15:26	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	309-00-2	
alpha-BHC	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	319-84-6	
beta-BHC	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	319-85-7	
delta-BHC	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	58-89-9	
Chlordane (Technical)	ND	ug/kg	1010	50	04/19/18 13:04	04/27/18 00:30	57-74-9	
alpha-Chlordane	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	5103-71-9	
gamma-Chlordane	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	5103-74-2	
4,4'-DDD	ND	ug/kg	202	50	04/19/18 13:04	04/27/18 00:30	72-54-8	
4,4'-DDE	ND	ug/kg	202	50	04/19/18 13:04	04/27/18 00:30	72-55-9	
4,4'-DDT	ND	ug/kg	202	50	04/19/18 13:04	04/27/18 00:30	50-29-3	
Dieldrin	ND	ug/kg	202	50	04/19/18 13:04	04/27/18 00:30	60-57-1	
Endosulfan I	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	959-98-8	
Endosulfan II	ND	ug/kg	202	50	04/19/18 13:04	04/27/18 00:30	33213-65-9	
Endosulfan sulfate	ND	ug/kg	202	50	04/19/18 13:04	04/27/18 00:30	1031-07-8	
Endrin	ND	ug/kg	202	50	04/19/18 13:04	04/27/18 00:30	72-20-8	
Endrin aldehyde	ND	ug/kg	202	50	04/19/18 13:04	04/27/18 00:30	7421-93-4	
Endrin ketone	ND	ug/kg	202	50	04/19/18 13:04	04/27/18 00:30	53494-70-5	
Heptachlor	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	76-44-8	
Heptachlor epoxide	ND	ug/kg	101	50	04/19/18 13:04	04/27/18 00:30	1024-57-3	
Methoxychlor	ND	ug/kg	1010	50	04/19/18 13:04	04/27/18 00:30	72-43-5	
Toxaphene	ND	ug/kg	3040	50	04/19/18 13:04	04/27/18 00:30	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	50	04/19/18 13:04	04/27/18 00:30	877-09-8	1M,D3, S4
Decachlorobiphenyl (S)	0	%.	30-150	50	04/19/18 13:04	04/27/18 00:30	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	12672-29-6	
PCB-1254 (Aroclor 1254)	**125**	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	11100-14-4	
PCB, Total	**125**	ug/kg	40.1	1	04/19/18 13:39	04/23/18 19:40	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	68	%.	48-125	1	04/19/18 13:39	04/23/18 19:40	877-09-8	
Decachlorobiphenyl (S)	126	%.	30-134	1	04/19/18 13:39	04/23/18 19:40	2051-24-3	CH

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-01 (3'-11' WM) **Lab ID: 10427824002** Collected: 04/18/18 12:30 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**889**	mg/kg	536	10	04/20/18 17:57	04/22/18 14:19		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/20/18 17:57	04/22/18 14:19	638-68-6	P3,S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	13.1	1	05/02/18 10:19	05/02/18 12:53		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	05/02/18 10:19	05/02/18 12:53	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**4360**	mg/kg	11.5	1	04/20/18 05:22	04/23/18 11:51	7429-90-5	
Barium	**636**	mg/kg	0.57	1	04/20/18 05:22	04/23/18 11:51	7440-39-3	
Boron	**9.0**	mg/kg	8.6	1	04/20/18 05:22	04/23/18 11:51	7440-42-8	
Copper	**20.7**	mg/kg	0.57	1	04/20/18 05:22	04/23/18 11:51	7440-50-8	
Iron	**9410**	mg/kg	2.9	1	04/20/18 05:22	04/23/18 11:51	7439-89-6	
Manganese	**402**	mg/kg	0.29	1	04/20/18 05:22	04/23/18 11:51	7439-96-5	
Nickel	**10.9**	mg/kg	1.1	1	04/20/18 05:22	04/23/18 11:51	7440-02-0	
Silver	ND	mg/kg	0.57	1	04/20/18 05:22	04/23/18 11:51	7440-22-4	
Tin	**8.6**	mg/kg	4.3	1	04/20/18 05:22	04/23/18 11:51	7440-31-5	
Titanium	**196**	mg/kg	1.4	1	04/20/18 05:22	04/23/18 11:51	7440-32-6	
Zinc	**412**	mg/kg	1.1	1	04/20/18 05:22	04/23/18 11:51	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**4.0**	mg/kg	0.22	1	04/25/18 09:25	04/26/18 04:06	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.58	20	04/20/18 06:41	04/21/18 05:07	7440-36-0	
Arsenic	**5.4**	mg/kg	0.58	20	04/20/18 06:41	04/21/18 05:07	7440-38-2	
Beryllium	**0.34**	mg/kg	0.23	20	04/20/18 06:41	04/21/18 05:07	7440-41-7	
Cadmium	**0.61**	mg/kg	0.093	20	04/20/18 06:41	04/21/18 05:07	7440-43-9	
Cobalt	**8.0**	mg/kg	0.58	20	04/20/18 06:41	04/21/18 05:07	7440-48-4	
Lead	**275**	mg/kg	0.12	20	04/20/18 06:41	04/21/18 05:07	7439-92-1	
Lithium	**5.3**	mg/kg	0.58	20	04/20/18 06:41	04/21/18 05:07	7439-93-2	
Selenium	**0.89**	mg/kg	0.58	20	04/20/18 06:41	04/21/18 05:07	7782-49-2	
Strontium	**44.3**	mg/kg	0.58	20	04/20/18 06:41	04/21/18 05:07	7440-24-6	
Vanadium	**24.8**	mg/kg	1.2	20	04/20/18 06:41	04/21/18 05:07	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.38**	mg/kg	0.021	1	04/20/18 04:53	04/22/18 16:35	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**17.9**	%	0.10	1		04/24/18 13:49		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	**2310**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	83-32-9	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-01 (3'-11' WM) **Lab ID: 10427824002** Collected: 04/18/18 12:30 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	208-96-8	
Anthracene	**5340**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	120-12-7	
Benzo(a)anthracene	**14800**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	56-55-3	
Benzo(a)pyrene	**13200**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	50-32-8	
Benzo(b)fluoranthene	**17100**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	205-99-2	
Benzo(g,h,i)perylene	**9010**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	191-24-2	
Benzo(k)fluoranthene	**6680**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	101-55-3	
Butylbenzylphthalate	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	85-68-7	
Carbazole	**2920**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	59-50-7	
4-Chloroaniline	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	108-60-1	
2-Chloronaphthalene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	91-58-7	
2-Chlorophenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	7005-72-3	
Chrysene	**15000**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	53-70-3	
Dibenzofuran	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	120-83-2	
Diethylphthalate	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	105-67-9	
Dimethylphthalate	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	131-11-3	
Di-n-butylphthalate	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	10300	5	04/19/18 19:31	04/26/18 00:56	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	606-20-2	
Di-n-octylphthalate	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	117-81-7	
Fluoranthene	**29100**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	206-44-0	
Fluorene	**2660**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	87-68-3	
Hexachlorobenzene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	118-74-1	
Hexachloroethane	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	67-72-1	
Indeno(1,2,3-cd)pyrene	**7810**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	193-39-5	
Isophorone	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	78-59-1	
1-Methylnaphthalene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	90-12-0	
2-Methylnaphthalene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-01 (3'-11' WM) **Lab ID: 10427824002** Collected: 04/18/18 12:30 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	4010	5	04/19/18 19:31	04/26/18 00:56		
Naphthalene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	91-20-3	
2-Nitroaniline	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	88-74-4	
3-Nitroaniline	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	99-09-2	
4-Nitroaniline	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	100-01-6	
Nitrobenzene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	98-95-3	
2-Nitrophenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	88-75-5	
4-Nitrophenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	86-30-6	
Pentachlorophenol	ND	ug/kg	4070	5	04/19/18 19:31	04/26/18 00:56	87-86-5	
Phenanthrene	**20000**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	85-01-8	
Phenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	108-95-2	
Pyrene	**27800**	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	2000	5	04/19/18 19:31	04/26/18 00:56	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	51	%.	43-125	5	04/19/18 19:31	04/26/18 00:56	4165-60-0	D3
2-Fluorobiphenyl (S)	56	%.	30-132	5	04/19/18 19:31	04/26/18 00:56	321-60-8	
p-Terphenyl-d14 (S)	73	%.	62-125	5	04/19/18 19:31	04/26/18 00:56	1718-51-0	
Phenol-d6 (S)	55	%.	48-125	5	04/19/18 19:31	04/26/18 00:56	13127-88-3	
2-Fluorophenol (S)	54	%.	40-125	5	04/19/18 19:31	04/26/18 00:56	367-12-4	
2,4,6-Tribromophenol (S)	54	%.	60-125	5	04/19/18 19:31	04/26/18 00:56	118-79-6	S5
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	**1740**	ug/kg	60.7	5	04/19/18 18:12	04/20/18 18:51	83-32-9	
Acenaphthylene	**308**	ug/kg	60.7	5	04/19/18 18:12	04/20/18 18:51	208-96-8	
Anthracene	**3890**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	120-12-7	
Benzo(a)anthracene	**11100**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	56-55-3	
Benzo(a)pyrene	**10700**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	50-32-8	
Benzo(b)fluoranthene	**14600**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	205-99-2	
Benzo(g,h,i)perylene	**6720**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	191-24-2	
Benzo(k)fluoranthene	**4760**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	207-08-9	
Chrysene	**10000**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	218-01-9	
Dibenz(a,h)anthracene	**1630**	ug/kg	60.7	5	04/19/18 18:12	04/20/18 18:51	53-70-3	
Fluoranthene	**23800**	ug/kg	1210	100	04/19/18 18:12	04/24/18 13:32	206-44-0	
Fluorene	**1910**	ug/kg	60.7	5	04/19/18 18:12	04/20/18 18:51	86-73-7	
Indeno(1,2,3-cd)pyrene	**5960**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	193-39-5	
Naphthalene	**617**	ug/kg	60.7	5	04/19/18 18:12	04/20/18 18:51	91-20-3	
Phenanthrene	**15800**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	85-01-8	
Pyrene	**18000**	ug/kg	607	50	04/19/18 18:12	04/23/18 20:51	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	81	%.	42-125	5	04/19/18 18:12	04/20/18 18:51	321-60-8	D3

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-01 (3'-11' WM) **Lab ID: 10427824002** Collected: 04/18/18 12:30 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	86	%.	57-125	5	04/19/18 18:12	04/20/18 18:51	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1320	1	04/29/18 13:40	04/29/18 22:51	67-64-1	
Allyl chloride	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	107-05-1	L2
Benzene	ND	ug/kg	26.5	1	04/29/18 13:40	04/29/18 22:51	71-43-2	
Bromobenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	108-86-1	
Bromochloromethane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	74-97-5	
Bromodichloromethane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	75-27-4	
Bromoform	ND	ug/kg	662	1	04/29/18 13:40	04/29/18 22:51	75-25-2	
Bromomethane	ND	ug/kg	662	1	04/29/18 13:40	04/29/18 22:51	74-83-9	
2-Butanone (MEK)	ND	ug/kg	331	1	04/29/18 13:40	04/29/18 22:51	78-93-3	
n-Butylbenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	104-51-8	
sec-Butylbenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	135-98-8	
tert-Butylbenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	98-06-6	
Carbon tetrachloride	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	56-23-5	
Chlorobenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	108-90-7	
Chloroethane	ND	ug/kg	662	1	04/29/18 13:40	04/29/18 22:51	75-00-3	
Chloroform	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	67-66-3	
Chloromethane	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	74-87-3	
2-Chlorotoluene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	95-49-8	
4-Chlorotoluene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	662	1	04/29/18 13:40	04/29/18 22:51	96-12-8	
Dibromochloromethane	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	106-93-4	
Dibromomethane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	75-71-8	
1,1-Dichloroethane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	75-34-3	
1,2-Dichloroethane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	107-06-2	
1,1-Dichloroethene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	156-60-5	
Dichlorofluoromethane	ND	ug/kg	662	1	04/29/18 13:40	04/29/18 22:51	75-43-4	
1,2-Dichloropropane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	78-87-5	
1,3-Dichloropropane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	142-28-9	
2,2-Dichloropropane	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	594-20-7	
1,1-Dichloropropene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	60-29-7	
Ethylbenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	331	1	04/29/18 13:40	04/29/18 22:51	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-01 (3'-11' WM) **Lab ID: 10427824002** Collected: 04/18/18 12:30 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	98-82-8	
p-Isopropyltoluene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	99-87-6	
Methylene Chloride	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	75-09-2	L2
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	331	1	04/29/18 13:40	04/29/18 22:51	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	1634-04-4	
Naphthalene	**272**	ug/kg	265	1	04/29/18 13:40	05/01/18 23:11	91-20-3	
n-Propylbenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	103-65-1	
Styrene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	79-34-5	
Tetrachloroethene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	127-18-4	
Tetrahydrofuran	ND	ug/kg	2650	1	04/29/18 13:40	04/29/18 22:51	109-99-9	
Toluene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	79-00-5	
Trichloroethene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	79-01-6	
Trichlorofluoromethane	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	265	1	04/29/18 13:40	04/29/18 22:51	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	108-67-8	
Vinyl chloride	ND	ug/kg	26.5	1	04/29/18 13:40	04/29/18 22:51	75-01-4	
Xylene (Total)	ND	ug/kg	199	1	04/29/18 13:40	04/29/18 22:51	1330-20-7	
m&p-Xylene	ND	ug/kg	132	1	04/29/18 13:40	04/29/18 22:51	179601-23-1	
o-Xylene	ND	ug/kg	66.2	1	04/29/18 13:40	04/29/18 22:51	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	98	%.	75-125	1	04/29/18 13:40	04/29/18 22:51	17060-07-0	
Toluene-d8 (S)	94	%.	75-125	1	04/29/18 13:40	04/29/18 22:51	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	04/29/18 13:40	04/29/18 22:51	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	24.7	10	04/28/18 10:35	05/01/18 10:58	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**4.0**	mg/kg	1.0	1		05/03/18 07:26	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.61**	mg/kg	0.31	1	04/25/18 11:00	04/25/18 13:41	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	04/25/18 14:45	04/26/18 02:10	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-02 (2'-10.5' WM) **Lab ID: 10427824003** Collected: 04/18/18 13:50 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	14.9	1	04/25/18 10:56	04/30/18 15:33	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	309-00-2	
alpha-BHC	ND	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	319-84-6	
beta-BHC	ND	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	319-85-7	
delta-BHC	ND	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	319-86-8	
gamma-BHC (Lindane)	**67.4**	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	58-89-9	
Chlordane (Technical)	ND	ug/kg	270	10	04/19/18 13:04	04/26/18 22:41	57-74-9	
alpha-Chlordane	**67.0**	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	5103-71-9	
gamma-Chlordane	**37.0**	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	5103-74-2	
4,4'-DDD	**92.0**	ug/kg	53.9	10	04/19/18 13:04	04/26/18 22:41	72-54-8	
4,4'-DDE	**70.3**	ug/kg	53.9	10	04/19/18 13:04	04/26/18 22:41	72-55-9	
4,4'-DDT	**100**	ug/kg	53.9	10	04/19/18 13:04	04/26/18 22:41	50-29-3	
Dieldrin	ND	ug/kg	53.9	10	04/19/18 13:04	04/26/18 22:41	60-57-1	
Endosulfan I	ND	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	959-98-8	
Endosulfan II	ND	ug/kg	53.9	10	04/19/18 13:04	04/26/18 22:41	33213-65-9	
Endosulfan sulfate	ND	ug/kg	53.9	10	04/19/18 13:04	04/26/18 22:41	1031-07-8	
Endrin	ND	ug/kg	53.9	10	04/19/18 13:04	04/26/18 22:41	72-20-8	
Endrin aldehyde	ND	ug/kg	53.9	10	04/19/18 13:04	04/26/18 22:41	7421-93-4	
Endrin ketone	ND	ug/kg	53.9	10	04/19/18 13:04	04/26/18 22:41	53494-70-5	
Heptachlor	ND	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	76-44-8	
Heptachlor epoxide	ND	ug/kg	27.0	10	04/19/18 13:04	04/26/18 22:41	1024-57-3	
Methoxychlor	ND	ug/kg	270	10	04/19/18 13:04	04/26/18 22:41	72-43-5	
Toxaphene	ND	ug/kg	810	10	04/19/18 13:04	04/26/18 22:41	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	0	%.	30-150	10	04/19/18 13:04	04/26/18 22:41	877-09-8	3M,D4, S4
Decachlorobiphenyl (S)	0	%.	30-150	10	04/19/18 13:04	04/26/18 22:41	2051-24-3	S4
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	53.3	1	04/19/18 13:39	04/23/18 19:08	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	53.3	1	04/19/18 13:39	04/23/18 19:08	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	53.3	1	04/19/18 13:39	04/23/18 19:08	11141-16-5	
PCB-1242 (Aroclor 1242)	**3780**	ug/kg	267	5	04/19/18 13:39	04/24/18 10:42	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	53.3	1	04/19/18 13:39	04/23/18 19:08	12672-29-6	
PCB-1254 (Aroclor 1254)	**929**	ug/kg	53.3	1	04/19/18 13:39	04/23/18 19:08	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	53.3	1	04/19/18 13:39	04/23/18 19:08	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	53.3	1	04/19/18 13:39	04/23/18 19:08	37324-23-5	
PCB-1268 (Aroclor 1268)	**277**	ug/kg	53.3	1	04/19/18 13:39	04/23/18 19:08	11100-14-4	
PCB, Total	**4990**	ug/kg	267	5	04/19/18 13:39	04/24/18 10:42	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	62	%.	48-125	1	04/19/18 13:39	04/23/18 19:08	877-09-8	
Decachlorobiphenyl (S)	99	%.	30-134	1	04/19/18 13:39	04/23/18 19:08	2051-24-3	CH

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-02 (2'-10.5' WM) **Lab ID: 10427824003** Collected: 04/18/18 13:50 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**2300**	mg/kg	1190	100	04/20/18 17:57	04/22/18 13:29		T6
Surrogates								
n-Triacontane (S)	0	%.	50-150	100	04/20/18 17:57	04/22/18 13:29	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**40.2**	mg/kg	23.0	1	05/02/18 10:19	05/02/18 14:55		
Surrogates								
a,a,a-Trifluorotoluene (S)	97	%.	80-150	1	05/02/18 10:19	05/02/18 14:55	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**14900**	mg/kg	15.7	1	04/20/18 05:22	04/23/18 11:53	7429-90-5	
Barium	**443**	mg/kg	0.79	1	04/20/18 05:22	04/23/18 11:53	7440-39-3	
Boron	**234**	mg/kg	11.8	1	04/20/18 05:22	04/23/18 11:53	7440-42-8	
Copper	**280**	mg/kg	0.79	1	04/20/18 05:22	04/23/18 11:53	7440-50-8	
Iron	**107000**	mg/kg	98.4	25	04/20/18 05:22	04/23/18 13:05	7439-89-6	
Manganese	**994**	mg/kg	2.0	5	04/20/18 05:22	04/23/18 13:01	7439-96-5	
Nickel	**39.1**	mg/kg	1.6	1	04/20/18 05:22	04/23/18 11:53	7440-02-0	
Silver	**0.82**	mg/kg	0.79	1	04/20/18 05:22	04/23/18 11:53	7440-22-4	
Tin	**52.3**	mg/kg	5.9	1	04/20/18 05:22	04/23/18 11:53	7440-31-5	
Titanium	**313**	mg/kg	2.0	1	04/20/18 05:22	04/23/18 11:53	7440-32-6	
Zinc	**1890**	mg/kg	1.6	1	04/20/18 05:22	04/23/18 11:53	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**29.0**	mg/kg	0.30	1	04/25/18 09:25	04/26/18 04:10	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**6.4**	mg/kg	0.77	20	04/20/18 06:41	04/21/18 05:12	7440-36-0	
Arsenic	**26.8**	mg/kg	0.77	20	04/20/18 06:41	04/21/18 05:12	7440-38-2	
Beryllium	**0.69**	mg/kg	0.31	20	04/20/18 06:41	04/21/18 05:12	7440-41-7	
Cadmium	**7.0**	mg/kg	0.12	20	04/20/18 06:41	04/21/18 05:12	7440-43-9	
Cobalt	**10.4**	mg/kg	0.77	20	04/20/18 06:41	04/21/18 05:12	7440-48-4	
Lead	**611**	mg/kg	0.15	20	04/20/18 06:41	04/21/18 05:12	7439-92-1	
Lithium	**6.0**	mg/kg	0.77	20	04/20/18 06:41	04/21/18 05:12	7439-93-2	
Selenium	**2.8**	mg/kg	0.77	20	04/20/18 06:41	04/21/18 05:12	7782-49-2	
Strontium	**114**	mg/kg	0.77	20	04/20/18 06:41	04/21/18 05:12	7440-24-6	
Vanadium	**44.3**	mg/kg	1.5	20	04/20/18 06:41	04/21/18 05:12	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.82**	mg/kg	0.029	1	04/20/18 04:53	04/22/18 16:37	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**38.3**	%	0.10	1		04/24/18 13:49		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	83-32-9	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-02 (2'-10.5' WM) **Lab ID: 10427824003** Collected: 04/18/18 13:50 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthylene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	208-96-8	
Anthracene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	120-12-7	
Benzo(a)anthracene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	56-55-3	
Benzo(a)pyrene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	101-55-3	
Butylbenzylphthalate	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	85-68-7	
Carbazole	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	59-50-7	
4-Chloroaniline	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	108-60-1	
2-Chloronaphthalene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	91-58-7	
2-Chlorophenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	7005-72-3	
Chrysene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	53-70-3	
Dibenzofuran	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	120-83-2	
Diethylphthalate	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	105-67-9	
Dimethylphthalate	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	131-11-3	
Di-n-butylphthalate	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2750	1	04/19/18 19:31	04/25/18 23:59	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	606-20-2	
Di-n-octylphthalate	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	122-66-7	
bis(2-Ethylhexyl)phthalate	**27300**	ug/kg	2670	5	04/19/18 19:31	04/26/18 16:11	117-81-7	
Fluoranthene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	206-44-0	
Fluorene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	87-68-3	
Hexachlorobenzene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	118-74-1	
Hexachloroethane	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	193-39-5	
Isophorone	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	78-59-1	
1-Methylnaphthalene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	90-12-0	
2-Methylnaphthalene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	91-57-6	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-02 (2'-10.5' WM) **Lab ID: 10427824003** Collected: 04/18/18 13:50 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
2-Methylphenol(o-Cresol)	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1070	1	04/19/18 19:31	04/25/18 23:59		
Naphthalene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	91-20-3	
2-Nitroaniline	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	88-74-4	
3-Nitroaniline	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	99-09-2	
4-Nitroaniline	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	100-01-6	
Nitrobenzene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	98-95-3	
2-Nitrophenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	88-75-5	
4-Nitrophenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	86-30-6	
Pentachlorophenol	ND	ug/kg	1090	1	04/19/18 19:31	04/25/18 23:59	87-86-5	
Phenanthrene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	85-01-8	
Phenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	108-95-2	
Pyrene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	535	1	04/19/18 19:31	04/25/18 23:59	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	59	%.	43-125	1	04/19/18 19:31	04/25/18 23:59	4165-60-0	
2-Fluorobiphenyl (S)	56	%.	30-132	1	04/19/18 19:31	04/25/18 23:59	321-60-8	
p-Terphenyl-d14 (S)	83	%.	62-125	1	04/19/18 19:31	04/25/18 23:59	1718-51-0	
Phenol-d6 (S)	64	%.	48-125	1	04/19/18 19:31	04/25/18 23:59	13127-88-3	
2-Fluorophenol (S)	65	%.	40-125	1	04/19/18 19:31	04/25/18 23:59	367-12-4	
2,4,6-Tribromophenol (S)	67	%.	60-125	1	04/19/18 19:31	04/25/18 23:59	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	83-32-9	
Acenaphthylene	ND	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	208-96-8	
Anthracene	ND	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	120-12-7	
Benzo(a)anthracene	**179**	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	56-55-3	
Benzo(a)pyrene	**112**	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	50-32-8	
Benzo(b)fluoranthene	**209**	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	207-08-9	
Chrysene	**228**	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	53-70-3	
Fluoranthene	**394**	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	206-44-0	
Fluorene	**101**	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	193-39-5	
Naphthalene	**109**	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	91-20-3	
Phenanthrene	**332**	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	85-01-8	
Pyrene	**344**	ug/kg	81.0	5	04/19/18 18:12	04/20/18 19:12	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	88	%.	42-125	5	04/19/18 18:12	04/20/18 19:12	321-60-8	D3

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-02 (2'-10.5' WM) **Lab ID: 10427824003** Collected: 04/18/18 13:50 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Surrogates								
p-Terphenyl-d14 (S)	92	%.	57-125	5	04/19/18 18:12	04/20/18 19:12	1718-51-0	
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2110	1	04/29/18 13:40	04/29/18 23:24	67-64-1	
Allyl chloride	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	107-05-1	L2
Benzene	**54.0**	ug/kg	42.3	1	04/29/18 13:40	04/29/18 23:24	71-43-2	
Bromobenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	108-86-1	
Bromochloromethane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	74-97-5	
Bromodichloromethane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	75-27-4	
Bromoform	ND	ug/kg	1060	1	04/29/18 13:40	04/29/18 23:24	75-25-2	
Bromomethane	ND	ug/kg	1060	1	04/29/18 13:40	04/29/18 23:24	74-83-9	
2-Butanone (MEK)	ND	ug/kg	528	1	04/29/18 13:40	04/29/18 23:24	78-93-3	
n-Butylbenzene	**106**	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	104-51-8	
sec-Butylbenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	135-98-8	
tert-Butylbenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	98-06-6	
Carbon tetrachloride	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	56-23-5	
Chlorobenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	108-90-7	
Chloroethane	ND	ug/kg	1060	1	04/29/18 13:40	04/29/18 23:24	75-00-3	
Chloroform	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	67-66-3	
Chloromethane	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	74-87-3	
2-Chlorotoluene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	95-49-8	
4-Chlorotoluene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1060	1	04/29/18 13:40	04/29/18 23:24	96-12-8	
Dibromochloromethane	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	106-93-4	
Dibromomethane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	541-73-1	
1,4-Dichlorobenzene	**255**	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	75-71-8	
1,1-Dichloroethane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	75-34-3	
1,2-Dichloroethane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	107-06-2	
1,1-Dichloroethene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1060	1	04/29/18 13:40	04/29/18 23:24	75-43-4	
1,2-Dichloropropane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	78-87-5	
1,3-Dichloropropane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	142-28-9	
2,2-Dichloropropane	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	594-20-7	
1,1-Dichloropropene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	60-29-7	
Ethylbenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	528	1	04/29/18 13:40	04/29/18 23:24	87-68-3	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Sample: FL-TT-02 (2'-10.5' WM) **Lab ID: 10427824003** Collected: 04/18/18 13:50 Received: 04/18/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Isopropylbenzene (Cumene)	**110**	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	98-82-8	
p-Isopropyltoluene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	99-87-6	
Methylene Chloride	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	75-09-2	L2
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	528	1	04/29/18 13:40	04/29/18 23:24	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	1634-04-4	
Naphthalene	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	91-20-3	
n-Propylbenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	103-65-1	
Styrene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	79-34-5	
Tetrachloroethene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	127-18-4	
Tetrahydrofuran	ND	ug/kg	4230	1	04/29/18 13:40	04/29/18 23:24	109-99-9	
Toluene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	79-00-5	
Trichloroethene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	79-01-6	
Trichlorofluoromethane	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	423	1	04/29/18 13:40	04/29/18 23:24	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	106	1	04/29/18 13:40	04/29/18 23:24	108-67-8	
Vinyl chloride	ND	ug/kg	42.3	1	04/29/18 13:40	04/29/18 23:24	75-01-4	
Xylene (Total)	ND	ug/kg	317	1	04/29/18 13:40	04/29/18 23:24	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1	04/29/18 13:40	04/29/18 23:24	17060-07-0	
Toluene-d8 (S)	94	%.	75-125	1	04/29/18 13:40	04/29/18 23:24	2037-26-5	
4-Bromofluorobenzene (S)	91	%.	75-125	1	04/29/18 13:40	04/29/18 23:24	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	31.8	10	04/28/18 10:35	05/01/18 10:58	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**29.0**	mg/kg	1.0	1		05/03/18 07:26	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.78**	mg/kg	0.60	1	04/25/18 11:00	04/25/18 13:42	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.98	1	04/25/18 14:45	04/26/18 01:50	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 141683 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 560161 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.05	04/30/18 13:39	N3

METHOD BLANK: 560162 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	2.98	04/30/18 13:46	N3

METHOD BLANK: 560163 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.04	04/30/18 13:53	N3

LABORATORY CONTROL SAMPLE: 560164

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	104	119	115	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 560165 560166

Parameter	Units	10427354001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	357	357	354	388	99	108	65-135	9	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 535145 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2910764 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	05/02/18 11:15	
a,a,a-Trifluorotoluene (S)	%.	99	80-150	05/02/18 11:15	

LABORATORY CONTROL SAMPLE & LCSD: 2907780 2907781

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	40.4	41.9	81	84	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%.				99	99	80-150			

MATRIX SPIKE SAMPLE: 2910759

Parameter	Units	10427824002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	56.5	67.3	119	80-120	
a,a,a-Trifluorotoluene (S)	%.				98	80-150	

SAMPLE DUPLICATE: 2910758

Parameter	Units	10428096003 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	ND	4.6J		20	
a,a,a-Trifluorotoluene (S)	%.	99	99	3		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 533419 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2897699 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.018	04/22/18 15:58	

LABORATORY CONTROL SAMPLE: 2897700

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.48	0.53	110	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897701 2897702

Parameter	Units	10426879001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	<0.018	.47	.5	0.48	0.46	103	93	80-120	4	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 533415 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2897683 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	10.0	04/23/18 10:48	
Barium	mg/kg	ND	0.50	04/23/18 10:48	
Boron	mg/kg	ND	7.5	04/23/18 10:48	
Copper	mg/kg	ND	0.50	04/23/18 10:48	
Iron	mg/kg	ND	2.5	04/23/18 10:48	
Manganese	mg/kg	ND	0.25	04/23/18 10:48	
Nickel	mg/kg	ND	1.0	04/23/18 10:48	
Silver	mg/kg	ND	0.50	04/23/18 10:48	
Tin	mg/kg	ND	3.8	04/23/18 10:48	
Titanium	mg/kg	ND	1.2	04/23/18 10:48	
Zinc	mg/kg	ND	1.0	04/23/18 10:48	

LABORATORY CONTROL SAMPLE: 2897684

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	1000	997	100	80-120	
Barium	mg/kg	50	51.0	102	80-120	
Boron	mg/kg	50	46.7	93	80-120	
Copper	mg/kg	50	49.1	98	80-120	
Iron	mg/kg	1000	1010	101	80-120	
Manganese	mg/kg	50	50.9	102	80-120	
Nickel	mg/kg	50	49.8	100	80-120	
Silver	mg/kg	25	23.5	94	80-120	
Tin	mg/kg	50	49.4	99	80-120	
Titanium	mg/kg	50	49.8	100	80-120	
Zinc	mg/kg	50	48.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897685 2897686

Parameter	Units	10427793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	34800	990	952	35400	35400	64	61	75-125	0	20	P6
Barium	mg/kg	1320	49.5	47.6	1320	1320	-1	0	75-125	0	20	P6
Boron	mg/kg	43.3	49.5	47.6	87.4	85.7	89	89	75-125	2	20	
Copper	mg/kg	2140	49.5	47.6	2090	2100	-85	-66	75-125	1	20	P6
Iron	mg/kg	31500	990	952	31000	31000	-51	-51	75-125	0	20	P6
Manganese	mg/kg	8040	49.5	47.6	7800	8030	-469	-22	75-125	3	20	P6
Nickel	mg/kg	113	49.5	47.6	148	147	70	71	75-125	1	20	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897685 2897686

Parameter	Units	10427793001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	18.5	24.8	23.8	48.7	49.0	122	128	75-125	1	20	M1
Tin	mg/kg	94.8	49.5	47.6	127	127	66	67	75-125	1	20	M1
Titanium	mg/kg	1650	49.5	47.6	1620	1690	-64	67	75-125	4	20	P6
Zinc	mg/kg	1960	49.5	47.6	1950	1930	-21	-53	75-125	1	20	P6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 438855 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2027873 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.19	04/26/18 02:38	N2

LABORATORY CONTROL SAMPLE: 2027874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.9	106	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2027875 2027876

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	5.4	4.87	4.87	7.0	6.1	34	15	75-125	14	20	M0,N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 533412 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2897671 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.48	04/21/18 02:51	
Arsenic	mg/kg	ND	0.48	04/21/18 02:51	
Beryllium	mg/kg	ND	0.19	04/21/18 02:51	
Cadmium	mg/kg	ND	0.076	04/21/18 02:51	
Cobalt	mg/kg	ND	0.48	04/21/18 02:51	
Lead	mg/kg	ND	0.095	04/23/18 17:49	
Lithium	mg/kg	ND	0.48	04/21/18 02:51	
Selenium	mg/kg	ND	0.48	04/21/18 02:51	
Strontium	mg/kg	ND	0.48	04/21/18 02:51	
Vanadium	mg/kg	ND	0.95	04/21/18 02:51	

LABORATORY CONTROL SAMPLE: 2897672

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	47.6	47.6	100	80-120	
Arsenic	mg/kg	47.6	47.9	101	80-120	
Beryllium	mg/kg	47.6	47.3	99	80-120	
Cadmium	mg/kg	47.6	47.1	99	80-120	
Cobalt	mg/kg	47.6	49.3	104	80-120	
Lead	mg/kg	47.6	48.7	102	80-120	
Lithium	mg/kg	47.6	45.4	95	80-120	
Selenium	mg/kg	47.6	47.6	100	80-120	
Strontium	mg/kg	47.6	47.2	99	80-120	
Vanadium	mg/kg	47.6	47.7	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897673 2897674

Parameter	Units	10427861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	0.59	49.5	48.5	21.6	20.0	42	40	75-125	8	20	M6
Arsenic	mg/kg	18.4	49.5	48.5	70.6	64.2	105	94	75-125	9	20	
Beryllium	mg/kg	0.60	49.5	48.5	46.4	44.0	92	90	75-125	5	20	
Cadmium	mg/kg	0.45	49.5	48.5	51.2	46.6	103	95	75-125	9	20	
Cobalt	mg/kg	6.1	49.5	48.5	59.2	53.9	107	99	75-125	9	20	
Lead	mg/kg	39.8	49.5	48.5	87.6	85.0	97	93	75-125	3	20	
Lithium	mg/kg	11.0	49.5	48.5	55.2	54.2	89	89	75-125	2	20	
Selenium	mg/kg	1.0	49.5	48.5	49.9	46.1	99	93	75-125	8	20	
Strontium	mg/kg	136	49.5	48.5	199	177	127	85	75-125	11	20	M6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897673 2897674

Parameter	Units	10427861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vanadium	mg/kg	22.3	49.5	48.5	76.0	68.8	108	96	75-125	10	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 534034 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10427824001, 10427824002, 10427824003

SAMPLE DUPLICATE: 2901166

Parameter	Units	10428311003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.7	14.8	8	30	

SAMPLE DUPLICATE: 2901255

Parameter	Units	10427906006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.4	21.5	0	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 534992 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2906940 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	05/02/18 19:07	
1,1,1-Trichloroethane	ug/kg	ND	50.0	05/02/18 19:07	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	05/02/18 19:07	
1,1,2-Trichloroethane	ug/kg	ND	50.0	05/02/18 19:07	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	05/02/18 19:07	
1,1-Dichloroethane	ug/kg	ND	50.0	05/02/18 19:07	
1,1-Dichloroethene	ug/kg	ND	50.0	05/02/18 19:07	
1,1-Dichloropropene	ug/kg	ND	50.0	05/02/18 19:07	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	05/02/18 19:07	
1,2,3-Trichloropropane	ug/kg	ND	200	05/02/18 19:07	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	05/02/18 19:07	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	05/02/18 19:07	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	05/02/18 19:07	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	05/02/18 19:07	
1,2-Dichlorobenzene	ug/kg	ND	50.0	05/02/18 19:07	
1,2-Dichloroethane	ug/kg	ND	50.0	05/02/18 19:07	
1,2-Dichloropropane	ug/kg	ND	50.0	05/02/18 19:07	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	05/02/18 19:07	
1,3-Dichlorobenzene	ug/kg	ND	50.0	05/02/18 19:07	
1,3-Dichloropropane	ug/kg	ND	50.0	05/02/18 19:07	
1,4-Dichlorobenzene	ug/kg	ND	50.0	05/02/18 19:07	
2,2-Dichloropropane	ug/kg	ND	200	05/02/18 19:07	
2-Butanone (MEK)	ug/kg	ND	250	05/02/18 19:07	
2-Chlorotoluene	ug/kg	ND	50.0	05/02/18 19:07	
4-Chlorotoluene	ug/kg	ND	50.0	05/02/18 19:07	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	05/02/18 19:07	
Acetone	ug/kg	ND	1000	05/02/18 19:07	
Allyl chloride	ug/kg	ND	200	05/02/18 19:07	
Benzene	ug/kg	ND	20.0	05/02/18 19:07	
Bromobenzene	ug/kg	ND	50.0	05/02/18 19:07	
Bromochloromethane	ug/kg	ND	50.0	05/02/18 19:07	
Bromodichloromethane	ug/kg	ND	50.0	05/02/18 19:07	
Bromoform	ug/kg	ND	500	05/02/18 19:07	MN
Bromomethane	ug/kg	ND	500	05/02/18 19:07	
Carbon tetrachloride	ug/kg	ND	50.0	05/02/18 19:07	
Chlorobenzene	ug/kg	ND	50.0	05/02/18 19:07	
Chloroethane	ug/kg	ND	500	05/02/18 19:07	
Chloroform	ug/kg	ND	50.0	05/02/18 19:07	
Chloromethane	ug/kg	ND	200	05/02/18 19:07	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	05/02/18 19:07	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	05/02/18 19:07	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

METHOD BLANK: 2906940 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	05/02/18 19:07	
Dibromomethane	ug/kg	ND	50.0	05/02/18 19:07	
Dichlorodifluoromethane	ug/kg	ND	200	05/02/18 19:07	
Dichlorofluoromethane	ug/kg	ND	500	05/02/18 19:07	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	05/02/18 19:07	
Ethylbenzene	ug/kg	ND	50.0	05/02/18 19:07	
Hexachloro-1,3-butadiene	ug/kg	ND	250	05/02/18 19:07	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	05/02/18 19:07	
m&p-Xylene	ug/kg	ND	100	05/02/18 19:07	
Methyl-tert-butyl ether	ug/kg	ND	50.0	05/02/18 19:07	
Methylene Chloride	ug/kg	ND	200	05/02/18 19:07	
n-Butylbenzene	ug/kg	ND	50.0	05/02/18 19:07	
n-Propylbenzene	ug/kg	ND	50.0	05/02/18 19:07	
Naphthalene	ug/kg	ND	200	05/02/18 19:07	
o-Xylene	ug/kg	ND	50.0	05/02/18 19:07	
p-Isopropyltoluene	ug/kg	ND	50.0	05/02/18 19:07	
sec-Butylbenzene	ug/kg	ND	50.0	05/02/18 19:07	
Styrene	ug/kg	ND	50.0	05/02/18 19:07	
tert-Butylbenzene	ug/kg	ND	50.0	05/02/18 19:07	
Tetrachloroethene	ug/kg	ND	50.0	05/02/18 19:07	
Tetrahydrofuran	ug/kg	ND	2000	05/02/18 19:07	
Toluene	ug/kg	ND	50.0	05/02/18 19:07	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	05/02/18 19:07	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	05/02/18 19:07	
Trichloroethene	ug/kg	ND	50.0	05/02/18 19:07	
Trichlorofluoromethane	ug/kg	ND	200	05/02/18 19:07	
Vinyl chloride	ug/kg	ND	20.0	05/02/18 19:07	
Xylene (Total)	ug/kg	ND	150	05/02/18 19:07	
1,2-Dichloroethane-d4 (S)	%.	97	75-125	05/02/18 19:07	
4-Bromofluorobenzene (S)	%.	98	75-125	05/02/18 19:07	
Toluene-d8 (S)	%.	96	75-125	05/02/18 19:07	

LABORATORY CONTROL SAMPLE & LCSD: 2906941 2906942

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	854	981	85	98	59-125	14	20	
1,1,1-Trichloroethane	ug/kg	1000	942	1120	94	112	59-125	18	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	721	822	72	82	58-125	13	20	
1,1,2-Trichloroethane	ug/kg	1000	784	880	78	88	64-125	12	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	744	925	74	92	65-125	22	20	R1
1,1-Dichloroethane	ug/kg	1000	717	816	72	82	63-125	13	20	
1,1-Dichloroethene	ug/kg	1000	748	891	75	89	59-125	18	20	
1,1-Dichloropropene	ug/kg	1000	893	981	89	98	64-125	9	20	
1,2,3-Trichlorobenzene	ug/kg	1000	766	799	77	80	55-126	4	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

LABORATORY CONTROL SAMPLE & LCSD: 2906941 2906942

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,3-Trichloropropane	ug/kg	1000	816	921	82	92	62-125	12	20	
1,2,4-Trichlorobenzene	ug/kg	1000	737	788	74	79	62-125	7	20	
1,2,4-Trimethylbenzene	ug/kg	1000	745	842	75	84	59-125	12	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	1950	2150	78	86	54-125	10	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	851	949	85	95	64-125	11	20	
1,2-Dichlorobenzene	ug/kg	1000	787	855	79	86	63-125	8	20	
1,2-Dichloroethane	ug/kg	1000	724	850	72	85	57-125	16	20	
1,2-Dichloropropane	ug/kg	1000	689	795	69	79	67-125	14	20	
1,3,5-Trimethylbenzene	ug/kg	1000	794	878	79	88	59-125	10	20	
1,3-Dichlorobenzene	ug/kg	1000	762	832	76	83	64-125	9	20	
1,3-Dichloropropane	ug/kg	1000	726	849	73	85	64-125	16	20	
1,4-Dichlorobenzene	ug/kg	1000	753	848	75	85	63-125	12	20	
2,2-Dichloropropane	ug/kg	1000	783	872	78	87	37-126	11	20	
2-Butanone (MEK)	ug/kg	5000	3350	3680	67	74	48-125	9	20	
2-Chlorotoluene	ug/kg	1000	762	851	76	85	62-125	11	20	
4-Chlorotoluene	ug/kg	1000	731	860	73	86	63-125	16	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	3210	3620	64	72	52-135	12	20	
Acetone	ug/kg	5000	4840	5150	97	103	65-125	6	20	
Allyl chloride	ug/kg	1000	512	624	51	62	52-125	20	20	L2
Benzene	ug/kg	1000	786	858	79	86	61-125	9	20	
Bromobenzene	ug/kg	1000	809	901	81	90	64-125	11	20	
Bromochloromethane	ug/kg	1000	843	905	84	91	65-125	7	20	
Bromodichloromethane	ug/kg	1000	824	930	82	93	57-125	12	20	
Bromoform	ug/kg	1000	748	929	75	93	57-125	22	20	R1
Bromomethane	ug/kg	1000	794	803	79	80	60-125	1	20	
Carbon tetrachloride	ug/kg	1000	919	1080	92	108	58-125	16	20	
Chlorobenzene	ug/kg	1000	754	871	75	87	66-125	14	20	
Chloroethane	ug/kg	1000	793	928	79	93	62-125	16	20	
Chloroform	ug/kg	1000	826	895	83	90	59-125	8	20	
Chloromethane	ug/kg	1000	538	572	54	57	50-125	6	20	
cis-1,2-Dichloroethene	ug/kg	1000	831	918	83	92	61-125	10	20	
cis-1,3-Dichloropropene	ug/kg	1000	784	885	78	88	61-125	12	20	
Dibromochloromethane	ug/kg	1000	788	875	79	88	60-125	10	20	
Dibromomethane	ug/kg	1000	821	937	82	94	69-125	13	20	
Dichlorodifluoromethane	ug/kg	1000	623	629	62	63	38-125	1	20	
Dichlorofluoromethane	ug/kg	1000	1000	867	100	87	67-125	15	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1250	1420	125	142	60-125	13	20	L3,SS
Ethylbenzene	ug/kg	1000	802	917	80	92	62-125	13	20	
Hexachloro-1,3-butadiene	ug/kg	1000	830	890	83	89	56-125	7	20	
Isopropylbenzene (Cumene)	ug/kg	1000	851	946	85	95	65-125	11	20	
m&p-Xylene	ug/kg	2000	1510	1730	75	87	61-125	14	20	
Methyl-tert-butyl ether	ug/kg	1000	709	852	71	85	59-125	18	20	
Methylene Chloride	ug/kg	1000	627	817	63	82	64-125	26	20	L2,R1
n-Butylbenzene	ug/kg	1000	770	856	77	86	59-125	11	20	
n-Propylbenzene	ug/kg	1000	763	851	76	85	61-125	11	20	
Naphthalene	ug/kg	1000	747	841	75	84	53-125	12	20	
o-Xylene	ug/kg	1000	776	886	78	89	61-125	13	20	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

LABORATORY CONTROL SAMPLE & LCSD: 2906941 2906942

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
p-Isopropyltoluene	ug/kg	1000	777	910	78	91	63-125	16	20	
sec-Butylbenzene	ug/kg	1000	789	879	79	88	62-125	11	20	
Styrene	ug/kg	1000	812	911	81	91	66-125	12	20	
tert-Butylbenzene	ug/kg	1000	773	873	77	87	64-125	12	20	
Tetrachloroethene	ug/kg	1000	850	952	85	95	67-125	11	20	
Tetrahydrofuran	ug/kg	10000	10800	11700	108	117	62-125	7	20	
Toluene	ug/kg	1000	727	832	73	83	61-125	14	20	
trans-1,2-Dichloroethene	ug/kg	1000	774	938	77	94	64-125	19	20	
trans-1,3-Dichloropropene	ug/kg	1000	785	908	79	91	56-125	14	20	
Trichloroethene	ug/kg	1000	825	958	83	96	67-125	15	20	
Trichlorofluoromethane	ug/kg	1000	1090	1130	109	113	65-125	3	20	
Vinyl chloride	ug/kg	1000	632	686	63	69	57-125	8	20	
Xylene (Total)	ug/kg	3000	2280	2620	76	87	62-125	14	20	
1,2-Dichloroethane-d4 (S)	%.				95	99	75-125			
4-Bromofluorobenzene (S)	%.				96	99	75-125			
Toluene-d8 (S)	%.				98	98	75-125			

MATRIX SPIKE SAMPLE: 2906943

Parameter	Units	10429482001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	1000	1300	130	64-146	
1,1,1-Trichloroethane	ug/kg	ND	1000	1430	143	56-148	
1,1,2,2-Tetrachloroethane	ug/kg	ND	1000	1230	123	36-150	
1,1,2-Trichloroethane	ug/kg	ND	1000	1260	125	67-148	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	1000	1110	111	60-142	
1,1-Dichloroethane	ug/kg	ND	1000	1210	121	57-140	
1,1-Dichloroethene	ug/kg	ND	1000	1100	109	59-139	
1,1-Dichloropropene	ug/kg	ND	1000	1320	132	61-142	
1,2,3-Trichlorobenzene	ug/kg	ND	1000	1120	112	69-150	
1,2,3-Trichloropropane	ug/kg	ND	1000	1250	125	64-150	
1,2,4-Trichlorobenzene	ug/kg	ND	1000	1180	118	71-149	
1,2,4-Trimethylbenzene	ug/kg	ND	1000	1170	117	67-149	
1,2-Dibromo-3-chloropropane	ug/kg	ND	2500	2930	117	61-150	
1,2-Dibromoethane (EDB)	ug/kg	ND	1000	1310	131	67-147	
1,2-Dichlorobenzene	ug/kg	ND	1000	1220	122	70-142	
1,2-Dichloroethane	ug/kg	ND	1000	1110	111	58-132	
1,2-Dichloropropane	ug/kg	ND	1000	1090	109	64-144	
1,3,5-Trimethylbenzene	ug/kg	ND	1000	1270	127	71-146	
1,3-Dichlorobenzene	ug/kg	ND	1000	1170	117	71-142	
1,3-Dichloropropane	ug/kg	ND	1000	1180	118	68-140	
1,4-Dichlorobenzene	ug/kg	ND	1000	1170	117	68-142	
2,2-Dichloropropane	ug/kg	ND	1000	1180	118	34-150	
2-Butanone (MEK)	ug/kg	ND	5010	5840	117	51-150	
2-Chlorotoluene	ug/kg	ND	1000	1270	127	66-144	
4-Chlorotoluene	ug/kg	ND	1000	1200	120	66-140	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

MATRIX SPIKE SAMPLE: 2906943

Parameter	Units	10429482001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	5010	4950	99	63-150	
Acetone	ug/kg	ND	5010	7870	157	54-150	M1
Allyl chloride	ug/kg	ND	1000	790	79	53-135	
Benzene	ug/kg	ND	1000	1210	121	65-135	
Bromobenzene	ug/kg	ND	1000	1330	133	71-141	
Bromochloromethane	ug/kg	ND	1000	1290	129	62-145	
Bromodichloromethane	ug/kg	ND	1000	1240	124	59-148	
Bromoform	ug/kg	ND	1000	1200	120	57-145	
Bromomethane	ug/kg	ND	1000	1050	105	51-129	
Carbon tetrachloride	ug/kg	ND	1000	1390	139	55-144	
Chlorobenzene	ug/kg	ND	1000	1180	118	70-142	
Chloroethane	ug/kg	ND	1000	1170	116	61-135	
Chloroform	ug/kg	ND	1000	1250	124	58-135	
Chloromethane	ug/kg	ND	1000	732	73	37-125	
cis-1,2-Dichloroethene	ug/kg	ND	1000	1290	129	60-138	
cis-1,3-Dichloropropene	ug/kg	ND	1000	1200	120	62-142	
Dibromochloromethane	ug/kg	ND	1000	1180	118	65-141	
Dibromomethane	ug/kg	ND	1000	1270	127	72-150	
Dichlorodifluoromethane	ug/kg	ND	1000	751	75	30-125	
Dichlorofluoromethane	ug/kg	ND	1000	1410	141	62-148	
Diethyl ether (Ethyl ether)	ug/kg	ND	1000	2080	207	62-135	M0,SS
Ethylbenzene	ug/kg	ND	1000	1230	123	72-138	
Hexachloro-1,3-butadiene	ug/kg	ND	1000	1330	133	38-150	
Isopropylbenzene (Cumene)	ug/kg	ND	1000	1270	127	75-148	
m&p-Xylene	ug/kg	ND	2000	2320	116	74-142	
Methyl-tert-butyl ether	ug/kg	ND	1000	1050	105	63-139	
Methylene Chloride	ug/kg	ND	1000	988	99	58-135	
n-Butylbenzene	ug/kg	ND	1000	1210	121	63-150	
n-Propylbenzene	ug/kg	ND	1000	1270	126	70-146	
Naphthalene	ug/kg	ND	1000	1160	116	63-150	
o-Xylene	ug/kg	ND	1000	1190	119	74-141	
p-Isopropyltoluene	ug/kg	ND	1000	1260	126	72-150	
sec-Butylbenzene	ug/kg	ND	1000	1200	120	66-150	
Styrene	ug/kg	ND	1000	1270	127	72-146	
tert-Butylbenzene	ug/kg	ND	1000	1220	122	71-148	
Tetrachloroethene	ug/kg	ND	1000	1300	130	70-150	
Tetrahydrofuran	ug/kg	ND	10000	16600	165	62-150	M1
Toluene	ug/kg	ND	1000	1150	115	65-142	
trans-1,2-Dichloroethene	ug/kg	ND	1000	1120	112	55-141	
trans-1,3-Dichloropropene	ug/kg	ND	1000	1200	120	57-147	
Trichloroethene	ug/kg	ND	1000	1270	127	62-150	
Trichlorofluoromethane	ug/kg	ND	1000	1560	156	51-150	M1
Vinyl chloride	ug/kg	ND	1000	881	88	45-132	
Xylene (Total)	ug/kg	ND	3000	3520	117	75-140	
1,2-Dichloroethane-d4 (S)	%.				97	75-125	
4-Bromofluorobenzene (S)	%.				105	75-125	
Toluene-d8 (S)	%.				100	75-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

SAMPLE DUPLICATE: 2906944

Parameter	Units	10427824002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	ND		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	ND		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

SAMPLE DUPLICATE: 2906944

Parameter	Units	10427824002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	ND		30	
m&p-Xylene	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	ND		30	
n-Propylbenzene	ug/kg	ND	ND		30	
Naphthalene	ug/kg	272	295	8	30	
o-Xylene	ug/kg	ND	ND		30	
p-Isopropyltoluene	ug/kg	ND	ND		30	
sec-Butylbenzene	ug/kg	ND	ND		30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	98	97	11		
4-Bromofluorobenzene (S)	%.	99	93	17		
Toluene-d8 (S)	%.	94	96	9		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 533317 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2896992 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	04/26/18 20:33	
4,4'-DDE	ug/kg	ND	3.3	04/26/18 20:33	
4,4'-DDT	ug/kg	ND	3.3	04/26/18 20:33	
Aldrin	ug/kg	ND	1.7	04/26/18 20:33	
alpha-BHC	ug/kg	ND	1.7	04/26/18 20:33	
alpha-Chlordane	ug/kg	ND	1.7	04/26/18 20:33	
beta-BHC	ug/kg	ND	1.7	04/26/18 20:33	
Chlordane (Technical)	ug/kg	ND	16.7	04/26/18 20:33	
delta-BHC	ug/kg	ND	1.7	04/26/18 20:33	
Dieldrin	ug/kg	ND	3.3	04/26/18 20:33	
Endosulfan I	ug/kg	ND	1.7	04/26/18 20:33	
Endosulfan II	ug/kg	ND	3.3	04/26/18 20:33	
Endosulfan sulfate	ug/kg	ND	3.3	04/26/18 20:33	
Endrin	ug/kg	ND	3.3	04/26/18 20:33	
Endrin aldehyde	ug/kg	ND	3.3	04/26/18 20:33	
Endrin ketone	ug/kg	ND	3.3	04/26/18 20:33	
gamma-BHC (Lindane)	ug/kg	ND	1.7	04/26/18 20:33	
gamma-Chlordane	ug/kg	ND	1.7	04/26/18 20:33	
Heptachlor	ug/kg	ND	1.7	04/26/18 20:33	
Heptachlor epoxide	ug/kg	ND	1.7	04/26/18 20:33	
Methoxychlor	ug/kg	ND	16.7	04/26/18 20:33	
Toxaphene	ug/kg	ND	50.0	04/26/18 20:33	
Decachlorobiphenyl (S)	%.	98	30-150	04/26/18 20:33	
Tetrachloro-m-xylene (S)	%.	105	30-150	04/26/18 20:33	

LABORATORY CONTROL SAMPLE: 2896993

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	35.6	107	62-127	
4,4'-DDE	ug/kg	33.3	34.8	104	66-125	
4,4'-DDT	ug/kg	33.3	31.8	96	67-128	
Aldrin	ug/kg	16.7	16.5	99	66-125	
alpha-BHC	ug/kg	16.7	17.5	105	64-125	
alpha-Chlordane	ug/kg	16.7	16.7	100	68-125	
beta-BHC	ug/kg	16.7	16.8	101	69-125	
delta-BHC	ug/kg	16.7	14.3	86	42-133	
Dieldrin	ug/kg	33.3	37.3	112	69-126	
Endosulfan I	ug/kg	16.7	16.0	96	63-125	
Endosulfan II	ug/kg	33.3	35.8	107	69-125	
Endosulfan sulfate	ug/kg	33.3	31.8	95	56-137	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

LABORATORY CONTROL SAMPLE: 2896993

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	34.5	103	69-125	
Endrin aldehyde	ug/kg	33.3	34.0	102	65-125	
Endrin ketone	ug/kg	33.3	36.0	108	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	17.4	104	67-125	
gamma-Chlordane	ug/kg	16.7	15.3	92	63-125	
Heptachlor	ug/kg	16.7	16.5	99	69-125	
Heptachlor epoxide	ug/kg	16.7	17.0	102	68-125	
Methoxychlor	ug/kg	167	160	96	65-134	
Decachlorobiphenyl (S)	%.			100	30-150	
Tetrachloro-m-xylene (S)	%.			107	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2896994 2896995

Parameter	Units	10427824001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	43.8	43.8	79J	92J	180	210	56-125		20	M6
4,4'-DDE	ug/kg	ND	43.8	43.8	61.7J	61.2J	141	140	32-150		20	
4,4'-DDT	ug/kg	ND	43.8	43.8	ND	105J	49	239	60-132		20	M6
Aldrin	ug/kg	ND	21.9	21.9	29.1J	43.3J	133	198	56-125		20	M6
alpha-BHC	ug/kg	ND	21.9	21.9	30.3J	25.5J	138	116	54-136		20	M6
alpha-Chlordane	ug/kg	ND	21.9	21.9	43.8J	97.5J	200	445	54-133		20	M6
beta-BHC	ug/kg	ND	21.9	21.9	ND	69.2J	190	315	30-150		20	M6
delta-BHC	ug/kg	ND	21.9	21.9	21.3J	19.8J	97	90	45-145		20	
Dieldrin	ug/kg	ND	43.8	43.8	67.4J	76.3J	154	174	47-150		20	M6
Endosulfan I	ug/kg	ND	21.9	21.9	23.9J	22.6J	109	103	35-145		20	
Endosulfan II	ug/kg	ND	43.8	43.8	53.3J	50.6J	122	115	50-147		20	
Endosulfan sulfate	ug/kg	ND	43.8	43.8	44.3J	43.8J	101	100	54-132		20	
Endrin	ug/kg	ND	43.8	43.8	49.3J	39.3J	113	90	62-125		20	
Endrin aldehyde	ug/kg	ND	43.8	43.8	48.2J	49.1J	110	112	33-150		20	
Endrin ketone	ug/kg	ND	43.8	43.8	83.8J	97.2J	191	222	56-144		20	M6
gamma-BHC (Lindane)	ug/kg	ND	21.9	21.9	26.3J	27.8J	120	127	63-125		20	M6
gamma-Chlordane	ug/kg	ND	21.9	21.9	43.3J	88.3J	198	403	45-132		20	M6
Heptachlor	ug/kg	ND	21.9	21.9	33.4J	24.2J	152	110	51-142		20	M6
Heptachlor epoxide	ug/kg	ND	21.9	21.9	27.4J	27J	125	123	50-142		20	
Methoxychlor	ug/kg	ND	219	219	261J	243J	119	111	58-139		20	
Decachlorobiphenyl (S)	%.						0	0	30-150			S4
Tetrachloro-m-xylene (S)	%.						0	0	30-150			2M, D3, S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 533330 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2897062 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/23/18 17:02	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/23/18 17:02	
Decachlorobiphenyl (S)	%.	125	30-134	04/23/18 17:02	CH
Tetrachloro-m-xylene (S)	%.	88	48-125	04/23/18 17:02	

LABORATORY CONTROL SAMPLE: 2897063

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	502	75	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	549	82	62-125	
Decachlorobiphenyl (S)	%.			126	30-134	CH
Tetrachloro-m-xylene (S)	%.			88	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897064 2897065

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	853	852	783	860	92	101	30-150	9	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	853	852	757	747	89	88	30-138	1	30	
Decachlorobiphenyl (S)	%.						110	108	30-134			CH
Tetrachloro-m-xylene (S)	%.						78	75	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 533315 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2896984 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/23/18 16:07	
1,2-Dichlorobenzene	ug/kg	ND	330	04/23/18 16:07	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/23/18 16:07	
1,3-Dichlorobenzene	ug/kg	ND	330	04/23/18 16:07	
1,4-Dichlorobenzene	ug/kg	ND	330	04/23/18 16:07	
1-Methylnaphthalene	ug/kg	ND	330	04/23/18 16:07	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/23/18 16:07	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/23/18 16:07	
2,4-Dichlorophenol	ug/kg	ND	330	04/23/18 16:07	
2,4-Dimethylphenol	ug/kg	ND	330	04/23/18 16:07	
2,4-Dinitrophenol	ug/kg	ND	330	04/23/18 16:07	
2,4-Dinitrotoluene	ug/kg	ND	330	04/23/18 16:07	
2,6-Dinitrotoluene	ug/kg	ND	330	04/23/18 16:07	
2-Chloronaphthalene	ug/kg	ND	330	04/23/18 16:07	
2-Chlorophenol	ug/kg	ND	330	04/23/18 16:07	
2-Methylnaphthalene	ug/kg	ND	330	04/23/18 16:07	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/23/18 16:07	
2-Nitroaniline	ug/kg	ND	330	04/23/18 16:07	
2-Nitrophenol	ug/kg	ND	330	04/23/18 16:07	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/23/18 16:07	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/23/18 16:07	
3-Nitroaniline	ug/kg	ND	330	04/23/18 16:07	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/23/18 16:07	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/23/18 16:07	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/23/18 16:07	
4-Chloroaniline	ug/kg	ND	330	04/23/18 16:07	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/23/18 16:07	
4-Nitroaniline	ug/kg	ND	330	04/23/18 16:07	
4-Nitrophenol	ug/kg	ND	330	04/23/18 16:07	
Acenaphthene	ug/kg	ND	330	04/23/18 16:07	
Acenaphthylene	ug/kg	ND	330	04/23/18 16:07	
Anthracene	ug/kg	ND	330	04/23/18 16:07	
Benzo(a)anthracene	ug/kg	ND	330	04/23/18 16:07	
Benzo(a)pyrene	ug/kg	ND	330	04/23/18 16:07	
Benzo(b)fluoranthene	ug/kg	ND	330	04/23/18 16:07	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/23/18 16:07	
Benzo(k)fluoranthene	ug/kg	ND	330	04/23/18 16:07	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/23/18 16:07	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/23/18 16:07	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/23/18 16:07	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/23/18 16:07	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

METHOD BLANK: 2896984 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/23/18 16:07	
Carbazole	ug/kg	ND	330	04/23/18 16:07	
Chrysene	ug/kg	ND	330	04/23/18 16:07	
Di-n-butylphthalate	ug/kg	ND	330	04/23/18 16:07	
Di-n-octylphthalate	ug/kg	ND	330	04/23/18 16:07	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/23/18 16:07	
Dibenzofuran	ug/kg	ND	330	04/23/18 16:07	
Diethylphthalate	ug/kg	ND	330	04/23/18 16:07	
Dimethylphthalate	ug/kg	ND	330	04/23/18 16:07	
Fluoranthene	ug/kg	ND	330	04/23/18 16:07	
Fluorene	ug/kg	ND	330	04/23/18 16:07	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/23/18 16:07	
Hexachlorobenzene	ug/kg	ND	330	04/23/18 16:07	
Hexachloroethane	ug/kg	ND	330	04/23/18 16:07	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/23/18 16:07	
Isophorone	ug/kg	ND	330	04/23/18 16:07	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/23/18 16:07	
N-Nitrosodimethylamine	ug/kg	ND	330	04/23/18 16:07	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/23/18 16:07	
Naphthalene	ug/kg	ND	330	04/23/18 16:07	
Nitrobenzene	ug/kg	ND	330	04/23/18 16:07	
Pentachlorophenol	ug/kg	ND	670	04/23/18 16:07	
Phenanthrene	ug/kg	ND	330	04/23/18 16:07	
Phenol	ug/kg	ND	330	04/23/18 16:07	
Pyrene	ug/kg	ND	330	04/23/18 16:07	
2,4,6-Tribromophenol (S)	%.	69	60-125	04/23/18 16:07	
2-Fluorobiphenyl (S)	%.	67	30-132	04/23/18 16:07	
2-Fluorophenol (S)	%.	64	40-125	04/23/18 16:07	
Nitrobenzene-d5 (S)	%.	63	43-125	04/23/18 16:07	
p-Terphenyl-d14 (S)	%.	79	62-125	04/23/18 16:07	
Phenol-d6 (S)	%.	63	48-125	04/23/18 16:07	

LABORATORY CONTROL SAMPLE: 2896985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1210	73	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1230	74	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1300	78	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1230	74	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1220	73	39-125	
1-Methylnaphthalene	ug/kg	1670	1320	79	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1340	81	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1310	79	61-125	
2,4-Dichlorophenol	ug/kg	1670	1370	82	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

LABORATORY CONTROL SAMPLE: 2896985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1280	77	51-125	
2,4-Dinitrophenol	ug/kg	1670	1130	68	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1550	93	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1470	88	63-125	
2-Chloronaphthalene	ug/kg	1670	1310	79	61-125	
2-Chlorophenol	ug/kg	1670	1230	74	46-125	
2-Methylnaphthalene	ug/kg	1670	1290	77	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1240	74	50-125	
2-Nitroaniline	ug/kg	1670	1350	81	61-125	
2-Nitrophenol	ug/kg	1670	1340	80	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1290	77	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1370	82	47-125	
3-Nitroaniline	ug/kg	1670	1370	82	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1540J	93	30-141	4M
4-Bromophenylphenyl ether	ug/kg	1670	1340	81	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1420	85	64-125	
4-Chloroaniline	ug/kg	1670	1080	65	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1350	81	64-125	
4-Nitroaniline	ug/kg	1670	1330	80	59-125	
4-Nitrophenol	ug/kg	1670	1240	75	54-125	
Acenaphthene	ug/kg	1670	1310	79	62-125	
Acenaphthylene	ug/kg	1670	1330	80	61-125	
Anthracene	ug/kg	1670	1350	81	66-125	
Benzo(a)anthracene	ug/kg	1670	1430	86	69-125	
Benzo(a)pyrene	ug/kg	1670	1410	85	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1440	87	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1450	87	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1400	84	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1230	74	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1130	68	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	978	59	37-125	4M
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1600	96	69-131	
Butylbenzylphthalate	ug/kg	1670	1550	93	69-129	
Carbazole	ug/kg	1670	1430	86	66-125	
Chrysene	ug/kg	1670	1410	85	68-125	
Di-n-butylphthalate	ug/kg	1670	1520	91	69-125	
Di-n-octylphthalate	ug/kg	1670	1640	98	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1480	89	64-125	
Dibenzofuran	ug/kg	1670	1380	83	65-125	
Diethylphthalate	ug/kg	1670	1420	85	67-125	
Dimethylphthalate	ug/kg	1670	1420	85	67-125	
Fluoranthene	ug/kg	1670	1410	85	66-125	
Fluorene	ug/kg	1670	1370	82	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1190	71	40-125	
Hexachlorobenzene	ug/kg	1670	1370	82	62-125	
Hexachloroethane	ug/kg	1670	1190	72	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1450	87	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

LABORATORY CONTROL SAMPLE: 2896985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1260	76	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1220	73	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1330	80	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1410	85	65-125	
Naphthalene	ug/kg	1670	1240	74	48-125	
Nitrobenzene	ug/kg	1670	1200	72	48-125	
Pentachlorophenol	ug/kg	1670	1120	67	41-125	
Phenanthrene	ug/kg	1670	1350	81	66-125	
Phenol	ug/kg	1670	1210	73	46-125	
Pyrene	ug/kg	1670	1460	88	69-125	
2,4,6-Tribromophenol (S)	%.			76	60-125	
2-Fluorobiphenyl (S)	%.			68	30-132	
2-Fluorophenol (S)	%.			61	40-125	
Nitrobenzene-d5 (S)	%.			59	43-125	
p-Terphenyl-d14 (S)	%.			82	62-125	
Phenol-d6 (S)	%.			63	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2896986 2896987

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	2130	2140	1630	1720	77	81	30-127	5	30	
1,2-Dichlorobenzene	ug/kg	ND	2130	2140	1610	1550	76	73	30-125	3	30	
1,2-Diphenylhydrazine	ug/kg	ND	2130	2140	1560	1800	73	84	30-150	15	30	
1,3-Dichlorobenzene	ug/kg	ND	2130	2140	1570	1470	74	69	30-125	7	30	
1,4-Dichlorobenzene	ug/kg	ND	2130	2140	1570	1500	74	70	30-125	5	30	
1-Methylnaphthalene	ug/kg	ND	2130	2140	1740	1900	81	89	42-125	9	30	
2,4,5-Trichlorophenol	ug/kg	ND	2130	2140	1690	1950	80	91	30-150	14	30	
2,4,6-Trichlorophenol	ug/kg	ND	2130	2140	1750	1990	82	93	30-150	13	30	
2,4-Dichlorophenol	ug/kg	ND	2130	2140	1820	1980	85	93	30-135	8	30	
2,4-Dimethylphenol	ug/kg	ND	2130	2140	1770	1930	83	90	30-148	9	30	
2,4-Dinitrophenol	ug/kg	ND	2130	2140	ND	ND	0	0	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	ND	2130	2140	1630	1760	77	82	30-150	7	30	
2,6-Dinitrotoluene	ug/kg	ND	2130	2140	1630	1820	77	85	30-150	11	30	
2-Chloronaphthalene	ug/kg	ND	2130	2140	1700	1930	80	90	30-138	13	30	
2-Chlorophenol	ug/kg	ND	2130	2140	1680	1720	79	80	30-130	2	30	
2-Methylnaphthalene	ug/kg	ND	2130	2140	1700	1860	79	87	46-125	9	30	
2-Methylphenol(o-Cresol)	ug/kg	ND	2130	2140	1720	1840	81	86	30-133	6	30	
2-Nitroaniline	ug/kg	ND	2130	2140	1830	2180	86	102	30-150	17	30	
2-Nitrophenol	ug/kg	ND	2130	2140	1360	1410	64	66	30-134	4	30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	2130	2140	1740	1870	82	88	30-138	7	30	
3,3'-Dichlorobenzidine	ug/kg	ND	2130	2140	1780	1880	84	88	30-149	5	30	
3-Nitroaniline	ug/kg	ND	2130	2140	1680	1930	79	91	30-150	14	30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	2130	2140	259J	ND	12	0	30-133		30	4M,M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2896986 2896987

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	2130	2140	1750	1930	82	90	44-125	9	30	
4-Chloro-3-methylphenol	ug/kg	ND	2130	2140	1910	2070	90	97	30-150	8	30	
4-Chloroaniline	ug/kg	ND	2130	2140	996	1070	47	50	30-125	7	30	
4-Chlorophenylphenyl ether	ug/kg	ND	2130	2140	1710	1990	81	93	44-125	15	30	
4-Nitroaniline	ug/kg	ND	2130	2140	1850	2240	87	105	30-150	19	30	
4-Nitrophenol	ug/kg	ND	2130	2140	1520	1800	71	84	30-150	17	30	
Acenaphthene	ug/kg	ND	2130	2140	1610	1840	73	84	40-125	13	30	
Acenaphthylene	ug/kg	ND	2130	2140	1690	1910	79	90	30-150	13	30	
Anthracene	ug/kg	ND	2130	2140	1760	1990	77	88	30-150	13	30	
Benzo(a)anthracene	ug/kg	ND	2130	2140	2080	2270	85	94	30-150	9	30	
Benzo(a)pyrene	ug/kg	ND	2130	2140	1990	2290	81	95	30-150	14	30	
Benzo(b)fluoranthene	ug/kg	ND	2130	2140	2120	2370	83	95	30-150	11	30	
Benzo(g,h,i)perylene	ug/kg	ND	2130	2140	1920	2210	82	95	30-150	14	30	
Benzo(k)fluoranthene	ug/kg	ND	2130	2140	1940	2190	84	95	30-150	12	30	
bis(2-Chloroethoxy)methane	ug/kg	ND	2130	2140	1670	1760	78	83	30-134	6	30	
bis(2-Chloroethyl) ether	ug/kg	ND	2130	2140	1590	1570	75	74	30-125	1	30	
bis(2-Chloroisopropyl) ether	ug/kg	ND	2130	2140	1300	1290	61	61	30-125	0	30	4M
bis(2-Ethylhexyl)phthalate	ug/kg	ND	2130	2140	2220	2540	98	113	30-150	14	30	
Butylbenzylphthalate	ug/kg	ND	2130	2140	2110	2580	97	119	30-150	20	30	
Carbazole	ug/kg	ND	2130	2140	1800	2040	82	93	41-125	12	30	
Chrysene	ug/kg	ND	2130	2140	2040	2290	83	95	30-150	11	30	
Di-n-butylphthalate	ug/kg	ND	2130	2140	1880	2150	88	101	30-150	14	30	
Di-n-octylphthalate	ug/kg	ND	2130	2140	2090	2370	98	111	30-150	13	30	
Dibenz(a,h)anthracene	ug/kg	ND	2130	2140	1870	2110	88	99	30-150	12	30	
Dibenzofuran	ug/kg	ND	2130	2140	1720	1980	80	92	45-125	14	30	
Diethylphthalate	ug/kg	ND	2130	2140	1760	2070	83	97	30-150	16	30	
Dimethylphthalate	ug/kg	ND	2130	2140	1800	2040	85	96	30-150	12	30	
Fluoranthene	ug/kg	565	2130	2140	2230	2380	78	85	30-150	7	30	
Fluorene	ug/kg	ND	2130	2140	1710	1950	78	89	30-150	13	30	
Hexachloro-1,3-butadiene	ug/kg	ND	2130	2140	1600	1620	75	76	30-128	2	30	
Hexachlorobenzene	ug/kg	ND	2130	2140	1760	1950	83	91	30-150	10	30	
Hexachloroethane	ug/kg	ND	2130	2140	642	673	30	32	30-125	5	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	2130	2140	1930	2210	84	97	30-150	14	30	
Isophorone	ug/kg	ND	2130	2140	1650	1750	78	82	30-140	6	30	
N-Nitroso-di-n-propylamine	ug/kg	ND	2130	2140	1610	1670	76	78	30-147	3	30	
N-Nitrosodimethylamine	ug/kg	ND	2130	2140	1640	1450	77	68	30-125	12	30	
N-Nitrosodiphenylamine	ug/kg	ND	2130	2140	1810	2020	85	94	30-150	11	30	
Naphthalene	ug/kg	ND	2130	2140	1660	1730	78	81	44-125	4	30	
Nitrobenzene	ug/kg	ND	2130	2140	1600	1640	75	77	30-136	2	30	
Pentachlorophenol	ug/kg	ND	2130	2140	1430	1530	67	72	30-150	7	30	
Phenanthrene	ug/kg	ND	2130	2140	1800	2050	67	79	30-150	13	30	
Phenol	ug/kg	ND	2130	2140	1600	1720	75	81	30-129	7	30	
Pyrene	ug/kg	511	2130	2140	2370	2530	87	95	30-150	7	30	
2,4,6-Tribromophenol (S)	%.						69	80	60-125			
2-Fluorobiphenyl (S)	%.						49	53	30-132			
2-Fluorophenol (S)	%.						63	59	40-125			

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2896986 2896987

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						57	54	43-125			
p-Terphenyl-d14 (S)	%.						76	86	62-125			
Phenol-d6 (S)	%.						64	65	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 533341 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2897115 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/20/18 12:15	
Acenaphthylene	ug/kg	ND	10.0	04/20/18 12:15	
Anthracene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(a)anthracene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(a)pyrene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/20/18 12:15	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/20/18 12:15	
Chrysene	ug/kg	ND	10.0	04/20/18 12:15	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/20/18 12:15	
Fluoranthene	ug/kg	ND	10.0	04/20/18 12:15	
Fluorene	ug/kg	ND	10.0	04/20/18 12:15	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/20/18 12:15	
Naphthalene	ug/kg	ND	10.0	04/20/18 12:15	
Phenanthrene	ug/kg	ND	10.0	04/20/18 12:15	
Pyrene	ug/kg	ND	10.0	04/20/18 12:15	
2-Fluorobiphenyl (S)	%.	72	42-125	04/20/18 12:15	
p-Terphenyl-d14 (S)	%.	88	57-125	04/20/18 12:15	

LABORATORY CONTROL SAMPLE: 2897116

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	25.3	76	52-125	
Acenaphthylene	ug/kg	33.3	24.9	75	50-125	
Anthracene	ug/kg	33.3	26.9	81	65-125	
Benzo(a)anthracene	ug/kg	33.3	29.0	87	60-125	
Benzo(a)pyrene	ug/kg	33.3	27.9	84	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	30.3	91	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	29.6	89	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	30.6	92	67-125	
Chrysene	ug/kg	33.3	30.1	90	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	30.5	92	63-125	
Fluoranthene	ug/kg	33.3	29.5	88	75-125	
Fluorene	ug/kg	33.3	25.5	77	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	30.0	90	63-125	
Naphthalene	ug/kg	33.3	24.8	75	49-125	
Phenanthrene	ug/kg	33.3	27.8	83	65-125	
Pyrene	ug/kg	33.3	28.2	85	64-125	
2-Fluorobiphenyl (S)	%.			76	42-125	
p-Terphenyl-d14 (S)	%.			89	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2897117 2897118

Parameter	Units	10427642004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	49.1	46	46.2	130	103	177	117	30-125	24	30	M1
Acenaphthylene	ug/kg	ND	46	46.2	37.4	38.8	81	84	30-133	4	30	
Anthracene	ug/kg	94.1	46	46.2	96.2	163	4	149	30-150	51	30	M1,R1
Benzo(a)anthracene	ug/kg	660	46	46.2	111	85.5	-1190	-1250	30-150	25	30	M1
Benzo(a)pyrene	ug/kg	680	46	46.2	109	79.9	-1240	-1300	30-150	31	30	M1,R1
Benzo(b)fluoranthene	ug/kg	879	46	46.2	138	101	-1610	-1690	30-150	31	30	M1,R1
Benzo(g,h,i)perylene	ug/kg	358	46	46.2	81.6	66.3	-599	-632	30-150	21	30	M1
Benzo(k)fluoranthene	ug/kg	293	46	46.2	75.1	59.2	-473	-507	30-150	24	30	M1
Chrysene	ug/kg	570	46	46.2	112	101	-996	-1020	30-150	10	30	M1
Dibenz(a,h)anthracene	ug/kg	88.8	46	46.2	49.0	45.5	-86	-94	30-131	7	30	M1
Fluoranthene	ug/kg	1040	46	46.2	241	169	-1720	-1880	30-150	35	30	M1,R1
Fluorene	ug/kg	43.3	46	46.2	96.7	112	116	148	30-147	14	30	M1
Indeno(1,2,3-cd)pyrene	ug/kg	308	46	46.2	71.6	62.1	-514	-534	30-150	14	30	M1
Naphthalene	ug/kg	106	46	46.2	222	190	252	182	30-131	16	30	M1
Phenanthrene	ug/kg	318	46	46.2	240	256	-169	-135	30-150	6	30	M1
Pyrene	ug/kg	872	46	46.2	191	139	-1480	-1590	30-150	32	30	M1,R1
2-Fluorobiphenyl (S)	%.						81	83	42-125			
p-Terphenyl-d14 (S)	%.						82	90	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 533572 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2898368 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	04/22/18 12:39	
n-Triacontane (S)	%.	115	50-150	04/22/18 12:39	

LABORATORY CONTROL SAMPLE & LCSD: 2898369 2898370

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	86.0	86.0	107	107	70-120	0	20	
n-Triacontane (S)	%.				115	119	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 439502 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 2030883 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	05/01/18 10:56	

LABORATORY CONTROL SAMPLE: 2030884

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	994	907	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030886 2030887

Parameter	Units	60268827001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1240	1220	1210	1170	98	95	75-125	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030888 2030889

Parameter	Units	60268827001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	49.7	49.1	40.0	37.2	81	76	75-125	7	20	

SAMPLE DUPLICATE: 2030885

Parameter	Units	50195327001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 286937 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 1678360 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/25/18 13:16	

LABORATORY CONTROL SAMPLE: 1678361

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.1	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678362 1678363

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.52	3.72	3.72	4.0	4.1	93	97	80-120	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678364 1678365

Parameter	Units	10428096003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.45	2.7	2.6	3.5	2.7	112	87	80-120	25	20	M0,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

QC Batch: 141337 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10427824001, 10427824002, 10427824003

METHOD BLANK: 559083 Matrix: Solid
Associated Lab Samples: 10427824001, 10427824002, 10427824003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	1.0	04/25/18 23:33	

LABORATORY CONTROL SAMPLE: 559082

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	49.8	55.2	111	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559084 559085

Parameter	Units	10427642003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	49.3	49.7	34.2	29.5	69	59	80-120	15	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559086 559087

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	50.5	49.3	21.2	19.1	42	39	80-120	10	20	M1

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QUALIFIERS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10427824

[1]	Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

ANALYTE QUALIFIERS

1M	Sample was black in color and slightly viscous. Sample was centrifuged and decanted prior to analysis.
2M	Sample was black in color and viscous. Sample was centrifuged and decanted prior to analysis.
3M	Sample was dark brown in color.
4M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.

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QUALIFIERS

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

ANALYTE QUALIFIERS

L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
MN	The reporting limit has been raised in accordance with Minnesota Statutes 4740.2100 Subpart 8. C, D. Reporting Limit Evaluation Rule.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 1630 (1998)	141683	EPA 1630 (1998)	141685
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 3550	533317	EPA 8081B	534051
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 3550	533317	EPA 8081B	534051
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 3550	533317	EPA 8081B	534051
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 3550	533330	EPA 8082A	533720
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 3550	533330	EPA 8082A	533720
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 3550	533330	EPA 8082A	533720
10427824001	**FD-TT-14 (2' -12' WM)**	WI MOD DRO	533572	WI MOD DRO	533638
10427824002	**FL-TT-01 (3'-11' WM)**	WI MOD DRO	533572	WI MOD DRO	533638
10427824003	**FL-TT-02 (2'-10.5' WM)**	WI MOD DRO	533572	WI MOD DRO	533638
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 5030 Medium Soil	535145	WI MOD GRO	535423
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 5030 Medium Soil	535145	WI MOD GRO	535423
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 5030 Medium Soil	535145	WI MOD GRO	535423
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 3050	533415	EPA 6010C	533499
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 3050	533415	EPA 6010C	533499
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 3050	533415	EPA 6010C	533499
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 3050B	438855	EPA 6020	439080
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 3050B	438855	EPA 6020	439080
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 3050B	438855	EPA 6020	439080
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 3050	533412	EPA 6020A	533510
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 3050	533412	EPA 6020A	533510
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 3050	533412	EPA 6020A	533510
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 7471	533419	EPA 7471	533655
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 7471	533419	EPA 7471	533655
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 7471	533419	EPA 7471	533655
10427824001	**FD-TT-14 (2' -12' WM)**	ASTM D2974	534034		
10427824002	**FL-TT-01 (3'-11' WM)**	ASTM D2974	534034		
10427824003	**FL-TT-02 (2'-10.5' WM)**	ASTM D2974	534034		
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 3550	533315	EPA 8270D	533819
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 3550	533315	EPA 8270D	533819
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 3550	533315	EPA 8270D	533819
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 3550	533341	EPA 8270D by SIM	533540
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 3550	533341	EPA 8270D by SIM	533540
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 3550	533341	EPA 8270D by SIM	533540
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 5035/5030B	534992	EPA 8260B	535296
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 5035/5030B	534992	EPA 8260B	535296
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 5035/5030B	534992	EPA 8260B	535296
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 3060A	439502	EPA 7196A	439771
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 3060A	439502	EPA 7196A	439771
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 3060A	439502	EPA 7196A	439771

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-Freeway LF Solid
Pace Project No.: 10427824

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10427824001	**FD-TT-14 (2' -12' WM)**	Trivalent Chromium Calculation	440373		
10427824002	**FL-TT-01 (3'-11' WM)**	Trivalent Chromium Calculation	440373		
10427824003	**FL-TT-02 (2'-10.5' WM)**	Trivalent Chromium Calculation	440373		
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 9012A	286937	EPA 9012	286958
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 9012A	286937	EPA 9012	286958
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 9012A	286937	EPA 9012	286958
10427824001	**FD-TT-14 (2' -12' WM)**	EPA 300.0	141337	EPA 9056A	141349
10427824002	**FL-TT-01 (3'-11' WM)**	EPA 300.0	141337	EPA 9056A	141349
10427824003	**FL-TT-02 (2'-10.5' WM)**	EPA 300.0	141337	EPA 9056A	141349

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WO#: 10427824

10427824

Chain-of-Custody Form

Minnesota Pollution Control Agency

Work Order Number:		COC Type:	Page: 1 of
Turnaround Time:		COC ID:	

PROJECT/CLIENT INFO

Facility Code:	MPCA - Freeway LF Solids	Program Code (MDH Lab Only):	
Project Name:	MPCA - Freeway LF Solids	Project Task Code:	
Project Manager:			
Potential Hazard?	If yes, add information to Sampler Comments Section		

LABORATORY

Lab Name:

Address: 14-00383

EPIC Profile # 39716

Phone No:

FOR LAB USE ONLY

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wn-Ground=Groundwater; Ws-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in Feet or meters	End Depth, in Feet or meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: see attached for soils/waste (+ Dioxins)	ANALYSIS: + Dioxins	Lab Sample No.	#
EP-TT-14 (2'-12' WM)	S	4/18/18	9:10	2'	12'	C	SD	WM			13		X	X	001	1
EL-TT-01 (3'-11' WM)	S	4/18/18	12:30	3'	11'	C	SD	WM			13		X	X	002	2
EL-TT-02 (2'-10.5' WM)	S	4/18/18	13:50	2'	10.6	C	SD	WM			13		X		003	3
																4
																5
																6
																7
																8
																9
																10

NW 11
4/18/18

Sampled By: Nate Hibbard

Sampler's Signature: Nate Hibbard

Phone #: 612 214-8066

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) Nate Hibbard / Pace	4/18/18 1730	Pace	4/18/18 1730
			T=7.3

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: WO#: 10427824

PM: JMA Due Date: 05/03/18

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ SpeeDee ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 7.1 **Cooler Temp Corrected (°C):** 7.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** MD 4/18/18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☐ Yes	☒ No		12. No times on samples
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: [signature] **Date:** 04/19/2018

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

pdf "red" revision comments: BGJ-Pace 3/23/18

March 22, 2018

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*) Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Chain of Custody

WO# : 12107384

12107384

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427824 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/18/2018 **Results Requested By:** 5/3/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Total Fluoride by 9056	LAB USE ONLY
1	FD-TT-14 (2' -12' WM)	PS	4/18/2018 09:10	10427824001	Solid	1	X	
2	FL-TT-01 (3'-11' WM)	PS	4/18/2018 12:30	10427824002	Solid	1	X	
3	FL-TT-02 (2'-10.5' WM)	PS	4/18/2018 13:50	10427824003	Solid	1	X	
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	Gary Hurd PACE	4/19/18 1740	[illegible]	4-19-18 1930
2	RJ Chief	4-20-18 0:30	B. Mathews	4/20/18 0645
3				

Comments

Cooler Temperature on Receipt 5.4 °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: **WO#: 12107384**

PM: HRZ Due Date: 05/02/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 5.1 Cooler Temp Corrected °C: 5.4 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 4-20-18 DC

Comments: BM 4/20/18

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Carrie Jern Date: 4/20/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

4016 7737

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427824 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/18/2018 Results Requested By: 5/3/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

	Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Total Cyanide by 9012	LAB USE ONLY
001	1	FD-TT-14 (2' -12' WM)	PS	4/18/2018 09:10	10427824001	Solid	1	X	
002	2	FL-TT-01 (3'-11' WM)	PS	4/18/2018 12:30	10427824002	Solid	1	X	
003	3	FL-TT-02 (2'-10.5' WM)	PS	4/18/2018 13:50	10427824003	Solid	1	X	
	4								
	5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	4/19/18 1645		
2	WorkOrder	4/20/18 0830	DSemrau pace	4/20/18 0840
3				

Comments

Cooler Temperature on Receipt 3.5 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Pace MN

Project # 40167737

All containers needing preservation have been checked and noted below: □Yes □No ☑N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/ Time:

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001																																	2.5 / 5 / 10
002																																	2.5 / 5 / 10
003																																	2.5 / 5 / 10
004																																	2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:

Headspace in VOA Vials (>6mm) : □Yes □No ☑N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP2N	500 mL plastic HNO3
BP2Z	500 mL plastic NaOH, Znact
BP3U	250 mL plastic unpres
BP3C	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

DG9A	40 mL amber ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres

SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN:	

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: 31Jan2018
	Document No.: **F-GB-C-031-rev.06**	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: **WO#: 40167737**

Client Name: Pace MN

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☑ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: 1697357

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - 66 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3 /Corr: 3.5

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 4/20/18
Initials: RS

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☑N/A	4. (RWU RS 4/20/18
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A MS/MSD ☐Yes ☐No ☑N/A	8. RS 4/20/18
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. 002+003 no collect times on client labels RS 4/20/18
-Includes date/time/ID/Analysis Matrix: S		
Trip Blank Present:	☐Yes ☑No ☐N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: CKW **Date:** 4/20/18

Chain of Custody

WO#: 12107384
PM: HRZ Due Date: 05/04/18
CLIENT: PACE MPLS

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427824 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/18/2 ... Requested By: 5/3/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Methyl Mercury by 1630	LAB USE ONLY
1	FD-TT-14 (2' -12' WM)	PS	4/18/2018 09:10	10427824001	Solid	1	X	
2	FL-TT-01 (3'-11' WM)	PS	4/18/2018 12:30	10427824002	Solid	1	X	
3	FL-TT-02 (2'-10.5' WM)	PS	4/18/2018 13:50	10427824003	Solid	1	X	
4								
5								

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] DSee	4/19/18 1720	[signature]	4-19-18 1970
2	[signature]	4-19-18 2215	[signature]	4/20/18 08:00
3				

Cooler Temperature on Receipt 4.0 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 7Mar2018 Page 1 of 1
	Document No.: F-DUL-C-001-rev.05	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: PACE MPLS

Project #: WO#: 12107384

PM: HRZ Due Date: 05/04/18

CLIENT: PACE MPLS

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☑Pace ☐Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☑Yes ☐No **Seals Intact?** ☑Yes ☐No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☑Bubble Wrap ☑Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☑Yes ☐No

Thermometer Used: ☑ 01339252/1710 ☐ IR-1 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Samples on ice, cooling process has begun

Cooler Temp Read °C: 4.0 **Cooler Temp Corrected °C:** 4.0 **Biological Tissue Frozen?** ☐Yes ☐No ☑NA

Temp should be above freezing to 6°C Correction Factor: 0.0 **Date and Initials of Person Examining Contents:** 4/20/18 JB

If temperature is ≤0°C, is there evidence of ice formation? ☐Yes ☐No ☑NA

				Comments:
Chain of Custody Present?	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out?	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished?	☑Yes	☐No	☐N/A	3.
Sampler Name and Signature on COC?	☐Yes	☐No	☑N/A	4.
Samples Arrived within Hold Time?	☑Yes	☐No	☐N/A	5. If Fecal: ☐<8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested?	☐Yes	☑No	☐N/A	7.
Sufficient Volume?	☑Yes	☐No	☐N/A	8.
Correct Containers Used?	☑Yes	☐No	☐N/A	9.
-Pace Containers Used?	☑Yes	☐No	☐N/A	
Containers Intact?	☑Yes	☐No	☐N/A	10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑Yes	☐No	☐N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐Yes	☐No	☑N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐Yes	☐No	☑N/A	13.
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☑N/A	14.
Trip Blank Present?	☐Yes	☐No	☑N/A	15.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: _____ **Date:** _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

Pace Analytical®
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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427824 **Workorder Name:** 18-00383 MPCA-Freeway LF Solid **Owner Received Date:** 4/18/2018 **Results Requested By:** 5/3/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Cr III	Cr VI	Total Cr by 6020	LAB USE ONLY
1	FD-TT-14 (2' -12' WM)	PS	4/18/2018 09:10	10427824001	Solid	1	X	X	X	001
2	FL-TT-01 (3'-11' WM)	PS	4/18/2018 12:30	10427824002	Solid	1	X	X	X	002
3	FL-TT-02 (2'-10.5' WM)	PS	4/18/2018 13:50	10427824003	Solid	1	X	X	X	003
4										
5										

50194902

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	4/19/18 1630	fedex	
2	fedex	4-20-18 0820	Jason Hiatt	4-20-180820
3				

Cooler Temperature on Receipt 2.5 °C **Custody Seal** Ⓨ or N **Received on Ice** Ⓨ or N **Samples Intact** Ⓨ or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50194907

Date/Time and Initials of person examining contents: JH 4-20-18 953

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace [ ] Other _____

Tracking #: 7475 9832 2530

Custody Seal on Cooler/Box Present: [X] Yes [ ] No **Seals Intact:** [X] Yes [ ] No

Packing Material: [ ] Bubble Wrap [X] Bubble Bags [ ] None [ ] Other _____

Thermometer: 1 2 [3] 4 5 6 A B C D E F **Ice Type:** [X] Wet [ ] Blue [ ] None | Samples collected today and on ice: [ ] Yes [ ] No [X] N

Cooler Temperature: 2.2 | 2.5 Ice Visible in Sample Containers?: [ ] Yes [X] No [ ] N

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: [ ] Yes [ ] No [X] N

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		X	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted.			X
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		X				
Chain of Custody Present:	X	X JH 4-20-18	Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			
Chain of Custody Filled Out:	X	1 JH 4-20-18	Dissolved Metals field filtered?:			X
Short Hold Time Analysis (<72hr)?: Analysis:		X	Headspace Wisconsin Sulfide			X
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			X
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			X
Rush TAT Requested:		X	Headspace in VOA Vials (>6mm):			X
Containers Intact?:	X		Trip Blank Present?:		X	
Sample Labels Match COC?: Except TCs, which only require sample ID	X		Trip Blank Custody Seals?:		X	

Comments:

Sample Container Count

WO# : 50194902

50194902

CLIENT: Pace MN

COC PAGE ____ of ____

COC ID# _____

Project # 50194902

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	Bulk Kit R				Matrix (Soil/W Aqueo	pH <2	pH >9	pH>1
1							1														SL			
2							1														SL			
3							1														SL			
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic	BP3U	250mL unpreserved plastic
BP1N	1 liter HNO3 plastic	BP3Z	250mL NaOH, Zn Ac plastic
BP1S	1 liter H2SO4 plastic		
BP1U	1 liter unpreserved plastic	AF	Air Filter
BP1Z	1 liter NaOH, Zn, Ac	C	Air Cassettes
BP2A	500mL NaOH, Asc Acid plastic	R	Terra core kit
BP2N	500mL HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
BP2O	500mL NaOH plastic	U	Summa Can
BP2S	500mL H2SO4 plastic	ZPLC	Ziploc Bag
BP2U	500mL unpreserved plastic		
BP2Z	500mL NaOH, Zn Ac		
BP3B	250mL NaOH plastic		
BP3N	250mL HNO3 plastic		
BP3S	250mL H2SO4 plastic		

2525 Advance Road
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608.221.8700 Phone
608.221.4889 Fax

April 28, 2018

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

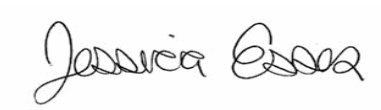
RE: 18-00383 MPCA Freeway LF Solid - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/20/2018.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jessica Esser

Project Manager

Certification List			Expires
ADEQ	Arkansas Department of Environmental Quality	17-065-0	09/26/2018
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2019
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2018
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2018
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2018
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2018
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2017-154	08/31/2018
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2018
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2018

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427824
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FD-TT-14 (2'-12' WM) (10427824001)	A181624-01	Solid	04/18/2018	04/20/2018
FL-TT-01 (3'-11' WM) (10427824002)	A181624-02	Solid	04/18/2018	04/20/2018
FL-TT-02 (2'-10.5' WM) (10427824003)	A181624-03	Solid	04/18/2018	04/20/2018

CASE NARRATIVE

Sample Receipt Information:
3 samples were received on 04/20/2018. Samples were received at 2.3 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427824
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FD-TT-14 (2'-12' WM) (10427824001)

A181624-01 (Solid)

Date Sampled
04/18/2018 09:10

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804178**			
2,4-D	**0.17**	0.10	mg/kg dry	1	04/22/2018	04/23/2018 03:34	EPA 8321B	P
2,4-DB	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:18	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:18	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:18	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:18	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 03:34	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 03:34	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:18	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 03:34	EPA 8321B	
Surrogate: DCAA		*85.3 %*		*70.8-116*	*04/22/2018*	*04/23/2018 03:34*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**75.5**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427824
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FL-TT-01 (3'-11' WM) (10427824002)

A181624-02 (Solid)

Date Sampled
04/18/2018 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804178**			
2,4-D	ND	0.10	mg/kg dry	1	04/22/2018	04/22/2018 21:59	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/22/2018	04/22/2018 21:59	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/22/2018	04/22/2018 21:59	EPA 8321B	
2,4,5-TP	**0.20**	0.10	mg/kg dry	1	04/22/2018	04/22/2018 21:59	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/22/2018	04/22/2018 21:59	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/22/2018	04/22/2018 21:59	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/22/2018	04/22/2018 21:59	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/22/2018	04/22/2018 21:59	EPA 8321B	
Triclopyr	**0.18**	0.10	mg/kg dry	1	04/22/2018	04/22/2018 21:59	EPA 8321B	
Surrogate: DCAA		*88.3 %*		*70.8-116*	*04/22/2018*	*04/22/2018 21:59*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**80.3**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427824
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FL-TT-02 (2'-10.5' WM) (10427824003)

A181624-03 (Solid)

Date Sampled
04/18/2018 13:50

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804178**			
2,4-D	**0.43**	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:41	EPA 8321B	P
2,4-DB	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:41	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 05:24	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:41	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:41	EPA 8321B	
Dicamba	**0.23**	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:41	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:41	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:41	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/22/2018	04/23/2018 04:41	EPA 8321B	
Surrogate: DCAA		*70.8 %*		*70.8-116*	*04/22/2018*	*04/23/2018 04:41*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**41.5**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427824
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804178 - EPA 3570										
Blank (A804178-BLK1)				Prepared: 04/22/2018 Analyzed: 04/22/2018 20:52						
2,4-D	ND	0.10	mg/kg wet							
2,4-D [2C]	ND	0.10	mg/kg wet							
2,4-DB	ND	0.10	mg/kg wet							
2,4-DB [2C]	ND	0.10	mg/kg wet							
2,4,5-T	ND	0.10	mg/kg wet							
2,4,5-T [2C]	ND	0.10	mg/kg wet							
2,4,5-TP	ND	0.10	mg/kg wet							
2,4,5-TP [2C]	ND	0.10	mg/kg wet							
Bentazon	ND	0.10	mg/kg wet							
Bentazon [2C]	ND	0.10	mg/kg wet							
Dicamba	ND	0.10	mg/kg wet							
Dicamba [2C]	ND	0.10	mg/kg wet							
MCPA	ND	0.10	mg/kg wet							
MCPA [2C]	ND	0.10	mg/kg wet							
Picloram	ND	0.10	mg/kg wet							
Picloram [2C]	ND	0.10	mg/kg wet							
Triclopyr	ND	0.10	mg/kg wet							
Triclopyr [2C]	ND	0.10	mg/kg wet							
Surrogate: DCAA	*19.9*		*mg/kg wet*	*20.00*		*99.7*	*70.8-116*			
Surrogate: DCAA [2C]	*17.9*		*mg/kg wet*	*20.00*		*89.4*	*62.3-114*			
LCS (A804178-BS1)				Prepared: 04/22/2018 Analyzed: 04/22/2018 19:45						
2,4-D	1.89	0.10	mg/kg wet	2.000		94.5	81.6-107			
2,4-D [2C]	1.73	0.10	mg/kg wet	2.000		86.5	71.8-120			
2,4-DB	1.77	0.10	mg/kg wet	2.000		88.7	76.4-107			
2,4-DB [2C]	1.66	0.10	mg/kg wet	2.000		82.9	62.2-129			
2,4,5-T	1.96	0.10	mg/kg wet	2.000		98.0	81.2-110			
2,4,5-T [2C]	1.87	0.10	mg/kg wet	2.000		93.6	70.6-125			
2,4,5-TP	1.86	0.10	mg/kg wet	2.000		92.8	79.1-106			
2,4,5-TP [2C]	1.74	0.10	mg/kg wet	2.000		86.9	68.2-118			
Bentazon	1.02	0.10	mg/kg wet	1.000		102	82.5-119			
Bentazon [2C]	0.877	0.10	mg/kg wet	1.000		87.7	73.3-125			
Dicamba	1.93	0.10	mg/kg wet	2.000		96.3	85.1-108			
Dicamba [2C]	1.83	0.10	mg/kg wet	2.000		91.4	71.4-115			
Picloram	0.978	0.10	mg/kg wet	1.000		97.8	86.1-106			
Picloram [2C]	0.846	0.10	mg/kg wet	1.000		84.6	74.5-114			
Triclopyr	1.86	0.10	mg/kg wet	2.000		92.9	78.6-106			
Triclopyr [2C]	1.71	0.10	mg/kg wet	2.000		85.6	69.4-118			
Surrogate: DCAA	*19.8*		*mg/kg wet*	*20.00*		*98.9*	*70.8-116*			
Surrogate: DCAA [2C]	*18.3*		*mg/kg wet*	*20.00*		*91.7*	*62.3-114*			
LCS (A804178-BS2)				Prepared: 04/22/2018 Analyzed: 04/22/2018 18:37						
MCPA	2.14	0.10	mg/kg wet	2.000		107	79.4-116			
MCPA [2C]	1.92	0.10	mg/kg wet	2.000		95.9	77-123			

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427824
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804178 - EPA 3570										
LCS (A804178-BS2)				Prepared: 04/22/2018 Analyzed: 04/22/2018 18:37						
Surrogate: DCAA	*19.9*		*mg/kg wet*	*20.00*		*99.4*	*70.8-116*			
Surrogate: DCAA [2C]	*20.2*		*mg/kg wet*	*20.00*		*101*	*62.3-114*			
Matrix Spike (A804178-MS1)		**Source: A181624-02**		Prepared: 04/22/2018 Analyzed: 04/22/2018 23:06						
2,4-D	2.05	0.10	mg/kg dry	2.490	ND	82.5	71.4-105			
2,4-D [2C]	1.94	0.10	mg/kg dry	2.490	0.220	69.1	50.5-123			
2,4-DB	1.91	0.10	mg/kg dry	2.490	0.0501	74.6	46.4-117			
2,4-DB [2C]	1.76	0.10	mg/kg dry	2.490	0.252	60.6	44.5-121			
2,4,5-T	2.16	0.10	mg/kg dry	2.490	ND	86.8	66.2-110			
2,4,5-T [2C]	1.87	0.10	mg/kg dry	2.490	ND	75.2	43.6-126			
2,4,5-TP	2.01	0.10	mg/kg dry	2.490	0.199	72.7	52.4-114			
2,4,5-TP [2C]	1.61	0.10	mg/kg dry	2.490	0.219	55.8	47.6-117			
Bentazon	1.13	0.10	mg/kg dry	1.245	ND	91.0	61.5-117			
Bentazon [2C]	1.20	0.10	mg/kg dry	1.245	ND	96.2	50.7-127			
Dicamba	1.71	0.10	mg/kg dry	2.490	ND	68.7	48.4-111			
Dicamba [2C]	1.86	0.10	mg/kg dry	2.490	0.290	63.1	43.3-108			
Picloram	0.654	0.10	mg/kg dry	1.245	ND	52.6	26.7-110			
Picloram [2C]	0.505	0.10	mg/kg dry	1.245	ND	40.6	10.8-110			
Triclopyr	2.16	0.10	mg/kg dry	2.490	0.182	79.6	56-113			
Triclopyr [2C]	1.70	0.10	mg/kg dry	2.490	0.211	60.0	47.9-120			
Surrogate: DCAA	*21.6*		*mg/kg dry*	*24.89*		*86.8*	*70.8-116*			
Surrogate: DCAA [2C]	*20.6*		*mg/kg dry*	*24.89*		*82.8*	*62.3-114*			
Matrix Spike (A804178-MS2)		**Source: A181624-02**		Prepared: 04/22/2018 Analyzed: 04/23/2018 01:20						
MCPA	2.29	0.10	mg/kg dry	2.490	ND	92.0	74.2-114			
MCPA [2C]	2.16	0.10	mg/kg dry	2.490	ND	86.7	60.9-122			
Surrogate: DCAA	*21.5*		*mg/kg dry*	*24.89*		*86.2*	*70.8-116*			
Surrogate: DCAA [2C]	*22.0*		*mg/kg dry*	*24.89*		*88.3*	*62.3-114*			
Matrix Spike Dup (A804178-MSD1)		**Source: A181624-02**		Prepared: 04/22/2018 Analyzed: 04/23/2018 00:13						
2,4-D	2.10	0.10	mg/kg dry	2.490	ND	84.3	71.4-105	2.19	20	
2,4-D [2C]	2.24	0.10	mg/kg dry	2.490	0.220	81.2	50.5-123	14.4	20	
2,4-DB	1.94	0.10	mg/kg dry	2.490	0.0501	76.1	46.4-117	1.91	20	
2,4-DB [2C]	1.82	0.10	mg/kg dry	2.490	0.252	63.2	44.5-121	3.63	20	
2,4,5-T	2.13	0.10	mg/kg dry	2.490	ND	85.4	66.2-110	1.61	20	
2,4,5-T [2C]	1.69	0.10	mg/kg dry	2.490	ND	67.7	43.6-126	10.5	20	
2,4,5-TP	1.97	0.10	mg/kg dry	2.490	0.199	71.0	52.4-114	2.17	20	
2,4,5-TP [2C]	1.69	0.10	mg/kg dry	2.490	0.219	59.2	47.6-117	5.02	20	
Bentazon	1.13	0.10	mg/kg dry	1.245	ND	90.5	61.5-117	0.559	20	
Bentazon [2C]	1.21	0.10	mg/kg dry	1.245	ND	96.9	50.7-127	0.794	20	
Dicamba	1.70	0.10	mg/kg dry	2.490	ND	68.5	48.4-111	0.297	20	
Dicamba [2C]	2.04	0.10	mg/kg dry	2.490	0.290	70.2	43.3-108	9.07	20	
Picloram	0.591	0.10	mg/kg dry	1.245	ND	47.5	26.7-110	10.2	20	
Picloram [2C]	0.569	0.10	mg/kg dry	1.245	ND	45.7	10.8-110	11.8	20	

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427824
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804178 - EPA 3570										
Matrix Spike Dup (A804178-MSD1)	**Source: A181624-02**			Prepared: 04/22/2018 Analyzed: 04/23/2018 00:13						
Triclopyr	2.16	0.10	mg/kg dry	2.490	0.182	79.6	56-113	0.0287	20	
Triclopyr [2C]	2.10	0.10	mg/kg dry	2.490	0.211	76.0	47.9-120	20.9	20	X
Surrogate: DCAA	*21.7*		*mg/kg dry*	*24.89*		*87.1*	*70.8-116*			
Surrogate: DCAA [2C]	*20.6*		*mg/kg dry*	*24.89*		*82.8*	*62.3-114*			
Matrix Spike Dup (A804178-MSD2)	**Source: A181624-02**			Prepared: 04/22/2018 Analyzed: 04/23/2018 02:27						
MCPA	2.35	0.10	mg/kg dry	2.490	ND	94.2	74.2-114	2.42	20	
MCPA [2C]	2.47	0.10	mg/kg dry	2.490	ND	99.2	60.9-122	13.5	20	
Surrogate: DCAA	*21.5*		*mg/kg dry*	*24.89*		*86.3*	*70.8-116*			
Surrogate: DCAA [2C]	*23.4*		*mg/kg dry*	*24.89*		*94.0*	*62.3-114*			

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10427824
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Classical Chemistry Parameters - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804195 - % Solids										
Duplicate (A804195-DUP1)		**Source: A181708-01**		Prepared: 04/25/2018 Analyzed: 04/27/2018 09:07						
% Solids	79.2	0.00	% by Weight		79.6			0.516	20	

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1700 Elm Street, Suite 200	Project Number: 10427824
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
P	The difference in the concentrations between the primary and confirmation column was > 40%.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

A181624

Chain of Custody

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10427824 Workorder Name: 18-00383 MPCA-Freeway LF Solid Owner Received Date: 4/18/2018 Results Requested By: 5/3/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	MDA List II	LAB USE ONLY
1	FD-TT-14 (2' -12' WM)	PS	4/18/2018 09:10	10427824001	Solid	1	X	01
2	FL-TT-01 (3'-11' WM)	PS	4/18/2018 12:30	10427824002	Solid	1	X	02
3	FL-TT-02 (2'-10.5' WM)	PS	4/18/2018 13:50	10427824003	Solid	1	X	03
4								
5								

Requested Analysis

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	4/19/18 1620	Kari-Ann Kjellberg	4/20/18
2				10:08
3				

Cooler Temperature on Receipt 2.3 °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

1601423274 exp. 7/12/18

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www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10428092
Sample Receipt Date: 04/20/2018
Client Project #: 18-00383
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

May 08, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
May 8, 2018

Report of Laboratory Analysis

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The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on five samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. The samples were received above the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled TCDD internal standard in the sample extracts ranged from 56-78%. All of the labeled internal standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 118%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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Tel: 612-607-1700
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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

WO#: 10428092

10428092

Minnesota Pollution Control Agency

Chain-of-Custody Form

Work Order Number: | COC Type: | Page: 1 of 1

Turnaround Time: | COC ID:

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MNSW057/MPCA Freeway LF Solid	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA - Freeway LF Solids	Project Task Code:	Address: 18-00383
Project Manager:			EPIC Profile #38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

SAMPLE DETAILS | **ANALYSIS REQUESTED**

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; SL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

Location Identifier	Sample Type	Date	Time	Start Depth, ft in meters	End Depth, ft in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: See Attach for Solids/waste. Incld Dioxin						Lab Sample No.	#
FL-TT-03 (2-10) WM	S	4/19/18	0900	2	10	C	SD				13		X							001	1
FL-TT-06 (0-10) S	S	4/19/18	1145	0	10	C	SD				13		X							002	2
FL-TT-04 (2-14) WM	S	4/19/18	1230	2	14	C	SD				13		X							003	3
FL-TT-05 (5-15) WM	S	4/19/18	1500	5	15	C	SD				13		X							004	4
FL-TT-07 (1-5) S	S	4/19/18	1715	1	5	C	SD				13		X							005	5
																					6
																					7
																					8
																					9
																					10

BCJ

04/30/18

Sampled By: Brad Jacobsen / SAK / TJB | Sampler's Signature: [signature] | Phone #: 612-570-8276

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/Affiliation	Date/Time
(Sampler) [signature]	4-20-18 1630	[signature] PACE	4/20/18 830

3.6°C

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Minnesota Pollution Control Agency

Project #: **WO# : 10428092**

PM: SCU **Due Date: 05/04/18**

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☑Pace ☐SpeeDee ☐Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☑No **Seals Intact?** ☐Yes ☑No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☑Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☐Yes ☑No

Thermometer Used: ☐151401163 ☑G87A9155100842 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Cooler Temp Read (°C): 3.6 **Cooler Temp Corrected (°C):** 3.6 **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Temp should be above freezing to 6°C **Correction Factor:** True **Date and Initials of Person Examining Contents:** H 4-20-18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☑No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☑No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑Yes	☐No		1.
Chain of Custody Filled Out?	☑Yes	☐No		2.
Chain of Custody Relinquished?	☑Yes	☐No		3.
Sampler Name and/or Signature on COC?	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☑Yes	☐No		5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No		6.
Rush Turn Around Time Requested?	☐Yes	☑No		7.
Sufficient Volume?	☑Yes	☐No		8.
Correct Containers Used?	☑Yes	☐No		9.
-Pace Containers Used?	☑Yes	☐No		
Containers Intact?	☑Yes	☐No		10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑Yes	☐No		12.
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☑N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☑N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐Yes	☐No	☑N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☑N/A	14.
Trip Blank Present?	☐Yes	☐No	☑N/A	15.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 04/20/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

March 22, 2018

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*)	
Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Pace Analytical Services, LLC
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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FL-TT-03 (2-10)WM		
Lab Sample ID	10428092001		
Filename	U180504B_04		
Injected By	BAL		
Total Amount Extracted	14.7 g	Matrix	Solid
% Moisture	71.2	Dilution	NA
Dry Weight Extracted	4.23 g	Collected	04/19/2018 09:00
ICAL ID	U180405	Received	04/20/2018 08:30
CCal Filename(s)	U180504A_16 & U180504B_15	Extracted	04/25/2018 15:05
Method Blank ID	BLANK-61942	Analyzed	05/04/2018 20:20

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	4.3	-----	1.0	2,3,7,8-TCDD-13C	2.00	64
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	63

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FL-TT-06 (0-10)S		
Lab Sample ID	10428092002		
Filename	U180504B_05		
Injected By	BAL		
Total Amount Extracted	14.0 g	Matrix	Solid
% Moisture	25.3	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	04/19/2018 11:45
ICAL ID	U180405	Received	04/20/2018 08:30
CCal Filename(s)	U180504A_16 & U180504B_15	Extracted	04/25/2018 15:05
Method Blank ID	BLANK-61942	Analyzed	05/04/2018 21:08

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	72
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	68

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FL-TT-04 (2-14)WM		
Lab Sample ID	10428092003		
Filename	U180504A_04		
Injected By	SMT		
Total Amount Extracted	13.3 g	Matrix	Solid
% Moisture	26.1	Dilution	NA
Dry Weight Extracted	9.83 g	Collected	04/19/2018 12:30
ICAL ID	U180405	Received	04/20/2018 08:30
CCal Filename(s)	U180503B_16 & U180504A_16	Extracted	04/25/2018 15:05
Method Blank ID	BLANK-61942	Analyzed	05/04/2018 07:22

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	1.4	-----	1.0	2,3,7,8-TCDD-13C	2.00	59
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	61

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FL-TT-05 (5-15)WM		
Lab Sample ID	10428092004		
Filename	U180504A_05		
Injected By	SMT		
Total Amount Extracted	15.7 g	Matrix	Solid
% Moisture	35.6	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	04/19/2018 15:00
ICAL ID	U180405	Received	04/20/2018 08:30
CCal Filename(s)	U180503B_16 & U180504A_16	Extracted	04/25/2018 15:05
Method Blank ID	BLANK-61942	Analyzed	05/04/2018 08:10

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	78
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	81

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FL-TT-07 (1-5)S		
Lab Sample ID	10428092005		
Filename	U180504A_06		
Injected By	SMT		
Total Amount Extracted	12.3 g	Matrix	Solid
% Moisture	48.2	Dilution	NA
Dry Weight Extracted	6.37 g	Collected	04/19/2018 17:15
ICAL ID	U180405	Received	04/20/2018 08:30
CCal Filename(s)	U180503B_16 & U180504A_16	Extracted	04/25/2018 15:05
Method Blank ID	BLANK-61942	Analyzed	05/04/2018 08:58

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	4.3	-----	1.0	2,3,7,8-TCDD-13C	2.00	56
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	54

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61942	Matrix	Solid
Filename	F180502B_07	Dilution	NA
Total Amount Extracted	75.5 g	Extracted	04/25/2018 15:05
ICAL ID	F180405	Analyzed	05/02/2018 16:51
CCal Filename(s)	F180502B_01 & F180502B_17	Injected By	SMT

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	61
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	59

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61943		
Filename	F180502B_16	Matrix	Solid
Total Amount Extracted	75.6 g	Dilution	NA
ICAL ID	F180405	Extracted	04/25/2018 15:05
CCal Filename(s)	F180502B_01 & F180502B_17	Analyzed	05/02/2018 23:37
Method Blank ID	BLANK-61942	Injected By	SMT

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.24	118	2,3,7,8-TCDD-13C	2.0	59
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	62

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 08, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 20, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6451
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
California Certification #2973
California Certification #2973
Alaska Certification UST-107
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Montana DHHS Certification #: CERT0102
Minnesota Dept of Health Certification #: 1382680
Nevada DCNR Certification #: MN000372018-1
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10428096001	**FL-TT-03(2-10) WM**	Solid	04/19/18 09:00	04/20/18 08:30
10428096002	**FL-TT-06 (0-10) S**	Solid	04/19/18 11:45	04/20/18 08:30
10428096003	**FL-TT-04 (2-14) WM**	Solid	04/19/18 12:30	04/20/18 08:30
10428096004	**FL-TT-05 (5-15) WM**	Solid	04/19/18 15:00	04/20/18 08:30
10428096005	**FL-TT-07 (1-5) S**	Solid	04/19/18 17:15	04/20/18 08:30

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10428096001	**FL-TT-03(2-10) WM**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10428096002	**FL-TT-06 (0-10) S**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10428096003	**FL-TT-04 (2-14) WM**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	PW1	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10428096004	**FL-TT-05 (5-15) WM**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	PW1	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V
10428096005	**FL-TT-07 (1-5) S**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	JRH	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	PW1	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	SLB	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-03(2-10) WM **Lab ID: 10428096001** Collected: 04/19/18 09:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	**29.1**	ng/g	24.0	1	05/04/18 10:07	05/07/18 14:03	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	309-00-2	
alpha-BHC	ND	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	319-84-6	
beta-BHC	ND	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	319-85-7	
delta-BHC	ND	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	319-86-8	
gamma-BHC (Lindane)	**102**	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	58-89-9	
Chlordane (Technical)	ND	ug/kg	231	2	04/20/18 16:36	05/01/18 21:45	57-74-9	
alpha-Chlordane	ND	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	5103-71-9	
gamma-Chlordane	ND	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	5103-74-2	
4,4'-DDD	ND	ug/kg	46.1	2	04/20/18 16:36	05/01/18 21:45	72-54-8	
4,4'-DDE	**53.4**	ug/kg	46.1	2	04/20/18 16:36	05/01/18 21:45	72-55-9	
4,4'-DDT	**75.3**	ug/kg	46.1	2	04/20/18 16:36	05/01/18 21:45	50-29-3	
Dieldrin	ND	ug/kg	46.1	2	04/20/18 16:36	05/01/18 21:45	60-57-1	
Endosulfan I	ND	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	959-98-8	
Endosulfan II	ND	ug/kg	46.1	2	04/20/18 16:36	05/01/18 21:45	33213-65-9	
Endosulfan sulfate	ND	ug/kg	46.1	2	04/20/18 16:36	05/01/18 21:45	1031-07-8	
Endrin	ND	ug/kg	46.1	2	04/20/18 16:36	05/01/18 21:45	72-20-8	
Endrin aldehyde	ND	ug/kg	46.1	2	04/20/18 16:36	05/01/18 21:45	7421-93-4	
Endrin ketone	**355**	ug/kg	46.1	2	04/20/18 16:36	05/01/18 21:45	53494-70-5	
Heptachlor	ND	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	76-44-8	
Heptachlor epoxide	ND	ug/kg	23.1	2	04/20/18 16:36	05/01/18 21:45	1024-57-3	
Methoxychlor	ND	ug/kg	231	2	04/20/18 16:36	05/01/18 21:45	72-43-5	
Toxaphene	ND	ug/kg	692	2	04/20/18 16:36	05/01/18 21:45	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	84	%.	30-150	2	04/20/18 16:36	05/01/18 21:45	877-09-8	3M,D4
Decachlorobiphenyl (S)	76	%.	30-150	2	04/20/18 16:36	05/01/18 21:45	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	229	1	04/20/18 16:33	04/24/18 15:10	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	229	1	04/20/18 16:33	04/24/18 15:10	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	229	1	04/20/18 16:33	04/24/18 15:10	11141-16-5	
PCB-1242 (Aroclor 1242)	**10500**	ug/kg	458	2	04/20/18 16:33	04/27/18 13:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	229	1	04/20/18 16:33	04/24/18 15:10	12672-29-6	
PCB-1254 (Aroclor 1254)	**878**	ug/kg	229	1	04/20/18 16:33	04/24/18 15:10	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	229	1	04/20/18 16:33	04/24/18 15:10	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	229	1	04/20/18 16:33	04/24/18 15:10	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	229	1	04/20/18 16:33	04/24/18 15:10	11100-14-4	
PCB, Total	**11300**	ug/kg	458	2	04/20/18 16:33	04/27/18 13:36	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	75	%.	48-125	1	04/20/18 16:33	04/24/18 15:10	877-09-8	
Decachlorobiphenyl (S)	114	%.	30-134	1	04/20/18 16:33	04/24/18 15:10	2051-24-3	CH
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**3370**	mg/kg	2890	10	04/20/18 17:57	04/22/18 14:26		T6

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-03(2-10) WM **Lab ID: 10428096001** Collected: 04/19/18 09:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/20/18 17:57	04/22/18 14:26	638-68-6	P3,S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	33.6	1	05/02/18 10:19	05/02/18 19:36		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	05/02/18 10:19	05/02/18 19:36	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**24900**	mg/kg	34.1	1	04/23/18 07:48	04/26/18 13:42	7429-90-5	P6,R1
Barium	**428**	mg/kg	1.7	1	04/23/18 07:48	04/26/18 13:42	7440-39-3	M1
Boron	**109**	mg/kg	25.6	1	04/23/18 07:48	04/26/18 13:42	7440-42-8	M1,R1
Copper	**448**	mg/kg	1.7	1	04/23/18 07:48	04/26/18 13:42	7440-50-8	M1,R1
Iron	**166000**	mg/kg	85.2	10	04/23/18 07:48	04/26/18 14:39	7439-89-6	M6,R1
Manganese	**596**	mg/kg	0.85	1	04/23/18 07:48	04/26/18 13:42	7439-96-5	M1
Nickel	**62.5**	mg/kg	3.4	1	04/23/18 07:48	04/26/18 13:42	7440-02-0	
Silver	**26.3**	mg/kg	1.7	1	04/23/18 07:48	04/26/18 13:42	7440-22-4	
Tin	**406**	mg/kg	12.8	1	04/23/18 07:48	04/26/18 13:42	7440-31-5	M1,R1
Titanium	**208**	mg/kg	4.3	1	04/23/18 07:48	04/26/18 13:42	7440-32-6	M1
Zinc	**831**	mg/kg	3.4	1	04/23/18 07:48	04/26/18 13:42	7440-66-6	P6
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**54.7**	mg/kg	0.63	1	04/25/18 09:25	04/26/18 04:15	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**3.7**	mg/kg	1.7	20	04/23/18 08:19	04/25/18 15:59	7440-36-0	
Arsenic	**11.9**	mg/kg	1.7	20	04/23/18 08:19	04/25/18 15:59	7440-38-2	
Beryllium	ND	mg/kg	0.69	20	04/23/18 08:19	04/25/18 15:59	7440-41-7	
Cadmium	**38.6**	mg/kg	0.28	20	04/23/18 08:19	04/25/18 15:59	7440-43-9	
Cobalt	**8.4**	mg/kg	1.7	20	04/23/18 08:19	04/25/18 15:59	7440-48-4	
Lead	**691**	mg/kg	0.34	20	04/23/18 08:19	04/25/18 15:59	7439-92-1	M6,R1
Lithium	**2.4**	mg/kg	1.7	20	04/23/18 08:19	04/25/18 15:59	7439-93-2	
Selenium	**1.8**	mg/kg	1.7	20	04/23/18 08:19	04/25/18 15:59	7782-49-2	
Strontium	**31.2**	mg/kg	1.7	20	04/23/18 08:19	04/25/18 15:59	7440-24-6	
Vanadium	**40.2**	mg/kg	3.4	20	04/23/18 08:19	04/25/18 15:59	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.72**	mg/kg	0.065	1	04/23/18 07:02	04/24/18 16:27	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**71.2**	%	0.10	1		04/24/18 15:34		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	83-32-9	
Acenaphthylene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	208-96-8	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-03(2-10) WM **Lab ID: 10428096001** Collected: 04/19/18 09:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	120-12-7	
Benzo(a)anthracene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	56-55-3	
Benzo(a)pyrene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	101-55-3	
Butylbenzylphthalate	**4230000**	ug/kg	565000	250	04/20/18 16:47	04/27/18 17:40	85-68-7	
Carbazole	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	59-50-7	
4-Chloroaniline	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	108-60-1	
2-Chloronaphthalene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	91-58-7	
2-Chlorophenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	7005-72-3	
Chrysene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	53-70-3	
Dibenzofuran	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	120-83-2	
Diethylphthalate	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	105-67-9	
Dimethylphthalate	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	131-11-3	
Di-n-butylphthalate	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	582000	50	04/20/18 16:47	04/27/18 16:43	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	606-20-2	
Di-n-octylphthalate	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	117-81-7	
Fluoranthene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	206-44-0	
Fluorene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	87-68-3	
Hexachlorobenzene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	118-74-1	
Hexachloroethane	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	193-39-5	
Isophorone	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	78-59-1	
1-Methylnaphthalene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	90-12-0	
2-Methylnaphthalene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-03(2-10) WM **Lab ID: 10428096001** Collected: 04/19/18 09:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	226000	50	04/20/18 16:47	04/27/18 16:43		
Naphthalene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	91-20-3	
2-Nitroaniline	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	88-74-4	
3-Nitroaniline	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	99-09-2	
4-Nitroaniline	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	100-01-6	
Nitrobenzene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	98-95-3	
2-Nitrophenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	88-75-5	
4-Nitrophenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	86-30-6	
Pentachlorophenol	ND	ug/kg	229000	50	04/20/18 16:47	04/27/18 16:43	87-86-5	
Phenanthrene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	85-01-8	
Phenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	108-95-2	
Pyrene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	113000	50	04/20/18 16:47	04/27/18 16:43	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	43-125	50	04/20/18 16:47	04/27/18 16:43	4165-60-0	D4,S4
2-Fluorobiphenyl (S)	0	%.	30-132	50	04/20/18 16:47	04/27/18 16:43	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	62-125	50	04/20/18 16:47	04/27/18 16:43	1718-51-0	S4
Phenol-d6 (S)	0	%.	48-125	50	04/20/18 16:47	04/27/18 16:43	13127-88-3	S4
2-Fluorophenol (S)	0	%.	40-125	50	04/20/18 16:47	04/27/18 16:43	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	60-125	50	04/20/18 16:47	04/27/18 16:43	118-79-6	S4
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	83-32-9	
Acenaphthylene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	208-96-8	
Anthracene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	120-12-7	
Benzo(a)anthracene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	56-55-3	
Benzo(a)pyrene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	207-08-9	
Chrysene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	53-70-3	
Fluoranthene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	206-44-0	
Fluorene	**206**	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	193-39-5	
Naphthalene	**199**	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	91-20-3	
Phenanthrene	**249**	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	85-01-8	
Pyrene	ND	ug/kg	173	5	04/23/18 18:32	04/24/18 19:28	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	64	%.	42-125	5	04/23/18 18:32	04/24/18 19:28	321-60-8	D3
p-Terphenyl-d14 (S)	61	%.	57-125	5	04/23/18 18:32	04/24/18 19:28	1718-51-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-03(2-10) WM **Lab ID: 10428096001** Collected: 04/19/18 09:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	3470	1	05/01/18 16:53	05/02/18 20:15	67-64-1	
Allyl chloride	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	107-05-1	
Benzene	ND	ug/kg	69.3	1	05/01/18 16:53	05/02/18 20:15	71-43-2	
Bromobenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	108-86-1	
Bromochloromethane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	74-97-5	
Bromodichloromethane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	75-27-4	
Bromoform	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	75-25-2	
Bromomethane	ND	ug/kg	1730	1	05/01/18 16:53	05/02/18 20:15	74-83-9	
2-Butanone (MEK)	ND	ug/kg	866	1	05/01/18 16:53	05/02/18 20:15	78-93-3	
n-Butylbenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	104-51-8	
sec-Butylbenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	135-98-8	
tert-Butylbenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	98-06-6	
Carbon tetrachloride	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	56-23-5	
Chlorobenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	108-90-7	
Chloroethane	ND	ug/kg	1730	1	05/01/18 16:53	05/02/18 20:15	75-00-3	
Chloroform	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	67-66-3	
Chloromethane	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	74-87-3	
2-Chlorotoluene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	95-49-8	
4-Chlorotoluene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1730	1	05/01/18 16:53	05/02/18 20:15	96-12-8	
Dibromochloromethane	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	106-93-4	
Dibromomethane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	541-73-1	
1,4-Dichlorobenzene	**175**	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	75-71-8	
1,1-Dichloroethane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	75-34-3	
1,2-Dichloroethane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	107-06-2	
1,1-Dichloroethene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1730	1	05/01/18 16:53	05/02/18 20:15	75-43-4	
1,2-Dichloropropane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	78-87-5	
1,3-Dichloropropane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	142-28-9	
2,2-Dichloropropane	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	594-20-7	
1,1-Dichloropropene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	60-29-7	
Ethylbenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	866	1	05/01/18 16:53	05/02/18 20:15	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	98-82-8	
p-Isopropyltoluene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	99-87-6	
Methylene Chloride	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	866	1	05/01/18 16:53	05/02/18 20:15	108-10-1	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-03(2-10) WM **Lab ID: 10428096001** Collected: 04/19/18 09:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	1634-04-4	
Naphthalene	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	91-20-3	
n-Propylbenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	103-65-1	
Styrene	**219**	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	79-34-5	
Tetrachloroethene	**178**	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	127-18-4	D6
Tetrahydrofuran	ND	ug/kg	6930	1	05/01/18 16:53	05/02/18 20:15	109-99-9	
Toluene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	79-00-5	
Trichloroethene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	79-01-6	
Trichlorofluoromethane	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	693	1	05/01/18 16:53	05/02/18 20:15	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	173	1	05/01/18 16:53	05/02/18 20:15	108-67-8	
Vinyl chloride	ND	ug/kg	69.3	1	05/01/18 16:53	05/02/18 20:15	75-01-4	
Xylene (Total)	ND	ug/kg	520	1	05/01/18 16:53	05/02/18 20:15	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	05/01/18 16:53	05/02/18 20:15	17060-07-0	C0
Toluene-d8 (S)	96	%.	75-125	1	05/01/18 16:53	05/02/18 20:15	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1	05/01/18 16:53	05/02/18 20:15	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	34.1	5	04/28/18 10:35	05/01/18 11:00	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**54.7**	mg/kg	1.0	1		05/03/18 07:33	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**4.0**	mg/kg	2.3	1	04/25/18 11:00	04/25/18 13:44	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.9	2	04/27/18 12:45	04/30/18 19:36	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-06 (0-10) S **Lab ID: 10428096002** Collected: 04/19/18 11:45 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	7.33	1	05/04/18 10:07	05/07/18 14:10	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	309-00-2	
alpha-BHC	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	319-84-6	
beta-BHC	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	319-85-7	
delta-BHC	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	58-89-9	
Chlordane (Technical)	ND	ug/kg	22.3	1	04/20/18 16:36	05/01/18 21:27	57-74-9	
alpha-Chlordane	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	5103-71-9	
gamma-Chlordane	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	5103-74-2	
4,4'-DDD	ND	ug/kg	4.5	1	04/20/18 16:36	05/01/18 21:27	72-54-8	
4,4'-DDE	ND	ug/kg	4.5	1	04/20/18 16:36	05/01/18 21:27	72-55-9	
4,4'-DDT	ND	ug/kg	4.5	1	04/20/18 16:36	05/01/18 21:27	50-29-3	
Dieldrin	ND	ug/kg	4.5	1	04/20/18 16:36	05/01/18 21:27	60-57-1	
Endosulfan I	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	959-98-8	
Endosulfan II	ND	ug/kg	4.5	1	04/20/18 16:36	05/01/18 21:27	33213-65-9	
Endosulfan sulfate	ND	ug/kg	4.5	1	04/20/18 16:36	05/01/18 21:27	1031-07-8	
Endrin	ND	ug/kg	4.5	1	04/20/18 16:36	05/01/18 21:27	72-20-8	
Endrin aldehyde	ND	ug/kg	4.5	1	04/20/18 16:36	05/01/18 21:27	7421-93-4	
Endrin ketone	ND	ug/kg	4.5	1	04/20/18 16:36	05/01/18 21:27	53494-70-5	
Heptachlor	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	76-44-8	
Heptachlor epoxide	ND	ug/kg	2.2	1	04/20/18 16:36	05/01/18 21:27	1024-57-3	
Methoxychlor	ND	ug/kg	22.3	1	04/20/18 16:36	05/01/18 21:27	72-43-5	
Toxaphene	ND	ug/kg	66.9	1	04/20/18 16:36	05/01/18 21:27	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	88	%.	30-150	1	04/20/18 16:36	05/01/18 21:27	877-09-8	
Decachlorobiphenyl (S)	77	%.	30-150	1	04/20/18 16:36	05/01/18 21:27	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	11100-14-4	
PCB, Total	ND	ug/kg	44.1	1	04/20/18 16:33	04/24/18 16:29	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	48-125	1	04/20/18 16:33	04/24/18 16:29	877-09-8	
Decachlorobiphenyl (S)	104	%.	30-134	1	04/20/18 16:33	04/24/18 16:29	2051-24-3	CH
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	8.3	1	04/20/18 17:57	04/22/18 13:50		

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-06 (0-10) S **Lab ID: 10428096002** Collected: 04/19/18 11:45 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	100	%.	50-150	1	04/20/18 17:57	04/22/18 13:50	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	13.4	1	05/02/18 10:19	05/02/18 20:00		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	05/02/18 10:19	05/02/18 20:00	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**5520**	mg/kg	12.4	1	04/23/18 07:48	04/26/18 14:02	7429-90-5	
Barium	**78.6**	mg/kg	0.62	1	04/23/18 07:48	04/26/18 14:02	7440-39-3	
Boron	**9.3**	mg/kg	9.3	1	04/23/18 07:48	04/26/18 14:02	7440-42-8	
Copper	**8.9**	mg/kg	0.62	1	04/23/18 07:48	04/26/18 14:02	7440-50-8	
Iron	**10000**	mg/kg	3.1	1	04/23/18 07:48	04/26/18 14:02	7439-89-6	
Manganese	**498**	mg/kg	0.31	1	04/23/18 07:48	04/26/18 14:02	7439-96-5	
Nickel	**11.7**	mg/kg	1.2	1	04/23/18 07:48	04/26/18 14:02	7440-02-0	
Silver	ND	mg/kg	0.62	1	04/23/18 07:48	04/26/18 14:02	7440-22-4	
Tin	ND	mg/kg	4.6	1	04/23/18 07:48	04/26/18 14:02	7440-31-5	
Titanium	**155**	mg/kg	1.5	1	04/23/18 07:48	04/26/18 14:02	7440-32-6	
Zinc	**31.2**	mg/kg	1.2	1	04/23/18 07:48	04/26/18 14:02	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**3.3**	mg/kg	0.24	1	04/25/18 09:25	04/26/18 04:19	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.66	20	04/23/18 08:19	04/25/18 16:07	7440-36-0	
Arsenic	**3.4**	mg/kg	0.66	20	04/23/18 08:19	04/25/18 16:07	7440-38-2	
Beryllium	**0.61**	mg/kg	0.27	20	04/23/18 08:19	04/25/18 16:07	7440-41-7	
Cadmium	**0.34**	mg/kg	0.11	20	04/23/18 08:19	04/25/18 16:07	7440-43-9	
Cobalt	**7.1**	mg/kg	0.66	20	04/23/18 08:19	04/25/18 16:07	7440-48-4	
Lead	**8.9**	mg/kg	0.13	20	04/23/18 08:19	04/25/18 16:07	7439-92-1	
Lithium	**10.2**	mg/kg	0.66	20	04/23/18 08:19	04/25/18 16:07	7439-93-2	
Selenium	**0.69**	mg/kg	0.66	20	04/23/18 08:19	04/25/18 16:07	7782-49-2	
Strontium	**52.8**	mg/kg	0.66	20	04/23/18 08:19	04/25/18 16:07	7440-24-6	
Vanadium	**30.3**	mg/kg	1.3	20	04/23/18 08:19	04/25/18 16:07	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.026**	mg/kg	0.026	1	04/23/18 07:02	04/24/18 16:29	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**25.3**	%	0.10	1		04/24/18 15:35		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	83-32-9	
Acenaphthylene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-06 (0-10) S **Lab ID: 10428096002** Collected: 04/19/18 11:45 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	120-12-7	
Benzo(a)anthracene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	56-55-3	
Benzo(a)pyrene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	101-55-3	
Butylbenzylphthalate	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	85-68-7	
Carbazole	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	59-50-7	
4-Chloroaniline	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	108-60-1	
2-Chloronaphthalene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	91-58-7	
2-Chlorophenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	7005-72-3	
Chrysene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	53-70-3	
Dibenzofuran	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	120-83-2	
Diethylphthalate	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	105-67-9	
Dimethylphthalate	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	131-11-3	
Di-n-butylphthalate	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2270	1	04/20/18 16:47	04/27/18 15:16	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	606-20-2	
Di-n-octylphthalate	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	117-81-7	
Fluoranthene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	206-44-0	
Fluorene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	87-68-3	
Hexachlorobenzene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	118-74-1	
Hexachloroethane	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	193-39-5	
Isophorone	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	78-59-1	
1-Methylnaphthalene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	90-12-0	
2-Methylnaphthalene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	95-48-7	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-06 (0-10) S **Lab ID: 10428096002** Collected: 04/19/18 11:45 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	881	1	04/20/18 16:47	04/27/18 15:16		
Naphthalene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	91-20-3	
2-Nitroaniline	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	88-74-4	
3-Nitroaniline	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	99-09-2	
4-Nitroaniline	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	100-01-6	
Nitrobenzene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	98-95-3	
2-Nitrophenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	88-75-5	
4-Nitrophenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	86-30-6	
Pentachlorophenol	ND	ug/kg	895	1	04/20/18 16:47	04/27/18 15:16	87-86-5	
Phenanthrene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	85-01-8	
Phenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	108-95-2	
Pyrene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	441	1	04/20/18 16:47	04/27/18 15:16	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	68	%.	43-125	1	04/20/18 16:47	04/27/18 15:16	4165-60-0	
2-Fluorobiphenyl (S)	71	%.	30-132	1	04/20/18 16:47	04/27/18 15:16	321-60-8	
p-Terphenyl-d14 (S)	85	%.	62-125	1	04/20/18 16:47	04/27/18 15:16	1718-51-0	
Phenol-d6 (S)	70	%.	48-125	1	04/20/18 16:47	04/27/18 15:16	13127-88-3	
2-Fluorophenol (S)	66	%.	40-125	1	04/20/18 16:47	04/27/18 15:16	367-12-4	
2,4,6-Tribromophenol (S)	58	%.	60-125	1	04/20/18 16:47	04/27/18 15:16	118-79-6	S0
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	83-32-9	
Acenaphthylene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	208-96-8	
Anthracene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	120-12-7	
Benzo(a)anthracene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	56-55-3	
Benzo(a)pyrene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	207-08-9	
Chrysene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	53-70-3	
Fluoranthene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	206-44-0	
Fluorene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	193-39-5	
Naphthalene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	91-20-3	
Phenanthrene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	85-01-8	
Pyrene	ND	ug/kg	13.4	1	04/23/18 18:32	04/24/18 14:59	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	89	%.	42-125	1	04/23/18 18:32	04/24/18 14:59	321-60-8	
p-Terphenyl-d14 (S)	96	%.	57-125	1	04/23/18 18:32	04/24/18 14:59	1718-51-0	

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1700 Elm Street - Suite 200
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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-06 (0-10) S **Lab ID: 10428096002** Collected: 04/19/18 11:45 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1350	1	05/01/18 16:53	05/03/18 03:51	67-64-1	
Allyl chloride	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	107-05-1	
Benzene	ND	ug/kg	27.1	1	05/01/18 16:53	05/03/18 03:51	71-43-2	
Bromobenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	108-86-1	
Bromochloromethane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	74-97-5	
Bromodichloromethane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	75-27-4	
Bromoform	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	75-25-2	
Bromomethane	ND	ug/kg	677	1	05/01/18 16:53	05/03/18 03:51	74-83-9	
2-Butanone (MEK)	ND	ug/kg	338	1	05/01/18 16:53	05/03/18 03:51	78-93-3	
n-Butylbenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	104-51-8	
sec-Butylbenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	135-98-8	
tert-Butylbenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	98-06-6	
Carbon tetrachloride	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	56-23-5	
Chlorobenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	108-90-7	
Chloroethane	ND	ug/kg	677	1	05/01/18 16:53	05/03/18 03:51	75-00-3	
Chloroform	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	67-66-3	
Chloromethane	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	74-87-3	
2-Chlorotoluene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	95-49-8	
4-Chlorotoluene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	677	1	05/01/18 16:53	05/03/18 03:51	96-12-8	
Dibromochloromethane	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	106-93-4	
Dibromomethane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	75-71-8	
1,1-Dichloroethane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	75-34-3	
1,2-Dichloroethane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	107-06-2	
1,1-Dichloroethene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	156-60-5	
Dichlorofluoromethane	ND	ug/kg	677	1	05/01/18 16:53	05/03/18 03:51	75-43-4	
1,2-Dichloropropane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	78-87-5	
1,3-Dichloropropane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	142-28-9	
2,2-Dichloropropane	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	594-20-7	
1,1-Dichloropropene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	60-29-7	
Ethylbenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	338	1	05/01/18 16:53	05/03/18 03:51	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	98-82-8	
p-Isopropyltoluene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	99-87-6	
Methylene Chloride	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	338	1	05/01/18 16:53	05/03/18 03:51	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-06 (0-10) S **Lab ID: 10428096002** Collected: 04/19/18 11:45 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	1634-04-4	
Naphthalene	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	91-20-3	
n-Propylbenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	103-65-1	
Styrene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	79-34-5	
Tetrachloroethene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	127-18-4	
Tetrahydrofuran	ND	ug/kg	2710	1	05/01/18 16:53	05/03/18 03:51	109-99-9	
Toluene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	79-00-5	
Trichloroethene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	79-01-6	
Trichlorofluoromethane	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	271	1	05/01/18 16:53	05/03/18 03:51	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	67.7	1	05/01/18 16:53	05/03/18 03:51	108-67-8	
Vinyl chloride	ND	ug/kg	27.1	1	05/01/18 16:53	05/03/18 03:51	75-01-4	
Xylene (Total)	ND	ug/kg	203	1	05/01/18 16:53	05/03/18 03:51	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1	05/01/18 16:53	05/03/18 03:51	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	05/01/18 16:53	05/03/18 03:51	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1	05/01/18 16:53	05/03/18 03:51	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	13.4	5	04/28/18 10:35	05/01/18 13:40	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**3.3**	mg/kg	1.0	1		05/03/18 07:33	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.51	1	04/25/18 11:00	04/25/18 13:45	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	**3.0**	mg/kg	1.0	1	04/27/18 12:45	04/30/18 18:57	16984-48-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-04 (2-14) WM **Lab ID: 10428096003** Collected: 04/19/18 12:30 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	9.16	1	05/04/18 10:07	05/07/18 14:17	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	309-00-2	
alpha-BHC	**4.7**	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	319-84-6	
beta-BHC	ND	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	319-85-7	
delta-BHC	ND	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	58-89-9	
Chlordane (Technical)	ND	ug/kg	45.1	2	04/20/18 16:36	05/01/18 22:03	57-74-9	
alpha-Chlordane	ND	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	5103-71-9	
gamma-Chlordane	ND	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	5103-74-2	
4,4'-DDD	ND	ug/kg	9.0	2	04/20/18 16:36	05/01/18 22:03	72-54-8	
4,4'-DDE	ND	ug/kg	9.0	2	04/20/18 16:36	05/01/18 22:03	72-55-9	
4,4'-DDT	ND	ug/kg	9.0	2	04/20/18 16:36	05/01/18 22:03	50-29-3	
Dieldrin	ND	ug/kg	9.0	2	04/20/18 16:36	05/01/18 22:03	60-57-1	
Endosulfan I	ND	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	959-98-8	
Endosulfan II	ND	ug/kg	9.0	2	04/20/18 16:36	05/01/18 22:03	33213-65-9	
Endosulfan sulfate	ND	ug/kg	9.0	2	04/20/18 16:36	05/01/18 22:03	1031-07-8	
Endrin	ND	ug/kg	9.0	2	04/20/18 16:36	05/01/18 22:03	72-20-8	
Endrin aldehyde	ND	ug/kg	9.0	2	04/20/18 16:36	05/01/18 22:03	7421-93-4	
Endrin ketone	ND	ug/kg	9.0	2	04/20/18 16:36	05/01/18 22:03	53494-70-5	
Heptachlor	ND	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	76-44-8	
Heptachlor epoxide	ND	ug/kg	4.5	2	04/20/18 16:36	05/01/18 22:03	1024-57-3	
Methoxychlor	ND	ug/kg	45.1	2	04/20/18 16:36	05/01/18 22:03	72-43-5	
Toxaphene	ND	ug/kg	135	2	04/20/18 16:36	05/01/18 22:03	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	84	%.	30-150	2	04/20/18 16:36	05/01/18 22:03	877-09-8	3M,D4
Decachlorobiphenyl (S)	74	%.	30-150	2	04/20/18 16:36	05/01/18 22:03	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	11141-16-5	
PCB-1242 (Aroclor 1242)	**475**	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	12672-29-6	
PCB-1254 (Aroclor 1254)	**158**	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	11100-14-4	
PCB, Total	**633**	ug/kg	44.7	1	04/20/18 16:33	04/24/18 15:42	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	86	%.	48-125	1	04/20/18 16:33	04/24/18 15:42	877-09-8	
Decachlorobiphenyl (S)	113	%.	30-134	1	04/20/18 16:33	04/24/18 15:42	2051-24-3	CH
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**171**	mg/kg	101	10	04/20/18 17:57	04/22/18 13:00		T6

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-04 (2-14) WM **Lab ID: 10428096003** Collected: 04/19/18 12:30 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/20/18 17:57	04/22/18 13:00	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	14.2	1	05/02/18 10:19	05/02/18 13:42		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	05/02/18 10:19	05/02/18 13:42	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**9530**	mg/kg	12.9	1	04/23/18 07:48	04/26/18 14:05	7429-90-5	
Barium	**177**	mg/kg	0.64	1	04/23/18 07:48	04/26/18 14:05	7440-39-3	
Boron	**12.2**	mg/kg	9.7	1	04/23/18 07:48	04/26/18 14:05	7440-42-8	
Copper	**102**	mg/kg	0.64	1	04/23/18 07:48	04/26/18 14:05	7440-50-8	
Iron	**26700**	mg/kg	16.1	5	04/23/18 07:48	04/26/18 14:53	7439-89-6	
Manganese	**531**	mg/kg	0.32	1	04/23/18 07:48	04/26/18 14:05	7439-96-5	
Nickel	**27.5**	mg/kg	1.3	1	04/23/18 07:48	04/26/18 14:05	7440-02-0	
Silver	ND	mg/kg	0.64	1	04/23/18 07:48	04/26/18 14:05	7440-22-4	
Tin	**16.6**	mg/kg	4.8	1	04/23/18 07:48	04/26/18 14:05	7440-31-5	
Titanium	**181**	mg/kg	1.6	1	04/23/18 07:48	04/26/18 14:05	7440-32-6	
Zinc	**364**	mg/kg	1.3	1	04/23/18 07:48	04/26/18 14:05	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**5.0**	mg/kg	0.25	1	04/25/18 09:25	04/26/18 04:24	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.3**	mg/kg	0.63	20	04/23/18 08:19	04/25/18 16:10	7440-36-0	
Arsenic	**8.9**	mg/kg	0.63	20	04/23/18 08:19	04/25/18 16:10	7440-38-2	
Beryllium	**0.89**	mg/kg	0.25	20	04/23/18 08:19	04/25/18 16:10	7440-41-7	
Cadmium	**1.0**	mg/kg	0.10	20	04/23/18 08:19	04/25/18 16:10	7440-43-9	
Cobalt	**10.6**	mg/kg	0.63	20	04/23/18 08:19	04/25/18 16:10	7440-48-4	
Lead	**273**	mg/kg	0.13	20	04/23/18 08:19	04/25/18 16:10	7439-92-1	
Lithium	**8.6**	mg/kg	0.63	20	04/23/18 08:19	04/25/18 16:10	7439-93-2	
Selenium	**0.84**	mg/kg	0.63	20	04/23/18 08:19	04/25/18 16:10	7782-49-2	
Strontium	**54.8**	mg/kg	0.63	20	04/23/18 08:19	04/25/18 16:10	7440-24-6	
Vanadium	**38.0**	mg/kg	1.3	20	04/23/18 08:19	04/25/18 16:10	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.20**	mg/kg	0.026	1	04/23/18 07:02	04/24/18 16:35	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**26.1**	%	0.10	1		04/30/18 11:27		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	83-32-9	
Acenaphthylene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-04 (2-14) WM **Lab ID: 10428096003** Collected: 04/19/18 12:30 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	120-12-7	
Benzo(a)anthracene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	56-55-3	
Benzo(a)pyrene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	101-55-3	
Butylbenzylphthalate	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	85-68-7	
Carbazole	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	59-50-7	
4-Chloroaniline	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	108-60-1	
2-Chloronaphthalene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	91-58-7	
2-Chlorophenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	7005-72-3	
Chrysene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	53-70-3	
Dibenzofuran	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	120-83-2	
Diethylphthalate	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	105-67-9	
Dimethylphthalate	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	131-11-3	
Di-n-butylphthalate	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2300	1	04/20/18 16:47	04/26/18 19:05	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	606-20-2	
Di-n-octylphthalate	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	122-66-7	
bis(2-Ethylhexyl)phthalate	**488**	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	117-81-7	
Fluoranthene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	206-44-0	
Fluorene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	87-68-3	
Hexachlorobenzene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	118-74-1	
Hexachloroethane	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	193-39-5	
Isophorone	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	78-59-1	
1-Methylnaphthalene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	90-12-0	
2-Methylnaphthalene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-04 (2-14) WM **Lab ID: 10428096003** Collected: 04/19/18 12:30 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	893	1	04/20/18 16:47	04/26/18 19:05		
Naphthalene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	91-20-3	
2-Nitroaniline	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	88-74-4	
3-Nitroaniline	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	99-09-2	
4-Nitroaniline	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	100-01-6	
Nitrobenzene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	98-95-3	
2-Nitrophenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	88-75-5	
4-Nitrophenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	86-30-6	
Pentachlorophenol	ND	ug/kg	906	1	04/20/18 16:47	04/26/18 19:05	87-86-5	
Phenanthrene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	85-01-8	
Phenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	108-95-2	
Pyrene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	446	1	04/20/18 16:47	04/26/18 19:05	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	58	%.	43-125	1	04/20/18 16:47	04/26/18 19:05	4165-60-0	
2-Fluorobiphenyl (S)	71	%.	30-132	1	04/20/18 16:47	04/26/18 19:05	321-60-8	
p-Terphenyl-d14 (S)	89	%.	62-125	1	04/20/18 16:47	04/26/18 19:05	1718-51-0	
Phenol-d6 (S)	63	%.	48-125	1	04/20/18 16:47	04/26/18 19:05	13127-88-3	
2-Fluorophenol (S)	60	%.	40-125	1	04/20/18 16:47	04/26/18 19:05	367-12-4	
2,4,6-Tribromophenol (S)	65	%.	60-125	1	04/20/18 16:47	04/26/18 19:05	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	83-32-9	
Acenaphthylene	ND	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	208-96-8	
Anthracene	ND	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	120-12-7	
Benzo(a)anthracene	**98.8**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	56-55-3	
Benzo(a)pyrene	**124**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	50-32-8	
Benzo(b)fluoranthene	**135**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	205-99-2	
Benzo(g,h,i)perylene	**121**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	191-24-2	
Benzo(k)fluoranthene	**45.7**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	207-08-9	
Chrysene	**96.3**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	218-01-9	
Dibenz(a,h)anthracene	**27.8**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	53-70-3	
Fluoranthene	**146**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	206-44-0	
Fluorene	ND	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	86-73-7	
Indeno(1,2,3-cd)pyrene	**66.3**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	193-39-5	
Naphthalene	ND	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	91-20-3	
Phenanthrene	**78.7**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	85-01-8	
Pyrene	**124**	ug/kg	27.0	2	04/23/18 18:32	04/25/18 18:02	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	101	%.	42-125	2	04/23/18 18:32	04/25/18 18:02	321-60-8	D3
p-Terphenyl-d14 (S)	115	%.	57-125	2	04/23/18 18:32	04/25/18 18:02	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-04 (2-14) WM **Lab ID: 10428096003** Collected: 04/19/18 12:30 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1440	1	05/01/18 16:53	05/03/18 04:08	67-64-1	
Allyl chloride	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	107-05-1	
Benzene	ND	ug/kg	28.8	1	05/01/18 16:53	05/03/18 04:08	71-43-2	
Bromobenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	108-86-1	
Bromochloromethane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	74-97-5	
Bromodichloromethane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	75-27-4	
Bromoform	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	75-25-2	
Bromomethane	ND	ug/kg	720	1	05/01/18 16:53	05/03/18 04:08	74-83-9	
2-Butanone (MEK)	ND	ug/kg	360	1	05/01/18 16:53	05/03/18 04:08	78-93-3	
n-Butylbenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	104-51-8	
sec-Butylbenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	135-98-8	
tert-Butylbenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	98-06-6	
Carbon tetrachloride	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	56-23-5	
Chlorobenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	108-90-7	
Chloroethane	ND	ug/kg	720	1	05/01/18 16:53	05/03/18 04:08	75-00-3	
Chloroform	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	67-66-3	
Chloromethane	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	74-87-3	
2-Chlorotoluene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	95-49-8	
4-Chlorotoluene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	720	1	05/01/18 16:53	05/03/18 04:08	96-12-8	
Dibromochloromethane	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	106-93-4	
Dibromomethane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	75-71-8	
1,1-Dichloroethane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	75-34-3	
1,2-Dichloroethane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	107-06-2	
1,1-Dichloroethene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	156-60-5	
Dichlorofluoromethane	ND	ug/kg	720	1	05/01/18 16:53	05/03/18 04:08	75-43-4	
1,2-Dichloropropane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	78-87-5	
1,3-Dichloropropane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	142-28-9	
2,2-Dichloropropane	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	594-20-7	
1,1-Dichloropropene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	60-29-7	
Ethylbenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	360	1	05/01/18 16:53	05/03/18 04:08	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	98-82-8	
p-Isopropyltoluene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	99-87-6	
Methylene Chloride	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	360	1	05/01/18 16:53	05/03/18 04:08	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-04 (2-14) WM **Lab ID: 10428096003** Collected: 04/19/18 12:30 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	1634-04-4	
Naphthalene	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	91-20-3	
n-Propylbenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	103-65-1	
Styrene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	79-34-5	
Tetrachloroethene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	127-18-4	
Tetrahydrofuran	ND	ug/kg	2880	1	05/01/18 16:53	05/03/18 04:08	109-99-9	
Toluene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	79-00-5	
Trichloroethene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	79-01-6	
Trichlorofluoromethane	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	288	1	05/01/18 16:53	05/03/18 04:08	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	72.0	1	05/01/18 16:53	05/03/18 04:08	108-67-8	
Vinyl chloride	ND	ug/kg	28.8	1	05/01/18 16:53	05/03/18 04:08	75-01-4	
Xylene (Total)	ND	ug/kg	216	1	05/01/18 16:53	05/03/18 04:08	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	98	%.	75-125	1	05/01/18 16:53	05/03/18 04:08	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	05/01/18 16:53	05/03/18 04:08	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	05/01/18 16:53	05/03/18 04:08	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	13.2	5	04/28/18 10:35	05/01/18 13:41	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**5.0**	mg/kg	1.0	1		05/03/18 07:33	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.61**	mg/kg	0.45	1	04/25/18 11:00	04/25/18 13:46	57-12-5	M0,R1
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	04/27/18 12:45	04/30/18 17:59	16984-48-8	M1

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-05 (5-15) WM **Lab ID: 10428096004** Collected: 04/19/18 15:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	11.5	1	05/04/18 10:07	05/07/18 14:23	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	309-00-2	
alpha-BHC	ND	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	319-84-6	
beta-BHC	**18.5**	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	319-85-7	
delta-BHC	ND	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	58-89-9	M1
Chlordane (Technical)	ND	ug/kg	130	5	04/20/18 16:36	05/01/18 19:55	57-74-9	
alpha-Chlordane	ND	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	5103-71-9	
gamma-Chlordane	ND	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	5103-74-2	
4,4'-DDD	ND	ug/kg	25.8	5	04/20/18 16:36	05/01/18 19:55	72-54-8	M1
4,4'-DDE	ND	ug/kg	25.8	5	04/20/18 16:36	05/01/18 19:55	72-55-9	
4,4'-DDT	ND	ug/kg	25.8	5	04/20/18 16:36	05/01/18 19:55	50-29-3	
Dieldrin	ND	ug/kg	25.8	5	04/20/18 16:36	05/01/18 19:55	60-57-1	
Endosulfan I	**22.0**	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	959-98-8	M1
Endosulfan II	ND	ug/kg	25.8	5	04/20/18 16:36	05/01/18 19:55	33213-65-9	
Endosulfan sulfate	ND	ug/kg	25.8	5	04/20/18 16:36	05/01/18 19:55	1031-07-8	
Endrin	ND	ug/kg	25.8	5	04/20/18 16:36	05/01/18 19:55	72-20-8	
Endrin aldehyde	ND	ug/kg	25.8	5	04/20/18 16:36	05/01/18 19:55	7421-93-4	
Endrin ketone	ND	ug/kg	25.8	5	04/20/18 16:36	05/01/18 19:55	53494-70-5	
Heptachlor	ND	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	76-44-8	
Heptachlor epoxide	**19.9**	ug/kg	13.0	5	04/20/18 16:36	05/01/18 19:55	1024-57-3	M1
Methoxychlor	ND	ug/kg	130	5	04/20/18 16:36	05/01/18 19:55	72-43-5	
Toxaphene	ND	ug/kg	388	5	04/20/18 16:36	05/01/18 19:55	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	108	%.	30-150	5	04/20/18 16:36	05/01/18 19:55	877-09-8	2M,D4
Decachlorobiphenyl (S)	105	%.	30-150	5	04/20/18 16:36	05/01/18 19:55	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	11141-16-5	
PCB-1242 (Aroclor 1242)	**1000**	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	12672-29-6	
PCB-1254 (Aroclor 1254)	**224**	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	11100-14-4	
PCB, Total	**1230**	ug/kg	51.1	1	04/20/18 16:33	04/24/18 15:26	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	78	%.	48-125	1	04/20/18 16:33	04/24/18 15:26	877-09-8	
Decachlorobiphenyl (S)	98	%.	30-134	1	04/20/18 16:33	04/24/18 15:26	2051-24-3	CH
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**395**	mg/kg	236	20	04/20/18 17:57	04/22/18 14:11		T6

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-05 (5-15) WM **Lab ID: 10428096004** Collected: 04/19/18 15:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	0	%.	50-150	20	04/20/18 17:57	04/22/18 14:11	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	**74.1**	mg/kg	15.9	1	05/02/18 10:19	05/02/18 20:24		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	05/02/18 10:19	05/02/18 20:24	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**23100**	mg/kg	14.5	1	04/23/18 07:48	04/26/18 14:07	7429-90-5	
Barium	**246**	mg/kg	0.73	1	04/23/18 07:48	04/26/18 14:07	7440-39-3	
Boron	**73.4**	mg/kg	10.9	1	04/23/18 07:48	04/26/18 14:07	7440-42-8	
Copper	**175**	mg/kg	0.73	1	04/23/18 07:48	04/26/18 14:07	7440-50-8	
Iron	**22000**	mg/kg	18.1	5	04/23/18 07:48	04/26/18 14:55	7439-89-6	
Manganese	**522**	mg/kg	0.36	1	04/23/18 07:48	04/26/18 14:07	7439-96-5	
Nickel	**16.3**	mg/kg	1.5	1	04/23/18 07:48	04/26/18 14:07	7440-02-0	
Silver	ND	mg/kg	0.73	1	04/23/18 07:48	04/26/18 14:07	7440-22-4	
Tin	**25.8**	mg/kg	5.4	1	04/23/18 07:48	04/26/18 14:07	7440-31-5	
Titanium	**277**	mg/kg	1.8	1	04/23/18 07:48	04/26/18 14:07	7440-32-6	
Zinc	**463**	mg/kg	1.5	1	04/23/18 07:48	04/26/18 14:07	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**3.6**	mg/kg	0.29	1	04/25/18 09:25	04/26/18 04:28	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	**1.3**	mg/kg	0.73	20	04/23/18 08:19	04/24/18 18:59	7440-36-0	
Arsenic	**8.1**	mg/kg	0.73	20	04/23/18 08:19	04/24/18 18:59	7440-38-2	
Beryllium	**0.68**	mg/kg	0.29	20	04/23/18 08:19	04/24/18 18:59	7440-41-7	
Cadmium	**2.5**	mg/kg	0.12	20	04/23/18 08:19	04/24/18 18:59	7440-43-9	
Cobalt	**7.0**	mg/kg	0.73	20	04/23/18 08:19	04/24/18 18:59	7440-48-4	
Lead	**284**	mg/kg	0.15	20	04/23/18 08:19	04/24/18 18:59	7439-92-1	
Lithium	**7.4**	mg/kg	0.73	20	04/23/18 08:19	04/24/18 18:59	7439-93-2	
Selenium	**0.90**	mg/kg	0.73	20	04/23/18 08:19	04/24/18 18:59	7782-49-2	
Strontium	**32.0**	mg/kg	0.73	20	04/23/18 08:19	04/24/18 18:59	7440-24-6	
Vanadium	**30.7**	mg/kg	1.5	20	04/23/18 08:19	04/24/18 18:59	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.55**	mg/kg	0.027	1	04/23/18 07:02	04/24/18 16:37	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**35.6**	%	0.10	1		04/30/18 11:27		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	83-32-9	
Acenaphthylene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-05 (5-15) WM **Lab ID: 10428096004** Collected: 04/19/18 15:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	120-12-7	
Benzo(a)anthracene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	56-55-3	
Benzo(a)pyrene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	101-55-3	
Butylbenzylphthalate	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	85-68-7	
Carbazole	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	59-50-7	
4-Chloroaniline	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	108-60-1	
2-Chloronaphthalene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	91-58-7	
2-Chlorophenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	7005-72-3	
Chrysene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	53-70-3	
Dibenzofuran	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	120-83-2	
Diethylphthalate	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	105-67-9	
Dimethylphthalate	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	131-11-3	
Di-n-butylphthalate	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	2630	1	04/20/18 16:47	04/26/18 19:34	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	606-20-2	
Di-n-octylphthalate	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	122-66-7	
bis(2-Ethylhexyl)phthalate	**2200**	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	117-81-7	
Fluoranthene	**874**	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	206-44-0	
Fluorene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	87-68-3	
Hexachlorobenzene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	118-74-1	
Hexachloroethane	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	193-39-5	
Isophorone	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	78-59-1	
1-Methylnaphthalene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	90-12-0	
2-Methylnaphthalene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	95-48-7	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-05 (5-15) WM **Lab ID: 10428096004** Collected: 04/19/18 15:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1020	1	04/20/18 16:47	04/26/18 19:34		
Naphthalene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	91-20-3	
2-Nitroaniline	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	88-74-4	
3-Nitroaniline	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	99-09-2	
4-Nitroaniline	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	100-01-6	
Nitrobenzene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	98-95-3	
2-Nitrophenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	88-75-5	
4-Nitrophenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	86-30-6	
Pentachlorophenol	ND	ug/kg	1040	1	04/20/18 16:47	04/26/18 19:34	87-86-5	
Phenanthrene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	85-01-8	
Phenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	108-95-2	
Pyrene	**790**	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	511	1	04/20/18 16:47	04/26/18 19:34	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	62	%.	43-125	1	04/20/18 16:47	04/26/18 19:34	4165-60-0	
2-Fluorobiphenyl (S)	76	%.	30-132	1	04/20/18 16:47	04/26/18 19:34	321-60-8	
p-Terphenyl-d14 (S)	90	%.	62-125	1	04/20/18 16:47	04/26/18 19:34	1718-51-0	
Phenol-d6 (S)	71	%.	48-125	1	04/20/18 16:47	04/26/18 19:34	13127-88-3	
2-Fluorophenol (S)	70	%.	40-125	1	04/20/18 16:47	04/26/18 19:34	367-12-4	
2,4,6-Tribromophenol (S)	78	%.	60-125	1	04/20/18 16:47	04/26/18 19:34	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	83-32-9	
Acenaphthylene	**154**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	208-96-8	
Anthracene	**169**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	120-12-7	
Benzo(a)anthracene	**748**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	56-55-3	
Benzo(a)pyrene	**788**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	50-32-8	
Benzo(b)fluoranthene	**997**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	205-99-2	
Benzo(g,h,i)perylene	**503**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	191-24-2	
Benzo(k)fluoranthene	**391**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	207-08-9	
Chrysene	**764**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	218-01-9	
Dibenz(a,h)anthracene	**123**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	53-70-3	
Fluoranthene	**1340**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	206-44-0	
Fluorene	ND	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	86-73-7	
Indeno(1,2,3-cd)pyrene	**453**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	193-39-5	
Naphthalene	ND	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	91-20-3	
Phenanthrene	**437**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	85-01-8	
Pyrene	**1100**	ug/kg	77.6	5	04/23/18 18:32	04/24/18 20:10	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	84	%.	42-125	5	04/23/18 18:32	04/24/18 20:10	321-60-8	D3
p-Terphenyl-d14 (S)	96	%.	57-125	5	04/23/18 18:32	04/24/18 20:10	1718-51-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-05 (5-15) WM **Lab ID: 10428096004** Collected: 04/19/18 15:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	1520	1	05/01/18 16:53	05/03/18 04:25	67-64-1	
Allyl chloride	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	107-05-1	
Benzene	ND	ug/kg	30.3	1	05/01/18 16:53	05/03/18 04:25	71-43-2	
Bromobenzene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	108-86-1	
Bromochloromethane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	74-97-5	
Bromodichloromethane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	75-27-4	
Bromoform	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	75-25-2	
Bromomethane	ND	ug/kg	759	1	05/01/18 16:53	05/03/18 04:25	74-83-9	
2-Butanone (MEK)	ND	ug/kg	379	1	05/01/18 16:53	05/03/18 04:25	78-93-3	
n-Butylbenzene	**234**	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	104-51-8	
sec-Butylbenzene	**269**	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	135-98-8	
tert-Butylbenzene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	98-06-6	
Carbon tetrachloride	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	56-23-5	
Chlorobenzene	**129**	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	108-90-7	
Chloroethane	ND	ug/kg	759	1	05/01/18 16:53	05/03/18 04:25	75-00-3	
Chloroform	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	67-66-3	
Chloromethane	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	74-87-3	
2-Chlorotoluene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	95-49-8	
4-Chlorotoluene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	759	1	05/01/18 16:53	05/03/18 04:25	96-12-8	
Dibromochloromethane	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	106-93-4	
Dibromomethane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	541-73-1	
1,4-Dichlorobenzene	**443**	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	75-71-8	
1,1-Dichloroethane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	75-34-3	
1,2-Dichloroethane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	107-06-2	
1,1-Dichloroethene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	156-60-5	
Dichlorofluoromethane	ND	ug/kg	759	1	05/01/18 16:53	05/03/18 04:25	75-43-4	
1,2-Dichloropropane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	78-87-5	
1,3-Dichloropropane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	142-28-9	
2,2-Dichloropropane	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	594-20-7	
1,1-Dichloropropene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	60-29-7	
Ethylbenzene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	379	1	05/01/18 16:53	05/03/18 04:25	87-68-3	
Isopropylbenzene (Cumene)	**127**	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	98-82-8	
p-Isopropyltoluene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	99-87-6	
Methylene Chloride	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	379	1	05/01/18 16:53	05/03/18 04:25	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-05 (5-15) WM **Lab ID: 10428096004** Collected: 04/19/18 15:00 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	1634-04-4	
Naphthalene	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	91-20-3	
n-Propylbenzene	**121**	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	103-65-1	
Styrene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	79-34-5	
Tetrachloroethene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	127-18-4	
Tetrahydrofuran	ND	ug/kg	3030	1	05/01/18 16:53	05/03/18 04:25	109-99-9	
Toluene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	79-00-5	
Trichloroethene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	79-01-6	
Trichlorofluoromethane	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:25	76-13-1	
1,2,4-Trimethylbenzene	**164**	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	75.9	1	05/01/18 16:53	05/03/18 04:25	108-67-8	
Vinyl chloride	ND	ug/kg	30.3	1	05/01/18 16:53	05/03/18 04:25	75-01-4	
Xylene (Total)	ND	ug/kg	228	1	05/01/18 16:53	05/03/18 04:25	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%.	75-125	1	05/01/18 16:53	05/03/18 04:25	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	05/01/18 16:53	05/03/18 04:25	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	05/01/18 16:53	05/03/18 04:25	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	15.8	5	04/28/18 10:35	05/01/18 13:41	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**3.6**	mg/kg	1.0	1		05/03/18 07:33	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	0.47	1	04/26/18 10:15	04/26/18 14:28	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	04/27/18 12:45	04/30/18 19:56	16984-48-8	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-07 (1-5) S **Lab ID: 10428096005** Collected: 04/19/18 17:15 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	12.3	1	05/04/18 10:07	05/07/18 14:57	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	309-00-2	
alpha-BHC	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	319-84-6	
beta-BHC	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	319-85-7	
delta-BHC	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	58-89-9	
Chlordane (Technical)	ND	ug/kg	64.4	2	04/20/18 16:36	05/01/18 22:22	57-74-9	
alpha-Chlordane	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	5103-71-9	
gamma-Chlordane	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	5103-74-2	
4,4'-DDD	ND	ug/kg	12.8	2	04/20/18 16:36	05/01/18 22:22	72-54-8	
4,4'-DDE	ND	ug/kg	12.8	2	04/20/18 16:36	05/01/18 22:22	72-55-9	
4,4'-DDT	ND	ug/kg	12.8	2	04/20/18 16:36	05/01/18 22:22	50-29-3	
Dieldrin	ND	ug/kg	12.8	2	04/20/18 16:36	05/01/18 22:22	60-57-1	
Endosulfan I	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	959-98-8	
Endosulfan II	ND	ug/kg	12.8	2	04/20/18 16:36	05/01/18 22:22	33213-65-9	
Endosulfan sulfate	ND	ug/kg	12.8	2	04/20/18 16:36	05/01/18 22:22	1031-07-8	
Endrin	ND	ug/kg	12.8	2	04/20/18 16:36	05/01/18 22:22	72-20-8	
Endrin aldehyde	ND	ug/kg	12.8	2	04/20/18 16:36	05/01/18 22:22	7421-93-4	
Endrin ketone	ND	ug/kg	12.8	2	04/20/18 16:36	05/01/18 22:22	53494-70-5	
Heptachlor	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	76-44-8	
Heptachlor epoxide	ND	ug/kg	6.4	2	04/20/18 16:36	05/01/18 22:22	1024-57-3	
Methoxychlor	ND	ug/kg	64.4	2	04/20/18 16:36	05/01/18 22:22	72-43-5	
Toxaphene	ND	ug/kg	193	2	04/20/18 16:36	05/01/18 22:22	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	78	%.	30-150	2	04/20/18 16:36	05/01/18 22:22	877-09-8	3M,D3
Decachlorobiphenyl (S)	67	%.	30-150	2	04/20/18 16:36	05/01/18 22:22	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	11100-14-4	
PCB, Total	ND	ug/kg	63.6	1	04/20/18 16:33	04/24/18 16:45	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	82	%.	48-125	1	04/20/18 16:33	04/24/18 16:45	877-09-8	
Decachlorobiphenyl (S)	106	%.	30-134	1	04/20/18 16:33	04/24/18 16:45	2051-24-3	
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	ND	mg/kg	14.7	1	04/20/18 17:57	04/22/18 13:43		

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-07 (1-5) S **Lab ID: 10428096005** Collected: 04/19/18 17:15 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	101	%.	50-150	1	04/20/18 17:57	04/22/18 13:43	638-68-6	
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	18.5	1	05/02/18 10:19	05/02/18 20:49		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	80-150	1	05/02/18 10:19	05/02/18 20:49	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**8590**	mg/kg	19.1	1	04/23/18 07:48	04/26/18 14:10	7429-90-5	
Barium	**240**	mg/kg	0.96	1	04/23/18 07:48	04/26/18 14:10	7440-39-3	
Boron	**27.0**	mg/kg	14.3	1	04/23/18 07:48	04/26/18 14:10	7440-42-8	
Copper	**17.5**	mg/kg	0.96	1	04/23/18 07:48	04/26/18 14:10	7440-50-8	
Iron	**23300**	mg/kg	23.9	5	04/23/18 07:48	04/26/18 14:58	7439-89-6	
Manganese	**999**	mg/kg	2.4	5	04/23/18 07:48	04/26/18 14:58	7439-96-5	
Nickel	**16.4**	mg/kg	1.9	1	04/23/18 07:48	04/26/18 14:10	7440-02-0	
Silver	ND	mg/kg	0.96	1	04/23/18 07:48	04/26/18 14:10	7440-22-4	
Tin	ND	mg/kg	7.2	1	04/23/18 07:48	04/26/18 14:10	7440-31-5	
Titanium	**170**	mg/kg	2.4	1	04/23/18 07:48	04/26/18 14:10	7440-32-6	
Zinc	**62.5**	mg/kg	1.9	1	04/23/18 07:48	04/26/18 14:10	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**7.5**	mg/kg	0.37	1	04/25/18 09:25	04/26/18 04:33	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	0.90	20	04/23/18 08:19	04/25/18 16:13	7440-36-0	
Arsenic	**6.3**	mg/kg	0.90	20	04/23/18 08:19	04/25/18 16:13	7440-38-2	
Beryllium	**0.67**	mg/kg	0.36	20	04/23/18 08:19	04/25/18 16:13	7440-41-7	
Cadmium	**0.47**	mg/kg	0.14	20	04/23/18 08:19	04/25/18 16:13	7440-43-9	
Cobalt	**8.3**	mg/kg	0.90	20	04/23/18 08:19	04/25/18 16:13	7440-48-4	
Lead	**16.2**	mg/kg	0.18	20	04/23/18 08:19	04/25/18 16:13	7439-92-1	
Lithium	**9.8**	mg/kg	0.90	20	04/23/18 08:19	04/25/18 16:13	7439-93-2	
Selenium	**2.2**	mg/kg	0.90	20	04/23/18 08:19	04/25/18 16:13	7782-49-2	
Strontium	**102**	mg/kg	0.90	20	04/23/18 08:19	04/25/18 16:13	7440-24-6	
Vanadium	**29.8**	mg/kg	1.8	20	04/23/18 08:19	04/25/18 16:13	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.065**	mg/kg	0.037	1	04/23/18 07:02	04/24/18 16:39	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**48.2**	%	0.10	1		04/30/18 11:28		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	83-32-9	
Acenaphthylene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	208-96-8	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-07 (1-5) S **Lab ID: 10428096005** Collected: 04/19/18 17:15 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	120-12-7	
Benzo(a)anthracene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	56-55-3	
Benzo(a)pyrene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	101-55-3	
Butylbenzylphthalate	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	85-68-7	
Carbazole	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	59-50-7	
4-Chloroaniline	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	108-60-1	
2-Chloronaphthalene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	91-58-7	
2-Chlorophenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	7005-72-3	
Chrysene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	53-70-3	
Dibenzofuran	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	120-83-2	
Diethylphthalate	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	105-67-9	
Dimethylphthalate	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	131-11-3	
Di-n-butylphthalate	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	3280	1	04/20/18 16:47	04/26/18 20:03	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	606-20-2	
Di-n-octylphthalate	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	122-66-7	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	117-81-7	
Fluoranthene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	206-44-0	
Fluorene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	87-68-3	
Hexachlorobenzene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	118-74-1	
Hexachloroethane	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	193-39-5	
Isophorone	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	78-59-1	
1-Methylnaphthalene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	90-12-0	
2-Methylnaphthalene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-07 (1-5) S **Lab ID: 10428096005** Collected: 04/19/18 17:15 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1270	1	04/20/18 16:47	04/26/18 20:03		
Naphthalene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	91-20-3	
2-Nitroaniline	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	88-74-4	
3-Nitroaniline	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	99-09-2	
4-Nitroaniline	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	100-01-6	
Nitrobenzene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	98-95-3	
2-Nitrophenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	88-75-5	
4-Nitrophenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	86-30-6	
Pentachlorophenol	ND	ug/kg	1290	1	04/20/18 16:47	04/26/18 20:03	87-86-5	
Phenanthrene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	85-01-8	
Phenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	108-95-2	
Pyrene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	636	1	04/20/18 16:47	04/26/18 20:03	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	57	%.	43-125	1	04/20/18 16:47	04/26/18 20:03	4165-60-0	
2-Fluorobiphenyl (S)	71	%.	30-132	1	04/20/18 16:47	04/26/18 20:03	321-60-8	
p-Terphenyl-d14 (S)	89	%.	62-125	1	04/20/18 16:47	04/26/18 20:03	1718-51-0	
Phenol-d6 (S)	65	%.	48-125	1	04/20/18 16:47	04/26/18 20:03	13127-88-3	
2-Fluorophenol (S)	62	%.	40-125	1	04/20/18 16:47	04/26/18 20:03	367-12-4	
2,4,6-Tribromophenol (S)	60	%.	60-125	1	04/20/18 16:47	04/26/18 20:03	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	83-32-9	
Acenaphthylene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	208-96-8	
Anthracene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	120-12-7	
Benzo(a)anthracene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	56-55-3	
Benzo(a)pyrene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	207-08-9	
Chrysene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	53-70-3	
Fluoranthene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	206-44-0	
Fluorene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	193-39-5	
Naphthalene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	91-20-3	
Phenanthrene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	85-01-8	
Pyrene	ND	ug/kg	19.3	1	04/20/18 15:33	04/24/18 21:12	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	56	%.	42-125	1	04/20/18 15:33	04/24/18 21:12	321-60-8	
p-Terphenyl-d14 (S)	68	%.	57-125	1	04/20/18 15:33	04/24/18 21:12	1718-51-0	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-07 (1-5) S **Lab ID: 10428096005** Collected: 04/19/18 17:15 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2020	1	05/01/18 16:53	05/03/18 04:42	67-64-1	
Allyl chloride	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	107-05-1	
Benzene	ND	ug/kg	40.4	1	05/01/18 16:53	05/03/18 04:42	71-43-2	
Bromobenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	108-86-1	
Bromochloromethane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	74-97-5	
Bromodichloromethane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	75-27-4	
Bromoform	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	75-25-2	
Bromomethane	ND	ug/kg	1010	1	05/01/18 16:53	05/03/18 04:42	74-83-9	
2-Butanone (MEK)	ND	ug/kg	505	1	05/01/18 16:53	05/03/18 04:42	78-93-3	
n-Butylbenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	104-51-8	
sec-Butylbenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	135-98-8	
tert-Butylbenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	98-06-6	
Carbon tetrachloride	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	56-23-5	
Chlorobenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	108-90-7	
Chloroethane	ND	ug/kg	1010	1	05/01/18 16:53	05/03/18 04:42	75-00-3	
Chloroform	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	67-66-3	
Chloromethane	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	74-87-3	
2-Chlorotoluene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	95-49-8	
4-Chlorotoluene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1010	1	05/01/18 16:53	05/03/18 04:42	96-12-8	
Dibromochloromethane	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	106-93-4	
Dibromomethane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	75-71-8	
1,1-Dichloroethane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	75-34-3	
1,2-Dichloroethane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	107-06-2	
1,1-Dichloroethene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1010	1	05/01/18 16:53	05/03/18 04:42	75-43-4	
1,2-Dichloropropane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	78-87-5	
1,3-Dichloropropane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	142-28-9	
2,2-Dichloropropane	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	594-20-7	
1,1-Dichloropropene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	60-29-7	
Ethylbenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	505	1	05/01/18 16:53	05/03/18 04:42	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	98-82-8	
p-Isopropyltoluene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	99-87-6	
Methylene Chloride	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	505	1	05/01/18 16:53	05/03/18 04:42	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Sample: FL-TT-07 (1-5) S **Lab ID: 10428096005** Collected: 04/19/18 17:15 Received: 04/20/18 08:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	1634-04-4	
Naphthalene	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	91-20-3	
n-Propylbenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	103-65-1	
Styrene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	79-34-5	
Tetrachloroethene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	127-18-4	
Tetrahydrofuran	ND	ug/kg	4040	1	05/01/18 16:53	05/03/18 04:42	109-99-9	
Toluene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	79-00-5	
Trichloroethene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	79-01-6	
Trichlorofluoromethane	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	404	1	05/01/18 16:53	05/03/18 04:42	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	101	1	05/01/18 16:53	05/03/18 04:42	108-67-8	
Vinyl chloride	ND	ug/kg	40.4	1	05/01/18 16:53	05/03/18 04:42	75-01-4	
Xylene (Total)	ND	ug/kg	303	1	05/01/18 16:53	05/03/18 04:42	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%.	75-125	1	05/01/18 16:53	05/03/18 04:42	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1	05/01/18 16:53	05/03/18 04:42	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1	05/01/18 16:53	05/03/18 04:42	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	190	50	04/28/18 10:35	05/01/18 13:41	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**7.5**	mg/kg	1.0	1		05/03/18 07:33	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	**0.78**	mg/kg	0.53	1	04/26/18 10:15	04/26/18 14:28	57-12-5	
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	0.99	1	04/27/18 12:45	04/30/18 19:17	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 142287 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 562608 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.21	05/07/18 13:37	N3

METHOD BLANK: 562609 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.15	05/07/18 13:43	N3

METHOD BLANK: 562610 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.21	05/07/18 13:50	N3

LABORATORY CONTROL SAMPLE: 562611

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	100	113	112	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 562612 562613

Parameter	Units	10428096004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	359	372	373	444	104	119	65-135	17	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 535145 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2910764 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	05/02/18 11:15	
a,a,a-Trifluorotoluene (S)	%.	99	80-150	05/02/18 11:15	

LABORATORY CONTROL SAMPLE & LCSD: 2907780 2907781

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	40.4	41.9	81	84	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%.				99	99	80-150			

MATRIX SPIKE SAMPLE: 2910759

Parameter	Units	10427824002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	56.5	67.3	119	80-120	
a,a,a-Trifluorotoluene (S)	%.				98	80-150	

SAMPLE DUPLICATE: 2910758

Parameter	Units	10428096003 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	ND	4.6J		20	
a,a,a-Trifluorotoluene (S)	%.	99	99	3		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 533683 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2898961 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.020	04/24/18 15:54	

LABORATORY CONTROL SAMPLE: 2898962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.47	0.51	109	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898963 2898964

Parameter	Units	10428159001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.097	.52	.51	0.65	0.62	105	103	80-120	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 533686 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050 Analysis Description: 6010C Solids
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2898973 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	9.3	04/26/18 13:37	
Barium	mg/kg	ND	0.47	04/26/18 13:37	
Boron	mg/kg	ND	7.0	04/26/18 13:37	
Copper	mg/kg	ND	0.47	04/26/18 13:37	
Iron	mg/kg	ND	2.3	04/26/18 13:37	
Manganese	mg/kg	ND	0.23	04/26/18 13:37	
Nickel	mg/kg	ND	0.93	04/26/18 13:37	
Silver	mg/kg	ND	0.47	04/26/18 13:37	
Tin	mg/kg	ND	3.5	04/26/18 13:37	
Titanium	mg/kg	ND	1.2	04/26/18 13:37	
Zinc	mg/kg	ND	0.93	04/26/18 13:37	

LABORATORY CONTROL SAMPLE: 2898974

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	971	965	99	80-120	
Barium	mg/kg	48.5	50.1	103	80-120	
Boron	mg/kg	48.5	44.5	92	80-120	
Copper	mg/kg	48.5	48.4	100	80-120	
Iron	mg/kg	971	983	101	80-120	
Manganese	mg/kg	48.5	49.9	103	80-120	
Nickel	mg/kg	48.5	48.5	100	80-120	
Silver	mg/kg	24.3	22.8	94	80-120	
Tin	mg/kg	48.5	48.8	100	80-120	
Titanium	mg/kg	48.5	49.1	101	80-120	
Zinc	mg/kg	48.5	47.4	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898975 2898976

Parameter	Units	10428096001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	24900	3380	3480	19400	40300	-165	441	75-125	70	20	P6,R1
Barium	mg/kg	428	169	174	408	498	-12	40	75-125	20	20	M1
Boron	mg/kg	109	169	174	229	285	71	101	75-125	22	20	M1,R1
Copper	mg/kg	448	169	174	446	1230	-1	452	75-125	94	20	M1,R1
Iron	mg/kg	166000	3380	3480	226000	163000	1800	-74	75-125	32	20	M6,R1
Manganese	mg/kg	596	169	174	887	870	172	158	75-125	2	20	M1
Nickel	mg/kg	62.5	169	174	223	235	95	99	75-125	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898975 2898976

Parameter	Units	10428096001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	26.3	84.5	86.9	95.0	99.1	81	84	75-125	4	20	
Tin	mg/kg	406	169	174	601	743	116	194	75-125	21	20	M1,R1
Titanium	mg/kg	208	169	174	430	468	131	149	75-125	9	20	M1
Zinc	mg/kg	831	169	174	901	1010	42	105	75-125	12	20	P6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 438855 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2027873 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.19	04/26/18 02:38	N2

LABORATORY CONTROL SAMPLE: 2027874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.9	106	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2027875 2027876

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	5.4	4.87	4.87	7.0	6.1	34	15	75-125	14	20	M0,N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 533687 Analysis Method: EPA 6020A
QC Batch Method: EPA 3050 Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2898977 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.49	04/24/18 18:20	
Arsenic	mg/kg	ND	0.49	04/24/18 18:20	
Beryllium	mg/kg	ND	0.19	04/24/18 18:20	
Cadmium	mg/kg	ND	0.078	04/24/18 18:20	
Cobalt	mg/kg	ND	0.49	04/24/18 18:20	
Lead	mg/kg	ND	0.097	04/24/18 18:20	
Lithium	mg/kg	ND	0.49	04/24/18 18:20	
Selenium	mg/kg	ND	0.49	04/24/18 18:20	
Strontium	mg/kg	ND	0.49	04/24/18 18:20	
Vanadium	mg/kg	ND	0.97	04/24/18 18:20	

LABORATORY CONTROL SAMPLE: 2898978

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	47.6	47.2	99	80-120	
Arsenic	mg/kg	47.6	46.8	98	80-120	
Beryllium	mg/kg	47.6	49.9	105	80-120	
Cadmium	mg/kg	47.6	47.0	99	80-120	
Cobalt	mg/kg	47.6	48.1	101	80-120	
Lead	mg/kg	47.6	49.6	104	80-120	
Lithium	mg/kg	47.6	52.3	110	80-120	
Selenium	mg/kg	47.6	48.6	102	80-120	
Strontium	mg/kg	47.6	48.0	101	80-120	
Vanadium	mg/kg	47.6	47.3	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898979 2898980

Parameter	Units	10428096001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	3.7	167	170	162	153	95	88	75-125	6	20	
Arsenic	mg/kg	11.9	167	170	200	181	113	99	75-125	10	20	
Beryllium	mg/kg	ND	167	170	195	181	116	106	75-125	8	20	
Cadmium	mg/kg	38.6	167	170	182	178	86	82	75-125	2	20	
Cobalt	mg/kg	8.4	167	170	214	187	123	105	75-125	13	20	
Lead	mg/kg	691	167	170	41400	4040	24300	1970	75-125	164	20	E,M6, R1
Lithium	mg/kg	2.4	167	170	205	191	121	111	75-125	7	20	
Selenium	mg/kg	1.8	167	170	175	166	104	96	75-125	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898979 2898980

Parameter	Units	10428096001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	mg/kg	31.2	167	170	210	211	107	105	75-125	0	20	
Vanadium	mg/kg	40.2	167	170	200	211	96	100	75-125	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 534083 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10428096001, 10428096002

SAMPLE DUPLICATE: 2901467

Parameter	Units	10428393003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	20.6	20.4	1	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 535059 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10428096003, 10428096004, 10428096005

SAMPLE DUPLICATE: 2907119

Parameter	Units	10428896001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	7.9	8.3	5	30	

SAMPLE DUPLICATE: 2907120

Parameter	Units	10428133002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	12.0	11.9	0	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 535427 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2909873 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	05/02/18 18:51	
1,1,1-Trichloroethane	ug/kg	ND	50.0	05/02/18 18:51	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	05/02/18 18:51	
1,1,2-Trichloroethane	ug/kg	ND	50.0	05/02/18 18:51	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	05/02/18 18:51	
1,1-Dichloroethane	ug/kg	ND	50.0	05/02/18 18:51	
1,1-Dichloroethene	ug/kg	ND	50.0	05/02/18 18:51	
1,1-Dichloropropene	ug/kg	ND	50.0	05/02/18 18:51	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	05/02/18 18:51	
1,2,3-Trichloropropane	ug/kg	ND	200	05/02/18 18:51	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	05/02/18 18:51	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	05/02/18 18:51	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	05/02/18 18:51	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	05/02/18 18:51	
1,2-Dichlorobenzene	ug/kg	ND	50.0	05/02/18 18:51	
1,2-Dichloroethane	ug/kg	ND	50.0	05/02/18 18:51	
1,2-Dichloropropane	ug/kg	ND	50.0	05/02/18 18:51	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	05/02/18 18:51	
1,3-Dichlorobenzene	ug/kg	ND	50.0	05/02/18 18:51	
1,3-Dichloropropane	ug/kg	ND	50.0	05/02/18 18:51	
1,4-Dichlorobenzene	ug/kg	ND	50.0	05/02/18 18:51	
2,2-Dichloropropane	ug/kg	ND	200	05/02/18 18:51	
2-Butanone (MEK)	ug/kg	ND	250	05/02/18 18:51	
2-Chlorotoluene	ug/kg	ND	50.0	05/02/18 18:51	
4-Chlorotoluene	ug/kg	ND	50.0	05/02/18 18:51	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	05/02/18 18:51	
Acetone	ug/kg	ND	1000	05/02/18 18:51	
Allyl chloride	ug/kg	ND	200	05/02/18 18:51	
Benzene	ug/kg	ND	20.0	05/02/18 18:51	
Bromobenzene	ug/kg	ND	50.0	05/02/18 18:51	
Bromochloromethane	ug/kg	ND	50.0	05/02/18 18:51	
Bromodichloromethane	ug/kg	ND	50.0	05/02/18 18:51	
Bromoform	ug/kg	ND	200	05/02/18 18:51	
Bromomethane	ug/kg	ND	500	05/02/18 18:51	
Carbon tetrachloride	ug/kg	ND	50.0	05/02/18 18:51	
Chlorobenzene	ug/kg	ND	50.0	05/02/18 18:51	
Chloroethane	ug/kg	ND	500	05/02/18 18:51	
Chloroform	ug/kg	ND	50.0	05/02/18 18:51	
Chloromethane	ug/kg	ND	200	05/02/18 18:51	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	05/02/18 18:51	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	05/02/18 18:51	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

METHOD BLANK: 2909873 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	05/02/18 18:51	
Dibromomethane	ug/kg	ND	50.0	05/02/18 18:51	
Dichlorodifluoromethane	ug/kg	ND	200	05/02/18 18:51	
Dichlorofluoromethane	ug/kg	ND	500	05/02/18 18:51	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	05/02/18 18:51	
Ethylbenzene	ug/kg	ND	50.0	05/02/18 18:51	
Hexachloro-1,3-butadiene	ug/kg	ND	250	05/02/18 18:51	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	05/02/18 18:51	
Methyl-tert-butyl ether	ug/kg	ND	50.0	05/02/18 18:51	
Methylene Chloride	ug/kg	ND	200	05/02/18 18:51	
n-Butylbenzene	ug/kg	ND	50.0	05/02/18 18:51	
n-Propylbenzene	ug/kg	ND	50.0	05/02/18 18:51	
Naphthalene	ug/kg	ND	200	05/02/18 18:51	
p-Isopropyltoluene	ug/kg	ND	50.0	05/02/18 18:51	
sec-Butylbenzene	ug/kg	ND	50.0	05/02/18 18:51	
Styrene	ug/kg	ND	50.0	05/02/18 18:51	
tert-Butylbenzene	ug/kg	ND	50.0	05/02/18 18:51	
Tetrachloroethene	ug/kg	ND	50.0	05/02/18 18:51	
Tetrahydrofuran	ug/kg	ND	2000	05/02/18 18:51	
Toluene	ug/kg	ND	50.0	05/02/18 18:51	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	05/02/18 18:51	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	05/02/18 18:51	
Trichloroethene	ug/kg	ND	50.0	05/02/18 18:51	
Trichlorofluoromethane	ug/kg	ND	200	05/02/18 18:51	
Vinyl chloride	ug/kg	ND	20.0	05/02/18 18:51	
Xylene (Total)	ug/kg	ND	150	05/02/18 18:51	
1,2-Dichloroethane-d4 (S)	%.	99	75-125	05/02/18 18:51	
4-Bromofluorobenzene (S)	%.	98	75-125	05/02/18 18:51	
Toluene-d8 (S)	%.	99	75-125	05/02/18 18:51	

LABORATORY CONTROL SAMPLE & LCSD: 2909874 2909875

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	914	897	91	90	59-125	2	20	
1,1,1-Trichloroethane	ug/kg	1000	898	976	90	98	59-125	8	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	901	920	90	92	58-125	2	20	
1,1,2-Trichloroethane	ug/kg	1000	889	909	89	91	64-125	2	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	852	881	85	88	65-125	3	20	
1,1-Dichloroethane	ug/kg	1000	883	930	88	93	63-125	5	20	
1,1-Dichloroethene	ug/kg	1000	830	873	83	87	59-125	5	20	
1,1-Dichloropropene	ug/kg	1000	866	942	87	94	64-125	8	20	
1,2,3-Trichlorobenzene	ug/kg	1000	927	953	93	95	55-126	3	20	
1,2,3-Trichloropropane	ug/kg	1000	943	948	94	95	62-125	1	20	
1,2,4-Trichlorobenzene	ug/kg	1000	941	939	94	94	62-125	0	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

LABORATORY CONTROL SAMPLE & LCSD: 2909874 2909875

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	944	928	94	93	59-125	2	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2370	2440	95	98	54-125	3	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	852	919	85	92	64-125	8	20	
1,2-Dichlorobenzene	ug/kg	1000	859	884	86	88	63-125	3	20	
1,2-Dichloroethane	ug/kg	1000	836	819	84	82	57-125	2	20	
1,2-Dichloropropane	ug/kg	1000	884	908	88	91	67-125	3	20	
1,3,5-Trimethylbenzene	ug/kg	1000	914	913	91	91	59-125	0	20	
1,3-Dichlorobenzene	ug/kg	1000	898	883	90	88	64-125	2	20	
1,3-Dichloropropane	ug/kg	1000	864	880	86	88	64-125	2	20	
1,4-Dichlorobenzene	ug/kg	1000	886	881	89	88	63-125	1	20	
2,2-Dichloropropane	ug/kg	1000	845	916	84	92	37-126	8	20	
2-Butanone (MEK)	ug/kg	5000	3880	4310	78	86	48-125	10	20	
2-Chlorotoluene	ug/kg	1000	878	881	88	88	62-125	0	20	
4-Chlorotoluene	ug/kg	1000	904	908	90	91	63-125	0	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4550	4650	91	93	52-135	2	20	
Acetone	ug/kg	5000	4580	4400	92	88	65-125	4	20	
Allyl chloride	ug/kg	1000	825	855	82	86	52-125	4	20	
Benzene	ug/kg	1000	936	916	94	92	61-125	2	20	
Bromobenzene	ug/kg	1000	922	938	92	94	64-125	2	20	
Bromochloromethane	ug/kg	1000	871	952	87	95	65-125	9	20	
Bromodichloromethane	ug/kg	1000	936	941	94	94	57-125	1	20	
Bromoform	ug/kg	1000	790	822	79	82	57-125	4	20	
Bromomethane	ug/kg	1000	993	1020	99	102	60-125	3	20	
Carbon tetrachloride	ug/kg	1000	890	972	89	97	58-125	9	20	
Chlorobenzene	ug/kg	1000	917	925	92	92	66-125	1	20	
Chloroethane	ug/kg	1000	751	825	75	82	62-125	9	20	
Chloroform	ug/kg	1000	827	932	83	93	59-125	12	20	
Chloromethane	ug/kg	1000	731	793	73	79	50-125	8	20	
cis-1,2-Dichloroethene	ug/kg	1000	854	904	85	90	61-125	6	20	
cis-1,3-Dichloropropene	ug/kg	1000	927	967	93	97	61-125	4	20	
Dibromochloromethane	ug/kg	1000	894	902	89	90	60-125	1	20	
Dibromomethane	ug/kg	1000	886	904	89	90	69-125	2	20	
Dichlorodifluoromethane	ug/kg	1000	517	551	52	55	38-125	6	20	
Dichlorofluoromethane	ug/kg	1000	826	927	83	93	67-125	12	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	2330	3490	233	349	60-125	40	20	L3,R1
Ethylbenzene	ug/kg	1000	918	930	92	93	62-125	1	20	
Hexachloro-1,3-butadiene	ug/kg	1000	930	947	93	95	56-125	2	20	
Isopropylbenzene (Cumene)	ug/kg	1000	958	961	96	96	65-125	0	20	
Methyl-tert-butyl ether	ug/kg	1000	818	876	82	88	59-125	7	20	
Methylene Chloride	ug/kg	1000	793	871	79	87	64-125	9	20	
n-Butylbenzene	ug/kg	1000	916	951	92	95	59-125	4	20	
n-Propylbenzene	ug/kg	1000	953	906	95	91	61-125	5	20	
Naphthalene	ug/kg	1000	914	934	91	93	53-125	2	20	
p-Isopropyltoluene	ug/kg	1000	927	947	93	95	63-125	2	20	
sec-Butylbenzene	ug/kg	1000	895	923	89	92	62-125	3	20	
Styrene	ug/kg	1000	925	931	92	93	66-125	1	20	
tert-Butylbenzene	ug/kg	1000	974	973	97	97	64-125	0	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

LABORATORY CONTROL SAMPLE & LCSD: 2909874 2909875

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	919	913	92	91	67-125	1	20	
Tetrahydrofuran	ug/kg	10000	8930	9280	89	93	62-125	4	20	
Toluene	ug/kg	1000	904	896	90	90	61-125	1	20	
trans-1,2-Dichloroethene	ug/kg	1000	824	845	82	84	64-125	3	20	
trans-1,3-Dichloropropene	ug/kg	1000	887	907	89	91	56-125	2	20	
Trichloroethene	ug/kg	1000	887	888	89	89	67-125	0	20	
Trichlorofluoromethane	ug/kg	1000	764	815	76	81	65-125	6	20	
Vinyl chloride	ug/kg	1000	733	779	73	78	57-125	6	20	
Xylene (Total)	ug/kg	3000	2680	2740	89	91	62-125	2	20	
1,2-Dichloroethane-d4 (S)	%.				99	97	75-125			
4-Bromofluorobenzene (S)	%.				102	102	75-125			
Toluene-d8 (S)	%.				99	100	75-125			

MATRIX SPIKE SAMPLE: 2909876

Parameter	Units	10429252001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	2120	2260	106	64-146	
1,1,1-Trichloroethane	ug/kg	ND	2120	2360	111	56-148	
1,1,2,2-Tetrachloroethane	ug/kg	ND	2120	2330	110	36-150	
1,1,2-Trichloroethane	ug/kg	ND	2120	2180	102	67-148	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	2120	2300	108	60-142	
1,1-Dichloroethane	ug/kg	ND	2120	2280	107	57-140	
1,1-Dichloroethene	ug/kg	ND	2120	2170	102	59-139	
1,1-Dichloropropene	ug/kg	ND	2120	2290	108	61-142	
1,2,3-Trichlorobenzene	ug/kg	ND	2120	2390	113	69-150	
1,2,3-Trichloropropane	ug/kg	ND	2120	2420	114	64-150	
1,2,4-Trichlorobenzene	ug/kg	ND	2120	2440	115	71-149	
1,2,4-Trimethylbenzene	ug/kg	ND	2120	2320	109	67-149	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5310	6340	119	61-150	
1,2-Dibromoethane (EDB)	ug/kg	ND	2120	2160	102	67-147	
1,2-Dichlorobenzene	ug/kg	ND	2120	2210	104	70-142	
1,2-Dichloroethane	ug/kg	ND	2120	2190	103	58-132	
1,2-Dichloropropane	ug/kg	ND	2120	2140	101	64-144	
1,3,5-Trimethylbenzene	ug/kg	ND	2120	2290	108	71-146	
1,3-Dichlorobenzene	ug/kg	ND	2120	2210	104	71-142	
1,3-Dichloropropane	ug/kg	ND	2120	2120	100	68-140	
1,4-Dichlorobenzene	ug/kg	ND	2120	2250	106	68-142	
2,2-Dichloropropane	ug/kg	ND	2120	2260	106	34-150	
2-Butanone (MEK)	ug/kg	ND	10600	10200	96	51-150	
2-Chlorotoluene	ug/kg	ND	2120	2230	105	66-144	
4-Chlorotoluene	ug/kg	ND	2120	2240	105	66-140	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	10600	11400	107	63-150	
Acetone	ug/kg	ND	10600	10100	95	54-150	
Allyl chloride	ug/kg	ND	2120	2120	100	53-135	
Benzene	ug/kg	ND	2120	2160	102	65-135	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

MATRIX SPIKE SAMPLE: 2909876

Parameter	Units	10429252001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/kg	ND	2120	2350	111	71-141	
Bromochloromethane	ug/kg	ND	2120	2230	105	62-145	
Bromodichloromethane	ug/kg	ND	2120	2300	108	59-148	
Bromoform	ug/kg	ND	2120	2080	98	57-145	
Bromomethane	ug/kg	ND	16.4	925	5110	51-129	1M,M1
Carbon tetrachloride	ug/kg	ND	2120	2410	113	55-144	
Chlorobenzene	ug/kg	ND	2120	2240	105	70-142	
Chloroethane	ug/kg	ND	16.4	ND	0	61-135	1M,M1
Chloroform	ug/kg	ND	2120	2180	103	58-135	
Chloromethane	ug/kg	ND	16.4	80.5J	343	37-125	1M,M1
cis-1,2-Dichloroethene	ug/kg	ND	2120	2150	101	60-138	
cis-1,3-Dichloropropene	ug/kg	ND	2120	2240	105	62-142	
Dibromochloromethane	ug/kg	ND	2120	2260	107	65-141	
Dibromomethane	ug/kg	ND	2120	2110	100	72-150	
Dichlorodifluoromethane	ug/kg	ND	16.4	ND	0	30-125	1M,M1
Dichlorofluoromethane	ug/kg	ND	16.4	ND	0	62-148	1M,M1
Diethyl ether (Ethyl ether)	ug/kg	ND	2120	11700	549	62-135	M0
Ethylbenzene	ug/kg	ND	2120	2230	105	72-138	
Hexachloro-1,3-butadiene	ug/kg	ND	2120	3030	143	38-150	
Isopropylbenzene (Cumene)	ug/kg	ND	2120	2360	111	75-148	
Methyl-tert-butyl ether	ug/kg	ND	2120	2220	104	63-139	
Methylene Chloride	ug/kg	ND	2120	2070	97	58-135	
n-Butylbenzene	ug/kg	ND	2120	2430	114	63-150	
n-Propylbenzene	ug/kg	ND	2120	2350	110	70-146	
Naphthalene	ug/kg	ND	2120	2350	111	63-150	
p-Isopropyltoluene	ug/kg	ND	2120	2360	111	72-150	
sec-Butylbenzene	ug/kg	ND	2120	2370	112	66-150	
Styrene	ug/kg	ND	2120	2270	107	72-146	
tert-Butylbenzene	ug/kg	ND	2120	2460	116	71-148	
Tetrachloroethene	ug/kg	ND	2120	2190	103	70-150	
Tetrahydrofuran	ug/kg	ND	21200	21300	100	62-150	
Toluene	ug/kg	ND	2120	2170	102	65-142	
trans-1,2-Dichloroethene	ug/kg	ND	2120	2120	100	55-141	
trans-1,3-Dichloropropene	ug/kg	ND	2120	2210	104	57-147	
Trichloroethene	ug/kg	ND	2120	2220	104	62-150	
Trichlorofluoromethane	ug/kg	ND	16.4	ND	0	51-150	1M,M1
Vinyl chloride	ug/kg	ND	16.4	ND	0	45-132	1M,M1
Xylene (Total)	ug/kg	ND	6370	6570	103	75-140	
1,2-Dichloroethane-d4 (S)	%.				109	75-125	C0
4-Bromofluorobenzene (S)	%.				103	75-125	
Toluene-d8 (S)	%.				99	75-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

SAMPLE DUPLICATE: 2909877

Parameter	Units	10428096001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	133J		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	41.4J		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	175	209	18	30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	613		30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

SAMPLE DUPLICATE: 2909877

Parameter	Units	10428096001 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	98.8J		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	ND		30	
n-Propylbenzene	ug/kg	ND	83.3J		30	
Naphthalene	ug/kg	ND	ND		30	
p-Isopropyltoluene	ug/kg	ND	ND		30	
sec-Butylbenzene	ug/kg	ND	49.7J		30	
Styrene	ug/kg	219	111J		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	178	352	65	30	D6
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	185		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	469J		30	
1,2-Dichloroethane-d4 (S)	%.	96	99	1		C0
4-Bromofluorobenzene (S)	%.	100	99	5		
Toluene-d8 (S)	%.	96	96	4		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 533571 Analysis Method: EPA 8081B
QC Batch Method: EPA 3550 Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2898364 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	05/01/18 19:18	
4,4'-DDE	ug/kg	ND	3.3	05/01/18 19:18	
4,4'-DDT	ug/kg	ND	3.3	05/01/18 19:18	
Aldrin	ug/kg	ND	1.7	05/01/18 19:18	
alpha-BHC	ug/kg	ND	1.7	05/01/18 19:18	
alpha-Chlordane	ug/kg	ND	1.7	05/01/18 19:18	
beta-BHC	ug/kg	ND	1.7	05/01/18 19:18	
Chlordane (Technical)	ug/kg	ND	16.7	05/01/18 19:18	
delta-BHC	ug/kg	ND	1.7	05/01/18 19:18	
Dieldrin	ug/kg	ND	3.3	05/01/18 19:18	
Endosulfan I	ug/kg	ND	1.7	05/01/18 19:18	
Endosulfan II	ug/kg	ND	3.3	05/01/18 19:18	
Endosulfan sulfate	ug/kg	ND	3.3	05/01/18 19:18	
Endrin	ug/kg	ND	3.3	05/01/18 19:18	
Endrin aldehyde	ug/kg	ND	3.3	05/01/18 19:18	
Endrin ketone	ug/kg	ND	3.3	05/01/18 19:18	
gamma-BHC (Lindane)	ug/kg	ND	1.7	05/01/18 19:18	
gamma-Chlordane	ug/kg	ND	1.7	05/01/18 19:18	
Heptachlor	ug/kg	ND	1.7	05/01/18 19:18	
Heptachlor epoxide	ug/kg	ND	1.7	05/01/18 19:18	
Methoxychlor	ug/kg	ND	16.7	05/01/18 19:18	
Toxaphene	ug/kg	ND	50.0	05/01/18 19:18	
Decachlorobiphenyl (S)	%.	85	30-150	05/01/18 19:18	
Tetrachloro-m-xylene (S)	%.	95	30-150	05/01/18 19:18	

LABORATORY CONTROL SAMPLE: 2898365

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	32.1	96	62-127	
4,4'-DDE	ug/kg	33.3	31.5	94	66-125	
4,4'-DDT	ug/kg	33.3	29.4	88	67-128	
Aldrin	ug/kg	16.7	15.6	93	66-125	
alpha-BHC	ug/kg	16.7	16.4	98	64-125	
alpha-Chlordane	ug/kg	16.7	15.8	95	68-125	
beta-BHC	ug/kg	16.7	15.9	96	69-125	
delta-BHC	ug/kg	16.7	12.8	77	42-133	
Dieldrin	ug/kg	33.3	33.5	100	69-126	
Endosulfan I	ug/kg	16.7	14.8	89	63-125	
Endosulfan II	ug/kg	33.3	32.6	98	69-125	
Endosulfan sulfate	ug/kg	33.3	28.3	85	56-137	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

LABORATORY CONTROL SAMPLE: 2898365

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	31.3	94	69-125	
Endrin aldehyde	ug/kg	33.3	30.8	92	65-125	
Endrin ketone	ug/kg	33.3	32.6	98	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	16.3	98	67-125	
gamma-Chlordane	ug/kg	16.7	13.1	78	63-125	
Heptachlor	ug/kg	16.7	16.1	97	69-125	
Heptachlor epoxide	ug/kg	16.7	16.0	96	68-125	
Methoxychlor	ug/kg	167	145	87	65-134	
Decachlorobiphenyl (S)	%.			87	30-150	
Tetrachloro-m-xylene (S)	%.			98	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898412 2898413

Parameter	Units	10428096004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	ND	51.7	51.7	67.6	58.4	131	113	56-125	15	20	M1
4,4'-DDE	ug/kg	ND	51.7	51.7	50.4	57.9	98	112	32-150	14	20	
4,4'-DDT	ug/kg	ND	51.7	51.7	56.5	57.6	109	112	60-132	2	20	
Aldrin	ug/kg	ND	25.8	25.8	29.8	25.8	115	100	56-125	14	20	
alpha-BHC	ug/kg	ND	25.8	25.8	24.4	25.4	94	98	54-136	4	20	
alpha-Chlordane	ug/kg	ND	25.8	25.8	27.7	29.7	107	115	54-133	7	20	
beta-BHC	ug/kg	18.5	25.8	25.8	27.6	27.4	35	34	30-150	1	20	
delta-BHC	ug/kg	ND	25.8	25.8	19.8	19.9	77	77	45-145	0	20	
Dieldrin	ug/kg	ND	51.7	51.7	54.7	54.3	106	105	47-150	1	20	
Endosulfan I	ug/kg	22.0	25.8	25.8	27.9	26.5	23	17	35-145	5	20	M1
Endosulfan II	ug/kg	ND	51.7	51.7	51.2	52.0	99	101	50-147	2	20	
Endosulfan sulfate	ug/kg	ND	51.7	51.7	44.4	45.5	86	88	54-132	3	20	
Endrin	ug/kg	ND	51.7	51.7	47.1	46.9	91	91	62-125	0	20	
Endrin aldehyde	ug/kg	ND	51.7	51.7	55.2	50.3	107	97	33-150	9	20	
Endrin ketone	ug/kg	ND	51.7	51.7	55.0	53.0	106	103	56-144	4	20	
gamma-BHC (Lindane)	ug/kg	ND	25.8	25.8	31.0	37.8	120	146	63-125	20	20	M1
gamma-Chlordane	ug/kg	ND	25.8	25.8	22.6	24.1	88	93	45-132	6	20	
Heptachlor	ug/kg	ND	25.8	25.8	24.5	25.9	95	100	51-142	6	20	
Heptachlor epoxide	ug/kg	19.9	25.8	25.8	26.0	26.9	24	27	50-142	4	20	M1
Methoxychlor	ug/kg	ND	258	258	302	299	117	116	58-139	1	20	
Decachlorobiphenyl (S)	%.						85	92	30-150			
Tetrachloro-m-xylene (S)	%.						85	90	30-150			2M,D4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 533570 Analysis Method: EPA 8082A
QC Batch Method: EPA 3550 Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2898360 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/24/18 14:38	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/24/18 14:38	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/24/18 14:38	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/24/18 14:38	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/24/18 14:38	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/24/18 14:38	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/24/18 14:38	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/24/18 14:38	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/24/18 14:38	
Decachlorobiphenyl (S)	%.	122	30-134	04/24/18 14:38	CH
Tetrachloro-m-xylene (S)	%.	83	48-125	04/24/18 14:38	

LABORATORY CONTROL SAMPLE: 2898361

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	501	75	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	547	82	62-125	
Decachlorobiphenyl (S)	%.			124	30-134	CH
Tetrachloro-m-xylene (S)	%.			86	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898410 2898411

Parameter	Units	10428096003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	901	901	864	893	96	99	30-150	3	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	901	901	776	840	86	93	30-138	8	30	
Decachlorobiphenyl (S)	%.						111	118	30-134			CH
Tetrachloro-m-xylene (S)	%.						83	86	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 533569 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2898356 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/25/18 18:45	
1,2-Dichlorobenzene	ug/kg	ND	330	04/25/18 18:45	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/25/18 18:45	
1,3-Dichlorobenzene	ug/kg	ND	330	04/25/18 18:45	
1,4-Dichlorobenzene	ug/kg	ND	330	04/25/18 18:45	
1-Methylnaphthalene	ug/kg	ND	330	04/25/18 18:45	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/25/18 18:45	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/25/18 18:45	
2,4-Dichlorophenol	ug/kg	ND	330	04/25/18 18:45	
2,4-Dimethylphenol	ug/kg	ND	330	04/25/18 18:45	
2,4-Dinitrophenol	ug/kg	ND	330	04/25/18 18:45	
2,4-Dinitrotoluene	ug/kg	ND	330	04/25/18 18:45	
2,6-Dinitrotoluene	ug/kg	ND	330	04/25/18 18:45	
2-Chloronaphthalene	ug/kg	ND	330	04/25/18 18:45	
2-Chlorophenol	ug/kg	ND	330	04/25/18 18:45	
2-Methylnaphthalene	ug/kg	ND	330	04/25/18 18:45	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/25/18 18:45	
2-Nitroaniline	ug/kg	ND	330	04/25/18 18:45	
2-Nitrophenol	ug/kg	ND	330	04/25/18 18:45	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/25/18 18:45	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/25/18 18:45	
3-Nitroaniline	ug/kg	ND	330	04/25/18 18:45	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/25/18 18:45	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/25/18 18:45	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/25/18 18:45	
4-Chloroaniline	ug/kg	ND	330	04/25/18 18:45	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/25/18 18:45	
4-Nitroaniline	ug/kg	ND	330	04/25/18 18:45	
4-Nitrophenol	ug/kg	ND	330	04/25/18 18:45	
Acenaphthene	ug/kg	ND	330	04/25/18 18:45	
Acenaphthylene	ug/kg	ND	330	04/25/18 18:45	
Anthracene	ug/kg	ND	330	04/25/18 18:45	
Benzo(a)anthracene	ug/kg	ND	330	04/25/18 18:45	
Benzo(a)pyrene	ug/kg	ND	330	04/25/18 18:45	
Benzo(b)fluoranthene	ug/kg	ND	330	04/25/18 18:45	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/25/18 18:45	
Benzo(k)fluoranthene	ug/kg	ND	330	04/25/18 18:45	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/25/18 18:45	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/25/18 18:45	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/25/18 18:45	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/25/18 18:45	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

METHOD BLANK: 2898356 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/25/18 18:45	
Carbazole	ug/kg	ND	330	04/25/18 18:45	
Chrysene	ug/kg	ND	330	04/25/18 18:45	
Di-n-butylphthalate	ug/kg	ND	330	04/25/18 18:45	
Di-n-octylphthalate	ug/kg	ND	330	04/25/18 18:45	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/25/18 18:45	
Dibenzofuran	ug/kg	ND	330	04/25/18 18:45	
Diethylphthalate	ug/kg	ND	330	04/25/18 18:45	
Dimethylphthalate	ug/kg	ND	330	04/25/18 18:45	
Fluoranthene	ug/kg	ND	330	04/25/18 18:45	
Fluorene	ug/kg	ND	330	04/25/18 18:45	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/25/18 18:45	
Hexachlorobenzene	ug/kg	ND	330	04/25/18 18:45	
Hexachloroethane	ug/kg	ND	330	04/25/18 18:45	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/25/18 18:45	
Isophorone	ug/kg	ND	330	04/25/18 18:45	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/25/18 18:45	
N-Nitrosodimethylamine	ug/kg	ND	330	04/25/18 18:45	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/25/18 18:45	
Naphthalene	ug/kg	ND	330	04/25/18 18:45	
Nitrobenzene	ug/kg	ND	330	04/25/18 18:45	
Pentachlorophenol	ug/kg	ND	670	04/25/18 18:45	
Phenanthrene	ug/kg	ND	330	04/25/18 18:45	
Phenol	ug/kg	ND	330	04/25/18 18:45	
Pyrene	ug/kg	ND	330	04/25/18 18:45	
2,4,6-Tribromophenol (S)	%.	73	60-125	04/25/18 18:45	
2-Fluorobiphenyl (S)	%.	71	30-132	04/25/18 18:45	
2-Fluorophenol (S)	%.	69	40-125	04/25/18 18:45	
Nitrobenzene-d5 (S)	%.	68	43-125	04/25/18 18:45	
p-Terphenyl-d14 (S)	%.	86	62-125	04/25/18 18:45	
Phenol-d6 (S)	%.	67	48-125	04/25/18 18:45	

LABORATORY CONTROL SAMPLE: 2898357

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1250	75	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1280	77	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1360	82	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1260	76	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1280	77	39-125	
1-Methylnaphthalene	ug/kg	1670	1310	79	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1400	84	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1390	83	61-125	
2,4-Dichlorophenol	ug/kg	1670	1380	83	57-125	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

LABORATORY CONTROL SAMPLE: 2898357

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1310	78	51-125	
2,4-Dinitrophenol	ug/kg	1670	1250	75	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1620	97	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1540	93	63-125	
2-Chloronaphthalene	ug/kg	1670	1360	82	61-125	
2-Chlorophenol	ug/kg	1670	1340	81	46-125	
2-Methylnaphthalene	ug/kg	1670	1320	79	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1320	79	50-125	
2-Nitroaniline	ug/kg	1670	1410	84	61-125	
2-Nitrophenol	ug/kg	1670	1380	83	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1350	81	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1520	91	47-125	
3-Nitroaniline	ug/kg	1670	1440	86	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1570J	94	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1410	85	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1460	88	64-125	
4-Chloroaniline	ug/kg	1670	1160	69	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1380	83	64-125	
4-Nitroaniline	ug/kg	1670	1430	86	59-125	
4-Nitrophenol	ug/kg	1670	1350	81	54-125	
Acenaphthene	ug/kg	1670	1360	82	62-125	
Acenaphthylene	ug/kg	1670	1360	82	61-125	
Anthracene	ug/kg	1670	1450	87	66-125	
Benzo(a)anthracene	ug/kg	1670	1490	89	69-125	
Benzo(a)pyrene	ug/kg	1670	1470	88	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1510	90	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1550	93	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1470	88	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1270	76	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1220	73	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1100	66	37-125	4M
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1730	104	69-131	
Butylbenzylphthalate	ug/kg	1670	1680	101	69-129	
Carbazole	ug/kg	1670	1530	92	66-125	
Chrysene	ug/kg	1670	1510	91	68-125	
Di-n-butylphthalate	ug/kg	1670	1620	97	69-125	
Di-n-octylphthalate	ug/kg	1670	1750	105	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1570	94	64-125	
Dibenzofuran	ug/kg	1670	1420	85	65-125	
Diethylphthalate	ug/kg	1670	1510	90	67-125	
Dimethylphthalate	ug/kg	1670	1480	89	67-125	
Fluoranthene	ug/kg	1670	1490	89	66-125	
Fluorene	ug/kg	1670	1400	84	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1230	74	40-125	
Hexachlorobenzene	ug/kg	1670	1440	86	62-125	
Hexachloroethane	ug/kg	1670	1290	78	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1560	93	64-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

LABORATORY CONTROL SAMPLE: 2898357

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1310	79	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1320	79	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1290	77	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1490	89	65-125	
Naphthalene	ug/kg	1670	1280	77	48-125	
Nitrobenzene	ug/kg	1670	1270	76	48-125	
Pentachlorophenol	ug/kg	1670	1050	63	41-125	
Phenanthrene	ug/kg	1670	1430	86	66-125	
Phenol	ug/kg	1670	1270	76	46-125	
Pyrene	ug/kg	1670	1550	93	69-125	
2,4,6-Tribromophenol (S)	%.			82	60-125	
2-Fluorobiphenyl (S)	%.			73	30-132	
2-Fluorophenol (S)	%.			73	40-125	
Nitrobenzene-d5 (S)	%.			69	43-125	
p-Terphenyl-d14 (S)	%.			89	62-125	
Phenol-d6 (S)	%.			71	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898403 2898404

Parameter	Units	10428096002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	2240	2220	1700	1760	76	79	30-127	4	30	
1,2-Dichlorobenzene	ug/kg	ND	2240	2220	1720	1740	77	79	30-125	1	30	
1,2-Diphenylhydrazine	ug/kg	ND	2240	2220	1800	1770	81	80	30-150	2	30	
1,3-Dichlorobenzene	ug/kg	ND	2240	2220	1690	1730	76	78	30-125	2	30	
1,4-Dichlorobenzene	ug/kg	ND	2240	2220	1710	1720	77	77	30-125	0	30	
1-Methylnaphthalene	ug/kg	ND	2240	2220	1780	1790	80	81	42-125	1	30	
2,4,5-Trichlorophenol	ug/kg	ND	2240	2220	1780	1740	80	78	30-150	2	30	
2,4,6-Trichlorophenol	ug/kg	ND	2240	2220	1790	1770	80	80	30-150	1	30	
2,4-Dichlorophenol	ug/kg	ND	2240	2220	1880	1850	84	83	30-135	2	30	
2,4-Dimethylphenol	ug/kg	ND	2240	2220	1590	1670	71	75	30-148	5	30	
2,4-Dinitrophenol	ug/kg	ND	2240	2220	808	817	36	37	30-125	1	30	
2,4-Dinitrotoluene	ug/kg	ND	2240	2220	2090	2040	94	92	30-150	3	30	
2,6-Dinitrotoluene	ug/kg	ND	2240	2220	1980	1960	89	88	30-150	1	30	
2-Chloronaphthalene	ug/kg	ND	2240	2220	1820	1800	82	81	30-138	1	30	
2-Chlorophenol	ug/kg	ND	2240	2220	1780	1810	80	82	30-130	2	30	
2-Methylnaphthalene	ug/kg	ND	2240	2220	1760	1780	79	80	46-125	1	30	
2-Methylphenol(o-Cresol)	ug/kg	ND	2240	2220	1740	1750	78	79	30-133	1	30	
2-Nitroaniline	ug/kg	ND	2240	2220	1890	1870	85	84	30-150	1	30	
2-Nitrophenol	ug/kg	ND	2240	2220	1850	1930	83	87	30-134	4	30	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	2240	2220	1830	1820	82	82	30-138	0	30	
3,3'-Dichlorobenzidine	ug/kg	ND	2240	2220	1930	2080	87	94	30-149	8	30	
3-Nitroaniline	ug/kg	ND	2240	2220	1820	1920	82	87	30-150	6	30	
4,6-Dinitro-2-methylphenol	ug/kg	ND	2240	2220	1450J	1440J	65	65	30-133		30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898403 2898404

Parameter	Units	10428096002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	ND	2240	2220	1830	1790	82	81	44-125	2	30	
4-Chloro-3-methylphenol	ug/kg	ND	2240	2220	1910	1880	85	85	30-150	1	30	
4-Chloroaniline	ug/kg	ND	2240	2220	1280	1500	58	68	30-125	16	30	
4-Chlorophenylphenyl ether	ug/kg	ND	2240	2220	1790	1790	80	81	44-125	0	30	
4-Nitroaniline	ug/kg	ND	2240	2220	1770	1860	79	84	30-150	5	30	
4-Nitrophenol	ug/kg	ND	2240	2220	1740	1730	78	78	30-150	1	30	
Acenaphthene	ug/kg	ND	2240	2220	1750	1730	79	78	40-125	1	30	
Acenaphthylene	ug/kg	ND	2240	2220	1830	1790	82	81	30-150	2	30	
Anthracene	ug/kg	ND	2240	2220	1860	1850	83	83	30-150	0	30	
Benzo(a)anthracene	ug/kg	ND	2240	2220	1900	1900	85	86	30-150	0	30	
Benzo(a)pyrene	ug/kg	ND	2240	2220	1960	1900	88	86	30-150	3	30	
Benzo(b)fluoranthene	ug/kg	ND	2240	2220	1980	1920	89	87	30-150	3	30	
Benzo(g,h,i)perylene	ug/kg	ND	2240	2220	1970	1890	88	85	30-150	4	30	
Benzo(k)fluoranthene	ug/kg	ND	2240	2220	1950	1890	88	85	30-150	4	30	
bis(2-Chloroethoxy)methane	ug/kg	ND	2240	2220	1750	1750	79	79	30-134	0	30	
bis(2-Chloroethyl) ether	ug/kg	ND	2240	2220	1740	1730	78	78	30-125	0	30	
bis(2-Chloroisopropyl) ether	ug/kg	ND	2240	2220	1560	1580	70	71	30-125	1	30	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	2240	2220	2230	2200	100	99	30-150	2	30	
Butylbenzylphthalate	ug/kg	ND	2240	2220	2130	2120	96	95	30-150	1	30	
Carbazole	ug/kg	ND	2240	2220	2000	1940	89	87	41-125	3	30	
Chrysene	ug/kg	ND	2240	2220	1930	1890	87	85	30-150	3	30	
Di-n-butylphthalate	ug/kg	ND	2240	2220	2050	2060	92	93	30-150	0	30	
Di-n-octylphthalate	ug/kg	ND	2240	2220	2260	2220	102	100	30-150	2	30	
Dibenz(a,h)anthracene	ug/kg	ND	2240	2220	2010	1960	90	88	30-150	3	30	
Dibenzofuran	ug/kg	ND	2240	2220	1830	1810	82	81	45-125	1	30	
Diethylphthalate	ug/kg	ND	2240	2220	1930	1920	87	86	30-150	1	30	
Dimethylphthalate	ug/kg	ND	2240	2220	1930	1880	86	85	30-150	2	30	
Fluoranthene	ug/kg	ND	2240	2220	1920	1910	86	86	30-150	1	30	
Fluorene	ug/kg	ND	2240	2220	1840	1820	82	82	30-150	1	30	
Hexachloro-1,3-butadiene	ug/kg	ND	2240	2220	1630	1680	73	76	30-128	3	30	
Hexachlorobenzene	ug/kg	ND	2240	2220	1850	1830	83	82	30-150	1	30	
Hexachloroethane	ug/kg	ND	2240	2220	1610	1630	72	74	30-125	2	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	2240	2220	1990	1930	89	87	30-150	3	30	
Isophorone	ug/kg	ND	2240	2220	1760	1790	79	81	30-140	2	30	
N-Nitroso-di-n-propylamine	ug/kg	ND	2240	2220	1780	1820	80	82	30-147	2	30	
N-Nitrosodimethylamine	ug/kg	ND	2240	2220	1700	1740	76	78	30-125	2	30	
N-Nitrosodiphenylamine	ug/kg	ND	2240	2220	1930	1920	87	86	30-150	1	30	
Naphthalene	ug/kg	ND	2240	2220	1740	1770	78	80	44-125	2	30	
Nitrobenzene	ug/kg	ND	2240	2220	1740	1790	78	80	30-136	3	30	
Pentachlorophenol	ug/kg	ND	2240	2220	1070	1110	48	50	30-150	3	30	
Phenanthrene	ug/kg	ND	2240	2220	1850	1840	83	83	30-150	1	30	
Phenol	ug/kg	ND	2240	2220	1760	1750	79	79	30-129	1	30	
Pyrene	ug/kg	ND	2240	2220	1980	1940	89	87	30-150	2	30	
2,4,6-Tribromophenol (S)	%.						78	78	60-125			
2-Fluorobiphenyl (S)	%.						74	73	30-132			
2-Fluorophenol (S)	%.						73	74	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898403 2898404

Parameter	Units	10428096002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						70	72	43-125			
p-Terphenyl-d14 (S)	%.						85	84	62-125			
Phenol-d6 (S)	%.						73	72	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 533524
QC Batch Method: EPA 3550
Analysis Method: EPA 8270D by SIM
Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10428096005

METHOD BLANK: 2898117
Matrix: Solid
Associated Lab Samples: 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/24/18 12:08	
Acenaphthylene	ug/kg	ND	10.0	04/24/18 12:08	
Anthracene	ug/kg	ND	10.0	04/24/18 12:08	
Benzo(a)anthracene	ug/kg	ND	10.0	04/24/18 12:08	
Benzo(a)pyrene	ug/kg	ND	10.0	04/24/18 12:08	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/24/18 12:08	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/24/18 12:08	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/24/18 12:08	
Chrysene	ug/kg	ND	10.0	04/24/18 12:08	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/24/18 12:08	
Fluoranthene	ug/kg	ND	10.0	04/24/18 12:08	
Fluorene	ug/kg	ND	10.0	04/24/18 12:08	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/24/18 12:08	
Naphthalene	ug/kg	ND	10.0	04/24/18 12:08	
Phenanthrene	ug/kg	ND	10.0	04/24/18 12:08	
Pyrene	ug/kg	ND	10.0	04/24/18 12:08	
2-Fluorobiphenyl (S)	%.	63	42-125	04/24/18 12:08	
p-Terphenyl-d14 (S)	%.	89	57-125	04/24/18 12:08	

LABORATORY CONTROL SAMPLE: 2898118

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	24.7	74	52-125	
Acenaphthylene	ug/kg	33.3	23.8	71	50-125	
Anthracene	ug/kg	33.3	31.6	95	65-125	
Benzo(a)anthracene	ug/kg	33.3	26.7	80	60-125	
Benzo(a)pyrene	ug/kg	33.3	29.0	87	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	27.2	82	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	29.0	87	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	30.2	91	67-125	
Chrysene	ug/kg	33.3	30.2	91	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	29.2	88	63-125	
Fluoranthene	ug/kg	33.3	30.8	92	75-125	
Fluorene	ug/kg	33.3	25.0	75	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	29.5	89	63-125	
Naphthalene	ug/kg	33.3	25.2	76	49-125	
Phenanthrene	ug/kg	33.3	27.6	83	65-125	
Pyrene	ug/kg	33.3	26.9	81	64-125	
2-Fluorobiphenyl (S)	%.			73	42-125	
p-Terphenyl-d14 (S)	%.			90	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898119 2898120

Parameter	Units	10427685001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	1290	41.7	41.7	1130J	1340	-396	100	30-125		30	M6
Acenaphthylene	ug/kg	ND	41.7	41.7	621J	736J	1490	1760	30-133		30	M6
Anthracene	ug/kg	ND	41.7	41.7	2010	2620	4810	6270	30-150	26	30	M6
Benzo(a)anthracene	ug/kg	ND	41.7	41.7	741J	999J	1780	2390	30-150		30	M6
Benzo(a)pyrene	ug/kg	ND	41.7	41.7	197J	231J	473	554	30-150		30	M6
Benzo(b)fluoranthene	ug/kg	ND	41.7	41.7	209J	223J	500	533	30-150		30	M6
Benzo(g,h,i)perylene	ug/kg	ND	41.7	41.7	153J	146J	367	351	30-150		30	M6
Benzo(k)fluoranthene	ug/kg	ND	41.7	41.7	ND	ND	0	0	30-150		30	M6
Chrysene	ug/kg	ND	41.7	41.7	924J	1220J	2220	2920	30-150		30	M6
Dibenz(a,h)anthracene	ug/kg	ND	41.7	41.7	80.7J	71.7J	193	172	30-131		30	M6
Fluoranthene	ug/kg	ND	41.7	41.7	497J	579J	1190	1390	30-150		30	M6
Fluorene	ug/kg	3310	41.7	41.7	2870	3300	-1060	-31	30-147	14	30	M6
Indeno(1,2,3-cd)pyrene	ug/kg	ND	41.7	41.7	ND	ND	176	196	30-150		30	M6
Naphthalene	ug/kg	17700	41.7	41.7	13000	15300	-11400	-5700	30-131	17	30	M6
Phenanthrene	ug/kg	10400	41.7	41.7	8630	10300	-4160	-164	30-150	18	30	M6
Pyrene	ug/kg	ND	41.7	41.7	829J	1030J	1990	2460	30-150		30	M6
2-Fluorobiphenyl (S)	%.						0	0	42-125			D3,P3, S4
p-Terphenyl-d14 (S)	%.						0	0	57-125			S4

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 533802 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004

METHOD BLANK: 2899450 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/24/18 12:50	
Acenaphthylene	ug/kg	ND	10.0	04/24/18 12:50	
Anthracene	ug/kg	ND	10.0	04/24/18 12:50	
Benzo(a)anthracene	ug/kg	ND	10.0	04/24/18 12:50	
Benzo(a)pyrene	ug/kg	ND	10.0	04/24/18 12:50	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/24/18 12:50	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/24/18 12:50	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/24/18 12:50	
Chrysene	ug/kg	ND	10.0	04/24/18 12:50	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/24/18 12:50	
Fluoranthene	ug/kg	ND	10.0	04/24/18 12:50	
Fluorene	ug/kg	ND	10.0	04/24/18 12:50	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/24/18 12:50	
Naphthalene	ug/kg	ND	10.0	04/24/18 12:50	
Phenanthrene	ug/kg	ND	10.0	04/24/18 12:50	
Pyrene	ug/kg	ND	10.0	04/24/18 12:50	
2-Fluorobiphenyl (S)	%.	58	42-125	04/24/18 12:50	
p-Terphenyl-d14 (S)	%.	100	57-125	04/24/18 12:50	

LABORATORY CONTROL SAMPLE: 2899451

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	25.2	76	52-125	
Acenaphthylene	ug/kg	33.3	24.3	73	50-125	
Anthracene	ug/kg	33.3	28.8	86	65-125	
Benzo(a)anthracene	ug/kg	33.3	27.8	84	60-125	
Benzo(a)pyrene	ug/kg	33.3	29.2	87	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	26.5	79	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	28.3	85	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	30.2	91	67-125	
Chrysene	ug/kg	33.3	31.0	93	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	28.2	85	63-125	
Fluoranthene	ug/kg	33.3	28.3	85	75-125	
Fluorene	ug/kg	33.3	25.9	78	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	28.4	85	63-125	
Naphthalene	ug/kg	33.3	24.4	73	49-125	
Phenanthrene	ug/kg	33.3	26.2	79	65-125	
Pyrene	ug/kg	33.3	29.3	88	64-125	
2-Fluorobiphenyl (S)	%.			79	42-125	
p-Terphenyl-d14 (S)	%.			101	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2899452 2899453

Parameter	Units	10427681004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	16.1	41.3	41.3	54.1	54.1	92	92	30-125	0	30	
Acenaphthylene	ug/kg	ND	41.3	41.3	40.9	34.6	99	84	30-133	17	30	
Anthracene	ug/kg	23.9	41.3	41.3	75.1	68.9	124	109	30-150	9	30	
Benzo(a)anthracene	ug/kg	58.8	41.3	41.3	126	105	163	111	30-150	19	30	M1
Benzo(a)pyrene	ug/kg	74.7	41.3	41.3	151	124	184	121	30-150	19	30	M1
Benzo(b)fluoranthene	ug/kg	91.9	41.3	41.3	175	148	200	136	30-150	16	30	M1
Benzo(g,h,i)perylene	ug/kg	53.2	41.3	41.3	118	94.3	157	99	30-150	23	30	M1
Benzo(k)fluoranthene	ug/kg	31.6	41.3	41.3	87.5	75.3	135	106	30-150	15	30	
Chrysene	ug/kg	84.4	41.3	41.3	161	132	186	116	30-150	20	30	M1
Dibenz(a,h)anthracene	ug/kg	ND	41.3	41.3	49.2	42.3	119	102	30-131	15	30	
Fluoranthene	ug/kg	124	41.3	41.3	248	191	301	164	30-150	26	30	M1
Fluorene	ug/kg	13.0	41.3	41.3	52.2	49.2	95	88	30-147	6	30	
Indeno(1,2,3-cd)pyrene	ug/kg	40.6	41.3	41.3	98.2	82.4	139	101	30-150	17	30	
Naphthalene	ug/kg	19.3	41.3	41.3	43.3	50.1	58	75	30-131	14	30	
Phenanthrene	ug/kg	94.8	41.3	41.3	197	162	247	163	30-150	19	30	M1
Pyrene	ug/kg	141	41.3	41.3	258	192	284	124	30-150	29	30	M1
2-Fluorobiphenyl (S)	%.						75	73	42-125			
p-Terphenyl-d14 (S)	%.						94	93	57-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 533572 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2898368 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	04/22/18 12:39	
n-Triacontane (S)	%.	115	50-150	04/22/18 12:39	

LABORATORY CONTROL SAMPLE & LCSD: 2898369 2898370

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	86.0	86.0	107	107	70-120	0	20	
n-Triacontane (S)	%.				115	119	50-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 439502 Analysis Method: EPA 7196A
QC Batch Method: EPA 3060A Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 2030883 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	05/01/18 10:56	

LABORATORY CONTROL SAMPLE: 2030884

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	994	907	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030886 2030887

Parameter	Units	60268827001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1240	1220	1210	1170	98	95	75-125	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030888 2030889

Parameter	Units	60268827001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	49.7	49.1	40.0	37.2	81	76	75-125	7	20	

SAMPLE DUPLICATE: 2030885

Parameter	Units	50195327001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 286937 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10428096001, 10428096002, 10428096003

METHOD BLANK: 1678360 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/25/18 13:16	

LABORATORY CONTROL SAMPLE: 1678361

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.1	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678362 1678363

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.52	3.72	3.72	4.0	4.1	93	97	80-120	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678364 1678365

Parameter	Units	10428096003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	0.61	3.65	3.52	4.7	3.6	112	87	80-120	25	20	M0,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 287059 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10428096004, 10428096005

METHOD BLANK: 1679101 Matrix: Solid
Associated Lab Samples: 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/26/18 14:20	

LABORATORY CONTROL SAMPLE: 1679102

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1679103 1679104

Parameter	Units	10428176001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	ND	10.3	10.3	8.3	10.9	71	95	80-120	27	20	M0,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

QC Batch: 141540 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

METHOD BLANK: 559769 Matrix: Solid
Associated Lab Samples: 10428096001, 10428096002, 10428096003, 10428096004, 10428096005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.99	04/30/18 17:39	

LABORATORY CONTROL SAMPLE: 559768

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	50.3	51.9	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559770 559771

Parameter	Units	10428096003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	50	49.3	11.4	12.3	23	25	80-120	7	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559772 559773

Parameter	Units	10428159006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	0.97 U	49.7	48.9	35.9	41.7	72	85	80-120	15	20	M1

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QUALIFIERS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

1M	Analyte was not added to the MS due to spiking error.
2M	Sample was brown in color.
3M	Sample was yellow in color.
4M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
C0	Result confirmed by second analysis.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

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QUALIFIERS

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
T6	High boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10428096001	**FL-TT-03(2-10) WM**	EPA 1630 (1998)	142287	EPA 1630 (1998)	142288
10428096002	**FL-TT-06 (0-10) S**	EPA 1630 (1998)	142287	EPA 1630 (1998)	142288
10428096003	**FL-TT-04 (2-14) WM**	EPA 1630 (1998)	142287	EPA 1630 (1998)	142288
10428096004	**FL-TT-05 (5-15) WM**	EPA 1630 (1998)	142287	EPA 1630 (1998)	142288
10428096005	**FL-TT-07 (1-5) S**	EPA 1630 (1998)	142287	EPA 1630 (1998)	142288
10428096001	**FL-TT-03(2-10) WM**	EPA 3550	533571	EPA 8081B	534053
10428096002	**FL-TT-06 (0-10) S**	EPA 3550	533571	EPA 8081B	534053
10428096003	**FL-TT-04 (2-14) WM**	EPA 3550	533571	EPA 8081B	534053
10428096004	**FL-TT-05 (5-15) WM**	EPA 3550	533571	EPA 8081B	534053
10428096005	**FL-TT-07 (1-5) S**	EPA 3550	533571	EPA 8081B	534053
10428096001	**FL-TT-03(2-10) WM**	EPA 3550	533570	EPA 8082A	533946
10428096002	**FL-TT-06 (0-10) S**	EPA 3550	533570	EPA 8082A	533946
10428096003	**FL-TT-04 (2-14) WM**	EPA 3550	533570	EPA 8082A	533946
10428096004	**FL-TT-05 (5-15) WM**	EPA 3550	533570	EPA 8082A	533946
10428096005	**FL-TT-07 (1-5) S**	EPA 3550	533570	EPA 8082A	533946
10428096001	**FL-TT-03(2-10) WM**	WI MOD DRO	533572	WI MOD DRO	533638
10428096002	**FL-TT-06 (0-10) S**	WI MOD DRO	533572	WI MOD DRO	533638
10428096003	**FL-TT-04 (2-14) WM**	WI MOD DRO	533572	WI MOD DRO	533638
10428096004	**FL-TT-05 (5-15) WM**	WI MOD DRO	533572	WI MOD DRO	533638
10428096005	**FL-TT-07 (1-5) S**	WI MOD DRO	533572	WI MOD DRO	533638
10428096001	**FL-TT-03(2-10) WM**	EPA 5030 Medium Soil	535145	WI MOD GRO	535423
10428096002	**FL-TT-06 (0-10) S**	EPA 5030 Medium Soil	535145	WI MOD GRO	535423
10428096003	**FL-TT-04 (2-14) WM**	EPA 5030 Medium Soil	535145	WI MOD GRO	535423
10428096004	**FL-TT-05 (5-15) WM**	EPA 5030 Medium Soil	535145	WI MOD GRO	535423
10428096005	**FL-TT-07 (1-5) S**	EPA 5030 Medium Soil	535145	WI MOD GRO	535423
10428096001	**FL-TT-03(2-10) WM**	EPA 3050	533686	EPA 6010C	534230
10428096002	**FL-TT-06 (0-10) S**	EPA 3050	533686	EPA 6010C	534230
10428096003	**FL-TT-04 (2-14) WM**	EPA 3050	533686	EPA 6010C	534230
10428096004	**FL-TT-05 (5-15) WM**	EPA 3050	533686	EPA 6010C	534230
10428096005	**FL-TT-07 (1-5) S**	EPA 3050	533686	EPA 6010C	534230
10428096001	**FL-TT-03(2-10) WM**	EPA 3050B	438855	EPA 6020	439080
10428096002	**FL-TT-06 (0-10) S**	EPA 3050B	438855	EPA 6020	439080
10428096003	**FL-TT-04 (2-14) WM**	EPA 3050B	438855	EPA 6020	439080
10428096004	**FL-TT-05 (5-15) WM**	EPA 3050B	438855	EPA 6020	439080
10428096005	**FL-TT-07 (1-5) S**	EPA 3050B	438855	EPA 6020	439080
10428096001	**FL-TT-03(2-10) WM**	EPA 3050	533687	EPA 6020A	533858
10428096002	**FL-TT-06 (0-10) S**	EPA 3050	533687	EPA 6020A	533858
10428096003	**FL-TT-04 (2-14) WM**	EPA 3050	533687	EPA 6020A	533858
10428096004	**FL-TT-05 (5-15) WM**	EPA 3050	533687	EPA 6020A	533858
10428096005	**FL-TT-07 (1-5) S**	EPA 3050	533687	EPA 6020A	533858
10428096001	**FL-TT-03(2-10) WM**	EPA 7471	533683	EPA 7471	533810
10428096002	**FL-TT-06 (0-10) S**	EPA 7471	533683	EPA 7471	533810
10428096003	**FL-TT-04 (2-14) WM**	EPA 7471	533683	EPA 7471	533810
10428096004	**FL-TT-05 (5-15) WM**	EPA 7471	533683	EPA 7471	533810
10428096005	**FL-TT-07 (1-5) S**	EPA 7471	533683	EPA 7471	533810

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10428096001	**FL-TT-03(2-10) WM**	ASTM D2974	534083		
10428096002	**FL-TT-06 (0-10) S**	ASTM D2974	534083		
10428096003	**FL-TT-04 (2-14) WM**	ASTM D2974	535059		
10428096004	**FL-TT-05 (5-15) WM**	ASTM D2974	535059		
10428096005	**FL-TT-07 (1-5) S**	ASTM D2974	535059		
10428096001	**FL-TT-03(2-10) WM**	EPA 3550	533569	EPA 8270D	533831
10428096002	**FL-TT-06 (0-10) S**	EPA 3550	533569	EPA 8270D	533831
10428096003	**FL-TT-04 (2-14) WM**	EPA 3550	533569	EPA 8270D	533831
10428096004	**FL-TT-05 (5-15) WM**	EPA 3550	533569	EPA 8270D	533831
10428096005	**FL-TT-07 (1-5) S**	EPA 3550	533569	EPA 8270D	533831
10428096001	**FL-TT-03(2-10) WM**	EPA 3550	533802	EPA 8270D by SIM	534011
10428096002	**FL-TT-06 (0-10) S**	EPA 3550	533802	EPA 8270D by SIM	534011
10428096003	**FL-TT-04 (2-14) WM**	EPA 3550	533802	EPA 8270D by SIM	534011
10428096004	**FL-TT-05 (5-15) WM**	EPA 3550	533802	EPA 8270D by SIM	534011
10428096005	**FL-TT-07 (1-5) S**	EPA 3550	533524	EPA 8270D by SIM	534010
10428096001	**FL-TT-03(2-10) WM**	EPA 5035/5030B	535427	EPA 8260B	535620
10428096002	**FL-TT-06 (0-10) S**	EPA 5035/5030B	535427	EPA 8260B	535620
10428096003	**FL-TT-04 (2-14) WM**	EPA 5035/5030B	535427	EPA 8260B	535620
10428096004	**FL-TT-05 (5-15) WM**	EPA 5035/5030B	535427	EPA 8260B	535620
10428096005	**FL-TT-07 (1-5) S**	EPA 5035/5030B	535427	EPA 8260B	535620
10428096001	**FL-TT-03(2-10) WM**	EPA 3060A	439502	EPA 7196A	439771
10428096002	**FL-TT-06 (0-10) S**	EPA 3060A	439502	EPA 7196A	439771
10428096003	**FL-TT-04 (2-14) WM**	EPA 3060A	439502	EPA 7196A	439771
10428096004	**FL-TT-05 (5-15) WM**	EPA 3060A	439502	EPA 7196A	439771
10428096005	**FL-TT-07 (1-5) S**	EPA 3060A	439502	EPA 7196A	439771
10428096001	**FL-TT-03(2-10) WM**	Trivalent Chromium Calculation	440378		
10428096002	**FL-TT-06 (0-10) S**	Trivalent Chromium Calculation	440378		
10428096003	**FL-TT-04 (2-14) WM**	Trivalent Chromium Calculation	440378		
10428096004	**FL-TT-05 (5-15) WM**	Trivalent Chromium Calculation	440378		
10428096005	**FL-TT-07 (1-5) S**	Trivalent Chromium Calculation	440378		
10428096001	**FL-TT-03(2-10) WM**	EPA 9012A	286937	EPA 9012	286958
10428096002	**FL-TT-06 (0-10) S**	EPA 9012A	286937	EPA 9012	286958
10428096003	**FL-TT-04 (2-14) WM**	EPA 9012A	286937	EPA 9012	286958
10428096004	**FL-TT-05 (5-15) WM**	EPA 9012A	287059	EPA 9012	287085
10428096005	**FL-TT-07 (1-5) S**	EPA 9012A	287059	EPA 9012	287085
10428096001	**FL-TT-03(2-10) WM**	EPA 300.0	141540	EPA 9056A	141561
10428096002	**FL-TT-06 (0-10) S**	EPA 300.0	141540	EPA 9056A	141561
10428096003	**FL-TT-04 (2-14) WM**	EPA 300.0	141540	EPA 9056A	141561
10428096004	**FL-TT-05 (5-15) WM**	EPA 300.0	141540	EPA 9056A	141561
10428096005	**FL-TT-07 (1-5) S**	EPA 300.0	141540	EPA 9056A	141561

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA-FreewayLF Solids
Pace Project No.: 10428096

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch

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WO# : 10428096

10428096

Minnesota Pollution Control Agency

Form

Work Order Number: | COC Type: | Page: 1 of 1

Turnaround Time: | COC ID: | FOR LAB USE ONLY

PROJECT/CLIENT INFO

Facility Code: MNSW057/MPCA Freeway LF Solid | Program Code (MDH Lab Only):

Project Name: MPCA - Freeway LF Solids | Project Task Code:

Project Manager:

Potential Hazard? | If yes, add information to Sampler Comments Section

LABORATORY

Lab Name:

Address: 18-00383

EPIC Profile #38716

Phone No:

Lab Work Order Sticker

SAMPLE DETAILS

ANALYSIS REQUESTED

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

Location Identifier	Sample Type	Date	Time	Start Depth, feet/meters	End Depth, feet/meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: See Attach for Solids/waste. Incld Dioxin					Lab Sample No.	#
FL-TT-03 (2-10) WM	S	4/19/18	0900	2	10	C	SD				13		X						001	1
FL-TT-06 (0-10) S	S	4/19/18	1145	0	10	C	SD				13		X						002	2
FL-TT-04 (2-14) WM	S	4/19/18	1230	2	14	C	SD				13		X						003	3
FL-TT-05 (5-15) WM	S	4/19/18	1500	5	15	C	SD				13		X						004	4
FL-TT-07 (1-5) S	S	4/19/18	1715	1	5	C	SD				13		X						005	5
																				6
																				7
																				8
																				9
																				10

BGJ

04/19/18

Sampled By: Brad Jacobson/SAK/TJB

Sampler's Signature:

Phone #: 612-590-8276

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/Affiliation	Date/Time
(Sampler)	4-20-18 0830	ACE 4-20-18	830

3.6°C

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Minnesota Pollution Control Agency

Project #: **WO#: 10428096**

PM: JMA Due Date: 05/04/18

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☑ Pace ☐ SpeeDee ☐ Other:

Tracking Number: HF 4-20-18

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 3.6 **Cooler Temp Corrected (°C):** 3.6 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** True **Date and Initials of Person Examining Contents:** HF 4-20-18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑ Yes	☐ No		1.
Chain of Custody Filled Out?	☑ Yes	☐ No		2.
Chain of Custody Relinquished?	☑ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		6.
Rush Turn Around Time Requested?	☐ Yes	☑ No		7.
Sufficient Volume?	☑ Yes	☐ No		8.
Correct Containers Used?	☑ Yes	☐ No		9.
-Pace Containers Used?	☑ Yes	☐ No		
Containers Intact?	☑ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☑ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☑ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

HF 4-20-18

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: [signature] **Date:** 04/20/2018

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

pdf "red" revision comments: BGJ-Pace 3/23/18

March 22, 2018

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*) Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10428096 Workorder Name: 18-00383 MPCA-FreewayLF Solids Owner Received Date: 4/20/2018 Results Requested By: 5/4/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Total Fluoride by 9056	LAB USE ONLY
1	FL-TT-03(2-10) WM	PS	4/19/2018 09:00	10428096001	Solid	1	X	
2	FL-TT-06 (0-10) S	PS	4/19/2018 11:45	10428096002	Solid	1	X	
3	FL-TT-04 (2-14) WM	PS	4/19/2018 12:30	10428096003	Solid	1	X	
4	FL-TT-05 (5-15) WM	PS	4/19/2018 15:00	10428096004	Solid	1	X	
5	FL-TT-07 (1-5) S	PS	4/19/2018 17:15	10428096005	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] 4.24.18	4/23/18 1800	DJ Chaff 4.24.18	1900
2	[signature] 4.24.18	2315	B. Matthews	4/25/18 0730
3				

Comments

Cooler Temperature on Receipt 2.4 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: **WO#: 12107524**

PM: HRZ Due Date: 05/04/18

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☐ Yes ☒ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: 2.1 Cooler Temp Corrected °C: 2.4 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 4-24-18 DC

Comments: BM 4/25/18

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☒ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☒ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Date: 4/25/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

WO# : 12107524

12107524

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10428096 Workorder Name: 18-00383 MPCA-FreewayLF Solids Owner Received Date: 4/20/2018 Results Requested By: 5/4/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

						Preserved Containers						Requested Analysis												
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved						Methyl Mercury by 1630												LAB USE ONLY
1	FL-TT-03(2-10) WM	PS	4/19/2018 09:00	10428096001	Solid	1						X												
2	FL-TT-06 (0-10) S	PS	4/19/2018 11:45	10428096002	Solid	1						X												
3	FL-TT-04 (2-14) WM	PS	4/19/2018 12:30	10428096003	Solid	1						X												
4	FL-TT-05 (5-15) WM	PS	4/19/2018 15:00	10428096004	Solid	1						X												
5	FL-TT-07 (1-5) S	PS	4/19/2018 17:15	10428096005	Solid	1						X												

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/23/18 1810	[signature] 4.24.18	1900
2	[signature] 4.24.18	2315	[signature]	4/25/18 0730
3				

Comments

Cooler Temperature on Receipt 0.8 °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: WO#: 12107524 PM: HRZ Due Date: 05/04/18 CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: Temp Blank? ☐ Yes ☑ No

Thermometer Used: ☑ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 0.5 Cooler Temp Corrected °C: 0.8 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 4-24-18 DL

Comments: BM 4/25/18

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Date: 4/25/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

40167891

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10428096 Workorder Name: 18-00383 MPCA-FreewayLF Solids Owner Received Date: 4/20/2018 Results Requested By: 5/4/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Total Cyanide by 9012	LAB USE ONLY
1	FL-TT-03(2-10) WM	PS	4/19/2018 09:00	10428096001	Solid	1	X	001
2	FL-TT-06 (0-10) S	PS	4/19/2018 11:45	10428096002	Solid	1	X	002
3	FL-TT-04 (2-14) WM	PS	4/19/2018 12:30	10428096003	Solid	1	X	003
4	FL-TT-05 (5-15) WM	PS	4/19/2018 15:00	10428096004	Solid	1	X	004
5	FL-TT-07 (1-5) S	PS	4/19/2018 17:15	10428096005	Solid	1	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1	PAC	4/23/18 1720		
2		4/24/18 0845	Pace	4-24-18 0845
3				

Comments

Cooler Temperature on Receipt 3 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Pace MN Project # 40167891

All containers needing preservation have been checked and noted below: □Yes □No ☑N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001																					1												2.5 / 5 / 10
002																					1												2.5 / 5 / 10
003																					1												2.5 / 5 / 10
004																					1												2.5 / 5 / 10
005																					1												2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : □Yes □No ☑N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace, MN

Project #: WO#: 40167891

40167891

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: 16999968

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - 4 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3.5 /Corr: 3

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 4-24-18
Initials: SW

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☑N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume: ☑Yes ☐No ☐N/A MS/MSD	☐Yes ☐No ☑N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☐No ☑N/A	
-Pace IR Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S		
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 4/24/18

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10428096 **Workorder Name:** 18-00383 MPCA-FreewayLF Solids **Owner Received Date:** 4/20/2018 **Results Requested By:** 5/4/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Cr III	Cr VI	Total Cr by 6020	LAB USE ONLY
1	FL-TT-03(2-10) WM	PS	4/19/2018 09:00	10428096001	Solid	1	X	X	X	50195167
2	FL-TT-06 (0-10) S	PS	4/19/2018 11:45	10428096002	Solid	1	X	X	X	
3	FL-TT-04 (2-14) WM	PS	4/19/2018 12:30	10428096003	Solid	1	X	X	X	
4	FL-TT-05 (5-15) WM	PS	4/19/2018 15:00	10428096004	Solid	1	X	X	X	
5	FL-TT-07 (1-5) S	PS	4/19/2018 17:15	10428096005	Solid	1	X	X	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	Cory Hunt PACE	4/23/18 1410	fedex	
2	fedex	4-24-18 0825	JasonHoff	4-24-18 085
3				

Comments

Cooler Temperature on Receipt 3.9 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

SAMPLE CONDITION UPON RECEIPT FORM

Pace Analytical

Project #: 50195167

Date/Time and Initials of person examining contents: JH 4-24-18 1232

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace [ ] Other _____

Tracking #: 7475 9832 2893

Custody Seal on Cooler/Box Present: [X] Yes [ ] No Seals Intact: [X] Yes [ ] No

Packing Material: [X] Bubble Wrap [X] Bubble Bags [ ] None [ ] Other _____

Thermometer: 1 2 3 4 5 6 A (B) C D E F Ice Type: [X] Wet [ ] Blue [ ] None | Samples collected today and on ice: [ ] Yes [ ] No [X] N/A

Cooler Temperature: 3.9/3.9 Ice Visible in Sample Containers?: [ ] Yes [X] No [ ] N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: [ ] Yes [ ] No [X] N/A

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		X	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			X
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		X				
Chain of Custody Present:	X		Dissolved Metals field filtered?:			X
Chain of Custody Filled Out:	X		Headspace Wisconsin Sulfide			X
Short Hold Time Analysis (<72hr)?: Analysis:		X		Present	Absent	N/A
Time 5035A TC placed in Freezer or Short Holds To Lab:			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			X
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			X
Rush TAT Requested:		X	Headspace in VOA Vials (>6mm):			X
Containers Intact?:	X		Trip Blank Present?:		X	
Sample Labels Match COC?: Except TCs, which only require sample ID	X		Trip Blank Custody Seals?:		X	

Comments:

Sample Container Count

WO#: 50195167

50195167

CLIENT: Pacem

COC PAGE ____ of ____

COC ID# _____

Project # 50195167

Sample Line Item	DG9H	VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	SBS DI Bulk Kit R				Matrix SlW (Soil/Water) Aqueous Li	pH <2	pH >9	pH>12
1								1														Sc			
2								1														Sc			
3								1														Sc			
4								1														Sc			
5								1														Sc			
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved amber vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved clear vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic
BP1N	1 liter HNO3 plastic
BP1S	1 liter H2SO4 plastic
BP1U	1 liter unpreserved plastic
BP1Z	1 liter NaOH, Zn, Ac
BP2A	500mL NaOH, Asc Acid plastic
BP2N	500mL HNO3 plastic
BP2O	500mL NaOH plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Ac
BP3B	250mL NaOH plastic
BP3N	250mL HNO3 plastic
BP3S	250mL H2SO4 plastic
BP3U	250mL unpreserved plastic
BP3Z	250mL NaOH, Zn Ac plastic

AF	Air Filter
C	Air Cassettes
R	Terra core kit
SP5T	120mL Coliform Na Thiosulfate
U	Summa Can
ZPLC	Ziploc Bag

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

May 04, 2018

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: 18-00383 MPCA Freeway LF Solid - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/24/2018.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kari-Ann Killian For Jessica Esser

Project Manager

Certification List			Expires
ADEQ	Arkansas Department of Environmental Quality	17-065-0	09/26/2018
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2019
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2018
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2018
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2018
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2018
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2017-154	08/31/2018
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2018
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2018

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608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10428096
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL-TT-03(2-10) WM (10428096001)	A181702-01	Solid	04/19/2018	04/24/2018
FL-TT-06 (0-10) S (10428096002)	A181702-02	Solid	04/19/2018	04/24/2018
FL-TT-04 (2-14) WM (10428096003)	A181702-03	Solid	04/19/2018	04/24/2018
FL-TT-05 (5-15) WM (10428096004)	A181702-04	Solid	04/19/2018	04/24/2018
FL-TT-07 (1-5) S (10428096005)	A181702-05	Solid	04/19/2018	04/24/2018

CASE NARRATIVE

Sample Receipt Information:
Five samples were received on April 24, 2018. Samples were received at 3.1 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

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2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10428096
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FL-TT-03(2-10) WM (10428096001)

A181702-01 (Solid)

Date Sampled
04/19/2018 09:00

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804197**			
2,4-D	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 20:30	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 15:18	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 15:18	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 15:18	EPA 8321B	
Bentazon	**0.75**	0.10	mg/kg dry	1	04/26/2018	05/01/2018 15:18	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 15:18	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 20:30	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 15:18	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 15:18	EPA 8321B	
Surrogate: DCAA		*79.8 %*		*70.8-116*	*04/26/2018*	*05/01/2018 15:18*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**31.5**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10428096
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FL-TT-06 (0-10) S (10428096002)

A181702-02 (Solid)

Date Sampled
04/19/2018 11:45

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804197**			
2,4-D	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 16:26	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 16:26	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 21:36	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 16:26	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 21:36	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 16:26	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 16:26	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 16:26	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 16:26	EPA 8321B	
Surrogate: DCAA		*96.9 %*		*70.8-116*	*04/26/2018*	*05/01/2018 16:26*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**74.6**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10428096
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FL-TT-04 (2-14) WM (10428096003)

A181702-03 (Solid)

Date Sampled
04/19/2018 12:30

Pace Analytical - Madison

Acid Herbicides by High Performance Liquid Chromatography — **Preparation Batch: A804197**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
2,4-D	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 03:05	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 03:05	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 22:01	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 03:05	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 22:01	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 22:01	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 22:01	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 22:01	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 22:01	EPA 8321B	
Surrogate: DCAA		*87.1 %*		*70.8-116*	*04/26/2018*	*05/01/2018 22:01*	*EPA 8321B*	

Classical Chemistry Parameters — **Preparation Batch: A804195**

% Solids	**59.5**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10428096
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FL-TT-05 (5-15) WM (10428096004)

A181702-04 (Solid)

Date Sampled
04/19/2018 15:00

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804197**			
2,4-D	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 04:11	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 04:11	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 23:08	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 23:08	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 23:08	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 04:11	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 04:11	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 23:08	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/26/2018	05/01/2018 23:08	EPA 8321B	
Surrogate: DCAA		*81.8 %*		*70.8-116*	*04/26/2018*	*05/01/2018 23:08*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**67.6**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FL-TT-07 (1-5) S (10428096005)

A181702-05 (Solid)

Date Sampled
04/19/2018 17:15

Pace Analytical - Madison

Acid Herbicides by High Performance Liquid Chromatography — **Preparation Batch: A804197**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
2,4-D	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 00:15	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 00:15	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 05:17	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 00:15	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 05:17	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 00:15	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 00:15	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 00:15	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 00:15	EPA 8321B	
Surrogate: DCAA		*85.8 %*		*70.8-116*	*04/26/2018*	*05/02/2018 00:15*	*EPA 8321B*	

Classical Chemistry Parameters — **Preparation Batch: A804195**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
% Solids	**51.1**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804197 - EPA 3570										
Blank (A804197-BLK1)				Prepared: 04/26/2018 Analyzed: 04/27/2018 01:46						
2,4-D	ND	0.10	mg/kg wet							
2,4-D [2C]	ND	0.10	mg/kg wet							
2,4-DB	ND	0.10	mg/kg wet							
2,4-DB [2C]	ND	0.10	mg/kg wet							
2,4,5-T	ND	0.10	mg/kg wet							
2,4,5-T [2C]	ND	0.10	mg/kg wet							
2,4,5-TP	ND	0.10	mg/kg wet							
2,4,5-TP [2C]	ND	0.10	mg/kg wet							
Bentazon	ND	0.10	mg/kg wet							
Bentazon [2C]	ND	0.10	mg/kg wet							
Dicamba	ND	0.10	mg/kg wet							
Dicamba [2C]	ND	0.10	mg/kg wet							
MCPA	ND	0.10	mg/kg wet							
MCPA [2C]	ND	0.10	mg/kg wet							
Picloram	ND	0.10	mg/kg wet							
Picloram [2C]	ND	0.10	mg/kg wet							
Triclopyr	ND	0.10	mg/kg wet							
Triclopyr [2C]	ND	0.10	mg/kg wet							
Surrogate: DCAA	*21.3*		*mg/kg wet*	*20.00*		*107*	*70.8-116*			
Surrogate: DCAA [2C]	*20.2*		*mg/kg wet*	*20.00*		*101*	*62.3-114*			
LCS (A804197-BS1)				Prepared: 04/26/2018 Analyzed: 04/26/2018 23:32						
2,4-D	1.91	0.10	mg/kg wet	2.000		95.3	81.6-107			
2,4-D [2C]	1.87	0.10	mg/kg wet	2.000		93.4	71.8-120			
2,4-DB	1.75	0.10	mg/kg wet	2.000		87.5	76.4-107			
2,4-DB [2C]	1.90	0.10	mg/kg wet	2.000		95.1	62.2-129			
2,4,5-T	1.94	0.10	mg/kg wet	2.000		97.1	81.2-110			
2,4,5-T [2C]	1.99	0.10	mg/kg wet	2.000		99.6	70.6-125			
2,4,5-TP	1.89	0.10	mg/kg wet	2.000		94.3	79.1-106			
2,4,5-TP [2C]	1.93	0.10	mg/kg wet	2.000		96.3	68.2-118			
Bentazon	1.03	0.10	mg/kg wet	1.000		103	82.5-119			
Bentazon [2C]	0.898	0.10	mg/kg wet	1.000		89.8	73.3-125			
Dicamba	2.00	0.10	mg/kg wet	2.000		99.9	85.1-108			
Dicamba [2C]	2.03	0.10	mg/kg wet	2.000		101	71.4-115			
Picloram	0.993	0.10	mg/kg wet	1.000		99.3	86.1-106			
Picloram [2C]	0.891	0.10	mg/kg wet	1.000		89.1	74.5-114			
Triclopyr	1.84	0.10	mg/kg wet	2.000		91.8	78.6-106			
Triclopyr [2C]	1.90	0.10	mg/kg wet	2.000		95.1	69.4-118			
Surrogate: DCAA	*20.6*		*mg/kg wet*	*20.00*		*103*	*70.8-116*			
Surrogate: DCAA [2C]	*19.8*		*mg/kg wet*	*20.00*		*98.8*	*62.3-114*			
LCS (A804197-BS2)				Prepared: 04/26/2018 Analyzed: 04/27/2018 00:39						
MCPA	2.14	0.10	mg/kg wet	2.000		107	79.4-116			
MCPA [2C]	2.26	0.10	mg/kg wet	2.000		113	77-123			

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Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10428096
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804197 - EPA 3570										
LCS (A804197-BS2)				Prepared: 04/26/2018 Analyzed: 04/27/2018 00:39						
Surrogate: DCAA	*21.0*		*mg/kg wet*	*20.00*		*105*	*70.8-116*			
Surrogate: DCAA [2C]	*22.4*		*mg/kg wet*	*20.00*		*112*	*62.3-114*			
Matrix Spike (A804197-MS1)		**Source: A181702-02**		Prepared: 04/26/2018 Analyzed: 05/01/2018 17:33						
2,4-D	2.39	0.10	mg/kg dry	2.682	ND	89.2	71.4-105			
2,4-D [2C]	2.16	0.10	mg/kg dry	2.682	0.0340	79.1	50.5-123			
2,4-DB	2.20	0.10	mg/kg dry	2.682	ND	82.2	46.4-117			
2,4-DB [2C]	2.12	0.10	mg/kg dry	2.682	0.0486	77.3	44.5-121			
2,4,5-T	2.46	0.10	mg/kg dry	2.682	0.0528	89.8	66.2-110			
2,4,5-T [2C]	2.28	0.10	mg/kg dry	2.682	ND	85.0	43.6-126			
2,4,5-TP	2.37	0.10	mg/kg dry	2.682	ND	88.5	52.4-114			
2,4,5-TP [2C]	2.21	0.10	mg/kg dry	2.682	0.0443	80.7	47.6-117			
Bentazon	1.25	0.10	mg/kg dry	1.341	0.0694	88.0	61.5-117			
Bentazon [2C]	0.896	0.10	mg/kg dry	1.341	0.0365	64.1	50.7-127			
Dicamba	2.06	0.10	mg/kg dry	2.682	ND	76.6	48.4-111			
Dicamba [2C]	1.95	0.10	mg/kg dry	2.682	0.0300	71.6	43.3-108			
Picloram	0.852	0.10	mg/kg dry	1.341	ND	63.5	26.7-110			
Picloram [2C]	0.565	0.10	mg/kg dry	1.341	0.00941	41.4	10.8-110			
Triclopyr	2.34	0.10	mg/kg dry	2.682	ND	87.2	56-113			
Triclopyr [2C]	2.29	0.10	mg/kg dry	2.682	0.0413	83.7	47.9-120			
Surrogate: DCAA	*25.5*		*mg/kg dry*	*26.82*		*95.0*	*70.8-116*			
Surrogate: DCAA [2C]	*21.9*		*mg/kg dry*	*26.82*		*81.8*	*62.3-114*			
Matrix Spike (A804197-MS2)		**Source: A181702-02**		Prepared: 04/26/2018 Analyzed: 05/01/2018 19:47						
MCPA	2.69	0.10	mg/kg dry	2.682	ND	100	74.2-114			
MCPA [2C]	2.57	0.10	mg/kg dry	2.682	0.0400	94.5	60.9-122			
Surrogate: DCAA	*26.5*		*mg/kg dry*	*26.82*		*98.8*	*70.8-116*			
Surrogate: DCAA [2C]	*26.3*		*mg/kg dry*	*26.82*		*98.2*	*62.3-114*			
Matrix Spike Dup (A804197-MSD1)		**Source: A181702-02**		Prepared: 04/26/2018 Analyzed: 05/01/2018 18:40						
2,4-D	2.40	0.10	mg/kg dry	2.682	ND	89.3	71.4-105	0.174	20	
2,4-D [2C]	2.16	0.10	mg/kg dry	2.682	0.0340	79.1	50.5-123	0.0217	20	
2,4-DB	2.19	0.10	mg/kg dry	2.682	ND	81.5	46.4-117	0.805	20	
2,4-DB [2C]	2.14	0.10	mg/kg dry	2.682	0.0486	78.0	44.5-121	0.882	20	
2,4,5-T	2.44	0.10	mg/kg dry	2.682	0.0528	89.0	66.2-110	0.921	20	
2,4,5-T [2C]	2.28	0.10	mg/kg dry	2.682	ND	85.1	43.6-126	0.192	20	
2,4,5-TP	2.40	0.10	mg/kg dry	2.682	ND	89.4	52.4-114	1.02	20	
2,4,5-TP [2C]	2.17	0.10	mg/kg dry	2.682	0.0443	79.3	47.6-117	1.71	20	
Bentazon	1.39	0.10	mg/kg dry	1.341	0.0694	98.4	61.5-117	10.6	20	
Bentazon [2C]	1.03	0.10	mg/kg dry	1.341	0.0365	74.2	50.7-127	14.1	20	
Dicamba	2.18	0.10	mg/kg dry	2.682	ND	81.4	48.4-111	6.02	20	
Dicamba [2C]	2.12	0.10	mg/kg dry	2.682	0.0300	77.9	43.3-108	8.30	20	
Picloram	0.927	0.10	mg/kg dry	1.341	ND	69.1	26.7-110	8.41	20	
Picloram [2C]	0.611	0.10	mg/kg dry	1.341	0.00941	44.9	10.8-110	7.94	20	

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1700 Elm Street, Suite 200	Project Number: 10428096
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804197 - EPA 3570										
Matrix Spike Dup (A804197-MSD1)	**Source: A181702-02**			Prepared: 04/26/2018 Analyzed: 05/01/2018 18:40						
Triclopyr	2.32	0.10	mg/kg dry	2.682	ND	86.3	56-113	1.05	20	
Triclopyr [2C]	2.16	0.10	mg/kg dry	2.682	0.0413	78.9	47.9-120	5.78	20	
Surrogate: DCAA	*26.2*		*mg/kg dry*	*26.82*		*97.8*	*70.8-116*			
Surrogate: DCAA [2C]	*23.6*		*mg/kg dry*	*26.82*		*88.1*	*62.3-114*			
Matrix Spike Dup (A804197-MSD2)	**Source: A181702-02**			Prepared: 04/26/2018 Analyzed: 05/01/2018 20:54						
MCPA	2.68	0.10	mg/kg dry	2.682	ND	99.8	74.2-114	0.430	20	
MCPA [2C]	2.53	0.10	mg/kg dry	2.682	0.0400	92.7	60.9-122	1.83	20	
Surrogate: DCAA	*25.9*		*mg/kg dry*	*26.82*		*96.7*	*70.8-116*			
Surrogate: DCAA [2C]	*26.3*		*mg/kg dry*	*26.82*		*98.0*	*62.3-114*			

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1700 Elm Street, Suite 200	Project Number: 10428096
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Classical Chemistry Parameters - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804195 - % Solids										
Duplicate (A804195-DUP1)		**Source: A181708-01**		Prepared: 04/25/2018 Analyzed: 04/27/2018 09:07						
% Solids	79.2	0.00	% by Weight		79.6			0.516	20	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A181702

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10428096 Workorder Name: 18-00383 MPCA-FreewayLF Solids Owner Received Date: 4/20/2018 Results Requested By: 5/4/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	MDA List II	Requested Analysis	LAB USE ONLY
1	FL-TT-03(2-10) WM	PS	4/19/2018 09:00	10428096001	Solid	1	X		01
2	FL-TT-06 (0-10) S	PS	4/19/2018 11:45	10428096002	Solid	1	X		02
3	FL-TT-04 (2-14) WM	PS	4/19/2018 12:30	10428096003	Solid	1	X		03
4	FL-TT-05 (5-15) WM	PS	4/19/2018 15:00	10428096004	Solid	1	X		04
5	FL-TT-07 (1-5) S	PS	4/19/2018 17:15	10428096005	Solid	1	X		05

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/23/18 1630	[signature]	4/24/18 0924
2				
3				

Cooler Temperature on Receipt 3.1 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

1601422744 Exp. 7/12/18

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

May 09, 2018

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 20, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6451
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services

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CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
California Certification #2973
Montana Certificate #CERT0103
California Certification #2973
Alaska Certification UST-107
Alaska Certification UST-107
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842018-1
Oklahoma Department of Environmental Quality
California Certification #2973

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Minnesota Dept of Health Certification #: 1382680
Nevada DCNR Certification #: MN000372018-1
Montana DHHS Certification #: CERT0102
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Green Bay Certification IDs

Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #:E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #:98019
Ohio VAP Certification #: CL-0065
Oklahoma Certification #: 2017-124
Texas Certification #: T104704355-18-12
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

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SAMPLE SUMMARY

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10428176001	**FL-TT-08 (1-7 WM)**	Solid	04/20/18 14:30	04/20/18 17:30

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SAMPLE ANALYTE COUNT

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10428176001	**FL-TT-08 (1-7 WM)**	EPA 1630 (1998)	CPK	1	PASI-DUL
		EPA 8081B	XV1	24	PASI-M
		EPA 8082A	RAG	12	PASI-M
		WI MOD DRO	EC2	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		EPA 6010C	DM	11	PASI-M
		EPA 6020	DMT	1	PASI-I
		EPA 6020A	TT3	10	PASI-M
		EPA 7471	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D	AT1	72	PASI-M
		EPA 8270D by SIM	STB	18	PASI-M
		EPA 8260B	CD2	70	PASI-M
		EPA 7196A	JRB	1	PASI-I
		Trivalent Chromium Calculation	AET1	1	PASI-I
		EPA 9012	DAW	1	PASI-G
		EPA 9056A	MCT	1	PASI-V

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Sample: FL-TT-08 (1-7 WM) **Lab ID: 10428176001** Collected: 04/20/18 14:30 Received: 04/20/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1630 Methyl Mercury	Analytical Method: EPA 1630 (1998) Preparation Method: EPA 1630 (1998)							
Methyl Mercury	ND	ng/g	18.3	1	05/04/18 10:07	05/07/18 15:03	7439-97-6	N3
8081B GCS Pesticides	Analytical Method: EPA 8081B Preparation Method: EPA 3550							
Aldrin	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	309-00-2	
alpha-BHC	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	319-84-6	
beta-BHC	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	319-85-7	
delta-BHC	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	319-86-8	
gamma-BHC (Lindane)	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	58-89-9	
Chlordane (Technical)	ND	ug/kg	232	5	04/26/18 06:51	05/04/18 23:16	57-74-9	
alpha-Chlordane	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	5103-71-9	
gamma-Chlordane	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	5103-74-2	
4,4'-DDD	**68.7**	ug/kg	46.2	5	04/26/18 06:51	05/04/18 23:16	72-54-8	
4,4'-DDE	**93.9**	ug/kg	46.2	5	04/26/18 06:51	05/04/18 23:16	72-55-9	
4,4'-DDT	ND	ug/kg	46.2	5	04/26/18 06:51	05/04/18 23:16	50-29-3	
Dieldrin	ND	ug/kg	46.2	5	04/26/18 06:51	05/04/18 23:16	60-57-1	
Endosulfan I	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	959-98-8	
Endosulfan II	ND	ug/kg	46.2	5	04/26/18 06:51	05/04/18 23:16	33213-65-9	
Endosulfan sulfate	ND	ug/kg	46.2	5	04/26/18 06:51	05/04/18 23:16	1031-07-8	
Endrin	ND	ug/kg	46.2	5	04/26/18 06:51	05/04/18 23:16	72-20-8	
Endrin aldehyde	ND	ug/kg	46.2	5	04/26/18 06:51	05/04/18 23:16	7421-93-4	
Endrin ketone	ND	ug/kg	46.2	5	04/26/18 06:51	05/04/18 23:16	53494-70-5	
Heptachlor	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	76-44-8	
Heptachlor epoxide	ND	ug/kg	23.2	5	04/26/18 06:51	05/04/18 23:16	1024-57-3	
Methoxychlor	ND	ug/kg	232	5	04/26/18 06:51	05/04/18 23:16	72-43-5	
Toxaphene	ND	ug/kg	693	5	04/26/18 06:51	05/04/18 23:16	8001-35-2	
Surrogates								
Tetrachloro-m-xylene (S)	94	%.	30-150	5	04/26/18 06:51	05/04/18 23:16	877-09-8	1M,D4
Decachlorobiphenyl (S)	97	%.	30-150	5	04/26/18 06:51	05/04/18 23:16	2051-24-3	
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	11100-14-4	
PCB, Total	ND	ug/kg	91.3	1	04/23/18 13:09	04/24/18 12:01	1336-36-3	
Surrogates								
Tetrachloro-m-xylene (S)	67	%.	48-125	1	04/23/18 13:09	04/24/18 12:01	877-09-8	
Decachlorobiphenyl (S)	74	%.	30-134	1	04/23/18 13:09	04/24/18 12:01	2051-24-3	CH
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
WDRO C10-C28	**781**	mg/kg	211	10	04/23/18 18:25	04/25/18 13:58		T6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Sample: FL-TT-08 (1-7 WM) **Lab ID: 10428176001** Collected: 04/20/18 14:30 Received: 04/20/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO							
Surrogates								
n-Triacontane (S)	0	%.	50-150	10	04/23/18 18:25	04/25/18 13:58	638-68-6	S4
WIGRO GCV	Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil							
Gasoline Range Organics	ND	mg/kg	29.9	1	05/03/18 14:43	05/04/18 08:24		
Surrogates								
a,a,a-Trifluorotoluene (S)	99	%.	80-150	1	05/03/18 14:43	05/04/18 08:24	98-08-8	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050							
Aluminum	**9180**	mg/kg	27.0	1	04/23/18 07:48	04/26/18 14:13	7429-90-5	
Barium	**383**	mg/kg	1.3	1	04/23/18 07:48	04/26/18 14:13	7440-39-3	
Boron	**47.3**	mg/kg	20.2	1	04/23/18 07:48	04/26/18 14:13	7440-42-8	
Copper	**30.6**	mg/kg	1.3	1	04/23/18 07:48	04/26/18 14:13	7440-50-8	
Iron	**22500**	mg/kg	6.7	1	04/23/18 07:48	04/26/18 14:13	7439-89-6	
Manganese	**470**	mg/kg	0.67	1	04/23/18 07:48	04/26/18 14:13	7439-96-5	
Nickel	**19.6**	mg/kg	2.7	1	04/23/18 07:48	04/26/18 14:13	7440-02-0	
Silver	**2.6**	mg/kg	1.3	1	04/23/18 07:48	04/26/18 14:13	7440-22-4	
Tin	**16.2**	mg/kg	10.1	1	04/23/18 07:48	04/26/18 14:13	7440-31-5	
Titanium	**163**	mg/kg	3.4	1	04/23/18 07:48	04/26/18 14:13	7440-32-6	
Zinc	**776**	mg/kg	2.7	1	04/23/18 07:48	04/26/18 14:13	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050B							
Chromium	**14.4**	mg/kg	0.54	1	04/25/18 09:25	04/26/18 04:38	7440-47-3	N2
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050							
Antimony	ND	mg/kg	1.4	20	04/23/18 08:19	04/25/18 16:16	7440-36-0	
Arsenic	**5.6**	mg/kg	1.4	20	04/23/18 08:19	04/25/18 16:16	7440-38-2	
Beryllium	**0.73**	mg/kg	0.56	20	04/23/18 08:19	04/25/18 16:16	7440-41-7	
Cadmium	**2.0**	mg/kg	0.22	20	04/23/18 08:19	04/25/18 16:16	7440-43-9	
Cobalt	**11.4**	mg/kg	1.4	20	04/23/18 08:19	04/25/18 16:16	7440-48-4	
Lead	**88.4**	mg/kg	0.28	20	04/23/18 08:19	04/25/18 16:16	7439-92-1	
Lithium	**7.8**	mg/kg	1.4	20	04/23/18 08:19	04/25/18 16:16	7439-93-2	
Selenium	**1.9**	mg/kg	1.4	20	04/23/18 08:19	04/25/18 16:16	7782-49-2	
Strontium	**81.7**	mg/kg	1.4	20	04/23/18 08:19	04/25/18 16:16	7440-24-6	
Vanadium	**34.2**	mg/kg	2.8	20	04/23/18 08:19	04/25/18 16:16	7440-62-2	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.12**	mg/kg	0.052	1	04/23/18 07:02	04/24/18 16:41	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974							
Percent Moisture	**64.0**	%	0.10	1		05/02/18 12:05		
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	83-32-9	
Acenaphthylene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	208-96-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Sample: FL-TT-08 (1-7 WM) **Lab ID: 10428176001** Collected: 04/20/18 14:30 Received: 04/20/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
Anthracene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	120-12-7	
Benzo(a)anthracene	**1060**	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	56-55-3	
Benzo(a)pyrene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	50-32-8	
Benzo(b)fluoranthene	**1160**	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	207-08-9	
4-Bromophenylphenyl ether	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	101-55-3	
Butylbenzylphthalate	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	85-68-7	
Carbazole	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	86-74-8	
4-Chloro-3-methylphenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	59-50-7	
4-Chloroaniline	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	108-60-1	
2-Chloronaphthalene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	91-58-7	
2-Chlorophenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	7005-72-3	
Chrysene	**1090**	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	53-70-3	
Dibenzofuran	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	120-83-2	
Diethylphthalate	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	105-67-9	
Dimethylphthalate	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	131-11-3	
Di-n-butylphthalate	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	4720	1	04/24/18 16:53	04/26/18 18:36	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	606-20-2	
Di-n-octylphthalate	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	117-84-0	
1,2-Diphenylhydrazine	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	122-66-7	
bis(2-Ethylhexyl)phthalate	**8130**	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	117-81-7	
Fluoranthene	**2280**	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	206-44-0	
Fluorene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	87-68-3	
Hexachlorobenzene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	118-74-1	
Hexachloroethane	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	193-39-5	
Isophorone	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	78-59-1	
1-Methylnaphthalene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	90-12-0	
2-Methylnaphthalene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	95-48-7	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Sample: FL-TT-08 (1-7 WM) **Lab ID: 10428176001** Collected: 04/20/18 14:30 Received: 04/20/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3550							
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	1830	1	04/24/18 16:53	04/26/18 18:36		
Naphthalene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	91-20-3	
2-Nitroaniline	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	88-74-4	
3-Nitroaniline	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	99-09-2	
4-Nitroaniline	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	100-01-6	
Nitrobenzene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	98-95-3	
2-Nitrophenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	88-75-5	
4-Nitrophenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	86-30-6	
Pentachlorophenol	ND	ug/kg	1860	1	04/24/18 16:53	04/26/18 18:36	87-86-5	
Phenanthrene	**1700**	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	85-01-8	
Phenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	108-95-2	
Pyrene	**2050**	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	916	1	04/24/18 16:53	04/26/18 18:36	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	62	%.	43-125	1	04/24/18 16:53	04/26/18 18:36	4165-60-0	
2-Fluorobiphenyl (S)	75	%.	30-132	1	04/24/18 16:53	04/26/18 18:36	321-60-8	
p-Terphenyl-d14 (S)	86	%.	62-125	1	04/24/18 16:53	04/26/18 18:36	1718-51-0	
Phenol-d6 (S)	65	%.	48-125	1	04/24/18 16:53	04/26/18 18:36	13127-88-3	
2-Fluorophenol (S)	63	%.	40-125	1	04/24/18 16:53	04/26/18 18:36	367-12-4	
2,4,6-Tribromophenol (S)	76	%.	60-125	1	04/24/18 16:53	04/26/18 18:36	118-79-6	
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	83-32-9	
Acenaphthylene	ND	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	208-96-8	
Anthracene	**29.6**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	120-12-7	
Benzo(a)anthracene	**66.4**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	56-55-3	
Benzo(a)pyrene	**69.7**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	50-32-8	
Benzo(b)fluoranthene	**98.3**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	205-99-2	
Benzo(g,h,i)perylene	**58.5**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	191-24-2	
Benzo(k)fluoranthene	**81.8**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	207-08-9	
Chrysene	**98.1**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	53-70-3	
Fluoranthene	**126**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	206-44-0	
Fluorene	**90.8**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	86-73-7	
Indeno(1,2,3-cd)pyrene	**46.6**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	193-39-5	
Naphthalene	**30.8**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	91-20-3	
Phenanthrene	**116**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	85-01-8	
Pyrene	**96.0**	ug/kg	27.7	1	04/23/18 07:27	04/24/18 20:33	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	80	%.	42-125	1	04/23/18 07:27	04/24/18 20:33	321-60-8	
p-Terphenyl-d14 (S)	62	%.	57-125	1	04/23/18 07:27	04/24/18 20:33	1718-51-0	

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(612)607-1700

ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Sample: FL-TT-08 (1-7 WM) **Lab ID: 10428176001** Collected: 04/20/18 14:30 Received: 04/20/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Acetone	ND	ug/kg	2740	1	05/03/18 13:18	05/03/18 21:13	67-64-1	
Allyl chloride	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	107-05-1	
Benzene	ND	ug/kg	54.9	1	05/03/18 13:18	05/03/18 21:13	71-43-2	
Bromobenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	108-86-1	
Bromochloromethane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	74-97-5	
Bromodichloromethane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	75-27-4	
Bromoform	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	75-25-2	
Bromomethane	ND	ug/kg	1370	1	05/03/18 13:18	05/03/18 21:13	74-83-9	
2-Butanone (MEK)	ND	ug/kg	686	1	05/03/18 13:18	05/03/18 21:13	78-93-3	
n-Butylbenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	104-51-8	
sec-Butylbenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	135-98-8	
tert-Butylbenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	98-06-6	
Carbon tetrachloride	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	56-23-5	
Chlorobenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	108-90-7	
Chloroethane	ND	ug/kg	1370	1	05/03/18 13:18	05/03/18 21:13	75-00-3	
Chloroform	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	67-66-3	
Chloromethane	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	74-87-3	
2-Chlorotoluene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	95-49-8	
4-Chlorotoluene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	1370	1	05/03/18 13:18	05/03/18 21:13	96-12-8	
Dibromochloromethane	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	106-93-4	
Dibromomethane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	541-73-1	
1,4-Dichlorobenzene	**415**	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	75-71-8	
1,1-Dichloroethane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	75-34-3	
1,2-Dichloroethane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	107-06-2	
1,1-Dichloroethene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	156-60-5	
Dichlorofluoromethane	ND	ug/kg	1370	1	05/03/18 13:18	05/03/18 21:13	75-43-4	
1,2-Dichloropropane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	78-87-5	
1,3-Dichloropropane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	142-28-9	
2,2-Dichloropropane	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	594-20-7	
1,1-Dichloropropene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	60-29-7	
Ethylbenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	686	1	05/03/18 13:18	05/03/18 21:13	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	98-82-8	
p-Isopropyltoluene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	99-87-6	
Methylene Chloride	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	686	1	05/03/18 13:18	05/03/18 21:13	108-10-1	

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ANALYTICAL RESULTS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Sample: FL-TT-08 (1-7 WM) **Lab ID: 10428176001** Collected: 04/20/18 14:30 Received: 04/20/18 17:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV 5030 Med Level	Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B							
Methyl-tert-butyl ether	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	1634-04-4	
Naphthalene	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	91-20-3	
n-Propylbenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	103-65-1	
Styrene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	79-34-5	
Tetrachloroethene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	127-18-4	
Tetrahydrofuran	ND	ug/kg	5490	1	05/03/18 13:18	05/03/18 21:13	109-99-9	
Toluene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	79-00-5	
Trichloroethene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	79-01-6	
Trichlorofluoromethane	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	549	1	05/03/18 13:18	05/03/18 21:13	76-13-1	
1,2,4-Trimethylbenzene	**156**	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	137	1	05/03/18 13:18	05/03/18 21:13	108-67-8	
Vinyl chloride	ND	ug/kg	54.9	1	05/03/18 13:18	05/03/18 21:13	75-01-4	
Xylene (Total)	ND	ug/kg	412	1	05/03/18 13:18	05/03/18 21:13	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%.	75-125	1	05/03/18 13:18	05/03/18 21:13	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1	05/03/18 13:18	05/03/18 21:13	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1	05/03/18 13:18	05/03/18 21:13	460-00-4	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196A Preparation Method: EPA 3060A							
Chromium, Hexavalent	ND	mg/kg	281	50	04/28/18 10:30	04/30/18 14:43	18540-29-9	D3
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**14.4**	mg/kg	1.0	1		05/04/18 14:40	16065-83-1	
9012 Cyanide, Total	Analytical Method: EPA 9012 Preparation Method: EPA 9012A							
Cyanide	ND	mg/kg	1.4	1	04/26/18 10:15	04/26/18 14:29	57-12-5	M0,R1
9056 IC Anions	Analytical Method: EPA 9056A Preparation Method: EPA 300.0							
Fluoride	ND	mg/kg	1.0	1	04/27/18 12:45	04/30/18 20:15	16984-48-8	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 142287 Analysis Method: EPA 1630 (1998)
QC Batch Method: EPA 1630 (1998) Analysis Description: 1630 Methyl Mercury
Associated Lab Samples: 10428176001

METHOD BLANK: 562608 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.21	05/07/18 13:37	N3

METHOD BLANK: 562609 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.15	05/07/18 13:43	N3

METHOD BLANK: 562610 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl Mercury	ng/g	ND	3.21	05/07/18 13:50	N3

LABORATORY CONTROL SAMPLE: 562611

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Methyl Mercury	ng/g	100	113	112	67-133	N3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 562612 562613

Parameter	Units	10428096004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl Mercury	ng/g	ND	359	372	373	444	104	119	65-135	17	35	N3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 535880 Analysis Method: WI MOD GRO
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 10428176001

METHOD BLANK: 2912515 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	10.0	05/03/18 23:08	
a,a,a-Trifluorotoluene (S)	%.	100	80-150	05/03/18 23:08	

LABORATORY CONTROL SAMPLE & LCSD: 2912516 2912517

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	43.4	45.7	87	91	80-120	5	20	
a,a,a-Trifluorotoluene (S)	%.				98	97	80-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2912904 2912905

Parameter	Units	10429117007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	51.8	50.2	51.9	48.7	100	97	80-120	6	20	
a,a,a-Trifluorotoluene (S)	%.						99	99	80-150			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 533683 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 10428176001

METHOD BLANK: 2898961 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.020	04/24/18 15:54	

LABORATORY CONTROL SAMPLE: 2898962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.47	0.51	109	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898963 2898964

Parameter	Units	10428159001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.097	.52	.51	0.65	0.62	105	103	80-120	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 533686
QC Batch Method: EPA 3050
Analysis Method: EPA 6010C
Analysis Description: 6010C Solids
Associated Lab Samples: 10428176001

METHOD BLANK: 2898973 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	9.3	04/26/18 13:37	
Barium	mg/kg	ND	0.47	04/26/18 13:37	
Boron	mg/kg	ND	7.0	04/26/18 13:37	
Copper	mg/kg	ND	0.47	04/26/18 13:37	
Iron	mg/kg	ND	2.3	04/26/18 13:37	
Manganese	mg/kg	ND	0.23	04/26/18 13:37	
Nickel	mg/kg	ND	0.93	04/26/18 13:37	
Silver	mg/kg	ND	0.47	04/26/18 13:37	
Tin	mg/kg	ND	3.5	04/26/18 13:37	
Titanium	mg/kg	ND	1.2	04/26/18 13:37	
Zinc	mg/kg	ND	0.93	04/26/18 13:37	

LABORATORY CONTROL SAMPLE: 2898974

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	971	965	99	80-120	
Barium	mg/kg	48.5	50.1	103	80-120	
Boron	mg/kg	48.5	44.5	92	80-120	
Copper	mg/kg	48.5	48.4	100	80-120	
Iron	mg/kg	971	983	101	80-120	
Manganese	mg/kg	48.5	49.9	103	80-120	
Nickel	mg/kg	48.5	48.5	100	80-120	
Silver	mg/kg	24.3	22.8	94	80-120	
Tin	mg/kg	48.5	48.8	100	80-120	
Titanium	mg/kg	48.5	49.1	101	80-120	
Zinc	mg/kg	48.5	47.4	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898975 2898976

Parameter	Units	10428096001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	24900	3380	3480	19400	40300	-165	441	75-125	70	20	P6,R1
Barium	mg/kg	428	169	174	408	498	-12	40	75-125	20	20	M1
Boron	mg/kg	109	169	174	229	285	71	101	75-125	22	20	M1,R1
Copper	mg/kg	448	169	174	446	1230	-1	452	75-125	94	20	M1,R1
Iron	mg/kg	166000	3380	3480	226000	163000	1800	-74	75-125	32	20	M6,R1
Manganese	mg/kg	596	169	174	887	870	172	158	75-125	2	20	M1
Nickel	mg/kg	62.5	169	174	223	235	95	99	75-125	5	20	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898975 2898976

Parameter	Units	10428096001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	mg/kg	26.3	84.5	86.9	95.0	99.1	81	84	75-125	4	20	
Tin	mg/kg	406	169	174	601	743	116	194	75-125	21	20	M1,R1
Titanium	mg/kg	208	169	174	430	468	131	149	75-125	9	20	M1
Zinc	mg/kg	831	169	174	901	1010	42	105	75-125	12	20	P6

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 438855 Analysis Method: EPA 6020
QC Batch Method: EPA 3050B Analysis Description: 6020 MET
Associated Lab Samples: 10428176001

METHOD BLANK: 2027873 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	mg/kg	ND	0.19	04/26/18 02:38	N2

LABORATORY CONTROL SAMPLE: 2027874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	mg/kg	3.7	3.9	106	80-120	N2

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2027875 2027876

Parameter	Units	10427642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/kg	5.4	4.87	4.87	7.0	6.1	34	15	75-125	14	20	M0,N2

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 533687
QC Batch Method: EPA 3050
Analysis Method: EPA 6020A
Analysis Description: 6020A Solids UPD4
Associated Lab Samples: 10428176001

METHOD BLANK: 2898977 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.49	04/24/18 18:20	
Arsenic	mg/kg	ND	0.49	04/24/18 18:20	
Beryllium	mg/kg	ND	0.19	04/24/18 18:20	
Cadmium	mg/kg	ND	0.078	04/24/18 18:20	
Cobalt	mg/kg	ND	0.49	04/24/18 18:20	
Lead	mg/kg	ND	0.097	04/24/18 18:20	
Lithium	mg/kg	ND	0.49	04/24/18 18:20	
Selenium	mg/kg	ND	0.49	04/24/18 18:20	
Strontium	mg/kg	ND	0.49	04/24/18 18:20	
Vanadium	mg/kg	ND	0.97	04/24/18 18:20	

LABORATORY CONTROL SAMPLE: 2898978

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	47.6	47.2	99	80-120	
Arsenic	mg/kg	47.6	46.8	98	80-120	
Beryllium	mg/kg	47.6	49.9	105	80-120	
Cadmium	mg/kg	47.6	47.0	99	80-120	
Cobalt	mg/kg	47.6	48.1	101	80-120	
Lead	mg/kg	47.6	49.6	104	80-120	
Lithium	mg/kg	47.6	52.3	110	80-120	
Selenium	mg/kg	47.6	48.6	102	80-120	
Strontium	mg/kg	47.6	48.0	101	80-120	
Vanadium	mg/kg	47.6	47.3	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898979 2898980

Parameter	Units	10428096001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	3.7	167	170	162	153	95	88	75-125	6	20	
Arsenic	mg/kg	11.9	167	170	200	181	113	99	75-125	10	20	
Beryllium	mg/kg	ND	167	170	195	181	116	106	75-125	8	20	
Cadmium	mg/kg	38.6	167	170	182	178	86	82	75-125	2	20	
Cobalt	mg/kg	8.4	167	170	214	187	123	105	75-125	13	20	
Lead	mg/kg	691	167	170	41400	4040	24300	1970	75-125	164	20	E,M6, R1
Lithium	mg/kg	2.4	167	170	205	191	121	111	75-125	7	20	
Selenium	mg/kg	1.8	167	170	175	166	104	96	75-125	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2898979 2898980

Parameter	Units	10428096001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	mg/kg	31.2	167	170	210	211	107	105	75-125	0	20	
Vanadium	mg/kg	40.2	167	170	200	211	96	100	75-125	5	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 535536
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight / %M by ASTM D2974
Associated Lab Samples: 10428176001

SAMPLE DUPLICATE: 2910636

Parameter	Units	10427732013 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	60.7	61.2	1	30	

SAMPLE DUPLICATE: 2910889

Parameter	Units	10429116010 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.5	18.4	1	30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 535771 Analysis Method: EPA 8260B
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV 5030 Med Level
Associated Lab Samples: 10428176001

METHOD BLANK: 2912043 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	50.0	05/03/18 15:30	
1,1,1-Trichloroethane	ug/kg	ND	50.0	05/03/18 15:30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	50.0	05/03/18 15:30	
1,1,2-Trichloroethane	ug/kg	ND	50.0	05/03/18 15:30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	200	05/03/18 15:30	
1,1-Dichloroethane	ug/kg	ND	50.0	05/03/18 15:30	
1,1-Dichloroethene	ug/kg	ND	50.0	05/03/18 15:30	
1,1-Dichloropropene	ug/kg	ND	50.0	05/03/18 15:30	
1,2,3-Trichlorobenzene	ug/kg	ND	50.0	05/03/18 15:30	
1,2,3-Trichloropropane	ug/kg	ND	200	05/03/18 15:30	
1,2,4-Trichlorobenzene	ug/kg	ND	50.0	05/03/18 15:30	
1,2,4-Trimethylbenzene	ug/kg	ND	50.0	05/03/18 15:30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	500	05/03/18 15:30	
1,2-Dibromoethane (EDB)	ug/kg	ND	50.0	05/03/18 15:30	
1,2-Dichlorobenzene	ug/kg	ND	50.0	05/03/18 15:30	
1,2-Dichloroethane	ug/kg	ND	50.0	05/03/18 15:30	
1,2-Dichloropropane	ug/kg	ND	50.0	05/03/18 15:30	
1,3,5-Trimethylbenzene	ug/kg	ND	50.0	05/03/18 15:30	
1,3-Dichlorobenzene	ug/kg	ND	50.0	05/03/18 15:30	
1,3-Dichloropropane	ug/kg	ND	50.0	05/03/18 15:30	
1,4-Dichlorobenzene	ug/kg	ND	50.0	05/03/18 15:30	
2,2-Dichloropropane	ug/kg	ND	200	05/03/18 15:30	
2-Butanone (MEK)	ug/kg	ND	250	05/03/18 15:30	
2-Chlorotoluene	ug/kg	ND	50.0	05/03/18 15:30	
4-Chlorotoluene	ug/kg	ND	50.0	05/03/18 15:30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	250	05/03/18 15:30	
Acetone	ug/kg	ND	1000	05/03/18 15:30	
Allyl chloride	ug/kg	ND	200	05/03/18 15:30	
Benzene	ug/kg	ND	20.0	05/03/18 15:30	
Bromobenzene	ug/kg	ND	50.0	05/03/18 15:30	
Bromochloromethane	ug/kg	ND	50.0	05/03/18 15:30	
Bromodichloromethane	ug/kg	ND	50.0	05/03/18 15:30	
Bromoform	ug/kg	ND	200	05/03/18 15:30	
Bromomethane	ug/kg	ND	500	05/03/18 15:30	
Carbon tetrachloride	ug/kg	ND	50.0	05/03/18 15:30	
Chlorobenzene	ug/kg	ND	50.0	05/03/18 15:30	
Chloroethane	ug/kg	ND	500	05/03/18 15:30	
Chloroform	ug/kg	ND	50.0	05/03/18 15:30	
Chloromethane	ug/kg	ND	200	05/03/18 15:30	
cis-1,2-Dichloroethene	ug/kg	ND	50.0	05/03/18 15:30	
cis-1,3-Dichloropropene	ug/kg	ND	50.0	05/03/18 15:30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

METHOD BLANK: 2912043 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/kg	ND	200	05/03/18 15:30	
Dibromomethane	ug/kg	ND	50.0	05/03/18 15:30	
Dichlorodifluoromethane	ug/kg	ND	200	05/03/18 15:30	
Dichlorofluoromethane	ug/kg	ND	500	05/03/18 15:30	
Diethyl ether (Ethyl ether)	ug/kg	ND	200	05/03/18 15:30	
Ethylbenzene	ug/kg	ND	50.0	05/03/18 15:30	
Hexachloro-1,3-butadiene	ug/kg	ND	250	05/03/18 15:30	
Isopropylbenzene (Cumene)	ug/kg	ND	50.0	05/03/18 15:30	
Methyl-tert-butyl ether	ug/kg	ND	50.0	05/03/18 15:30	
Methylene Chloride	ug/kg	ND	200	05/03/18 15:30	
n-Butylbenzene	ug/kg	ND	50.0	05/03/18 15:30	
n-Propylbenzene	ug/kg	ND	50.0	05/03/18 15:30	
Naphthalene	ug/kg	ND	200	05/03/18 15:30	
p-Isopropyltoluene	ug/kg	ND	50.0	05/03/18 15:30	
sec-Butylbenzene	ug/kg	ND	50.0	05/03/18 15:30	
Styrene	ug/kg	ND	50.0	05/03/18 15:30	
tert-Butylbenzene	ug/kg	ND	50.0	05/03/18 15:30	
Tetrachloroethene	ug/kg	ND	50.0	05/03/18 15:30	
Tetrahydrofuran	ug/kg	ND	2000	05/03/18 15:30	
Toluene	ug/kg	ND	50.0	05/03/18 15:30	
trans-1,2-Dichloroethene	ug/kg	ND	50.0	05/03/18 15:30	
trans-1,3-Dichloropropene	ug/kg	ND	50.0	05/03/18 15:30	
Trichloroethene	ug/kg	ND	50.0	05/03/18 15:30	
Trichlorofluoromethane	ug/kg	ND	200	05/03/18 15:30	
Vinyl chloride	ug/kg	ND	20.0	05/03/18 15:30	
Xylene (Total)	ug/kg	ND	150	05/03/18 15:30	
1,2-Dichloroethane-d4 (S)	%.	97	75-125	05/03/18 15:30	
4-Bromofluorobenzene (S)	%.	101	75-125	05/03/18 15:30	
Toluene-d8 (S)	%.	98	75-125	05/03/18 15:30	

LABORATORY CONTROL SAMPLE & LCSD: 2912044 2912045

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	848	777	85	78	59-125	9	20	
1,1,1-Trichloroethane	ug/kg	1000	818	860	82	86	59-125	5	20	
1,1,2,2-Tetrachloroethane	ug/kg	1000	948	878	95	88	58-125	8	20	
1,1,2-Trichloroethane	ug/kg	1000	886	839	89	84	64-125	6	20	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	854	828	85	83	65-125	3	20	
1,1-Dichloroethane	ug/kg	1000	803	815	80	81	63-125	1	20	
1,1-Dichloroethene	ug/kg	1000	827	823	83	82	59-125	1	20	
1,1-Dichloropropene	ug/kg	1000	826	844	83	84	64-125	2	20	
1,2,3-Trichlorobenzene	ug/kg	1000	912	889	91	89	55-126	3	20	
1,2,3-Trichloropropane	ug/kg	1000	980	949	98	95	62-125	3	20	
1,2,4-Trichlorobenzene	ug/kg	1000	913	900	91	90	62-125	1	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

LABORATORY CONTROL SAMPLE & LCSD: 2912044 2912045

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	941	882	94	88	59-125	6	20	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2260	2130	91	85	54-125	6	20	
1,2-Dibromoethane (EDB)	ug/kg	1000	905	812	90	81	64-125	11	20	
1,2-Dichlorobenzene	ug/kg	1000	887	827	89	83	63-125	7	20	
1,2-Dichloroethane	ug/kg	1000	832	759	83	76	57-125	9	20	
1,2-Dichloropropane	ug/kg	1000	879	824	88	82	67-125	6	20	
1,3,5-Trimethylbenzene	ug/kg	1000	917	859	92	86	59-125	6	20	
1,3-Dichlorobenzene	ug/kg	1000	891	827	89	83	64-125	7	20	
1,3-Dichloropropane	ug/kg	1000	887	821	89	82	64-125	8	20	
1,4-Dichlorobenzene	ug/kg	1000	895	820	90	82	63-125	9	20	
2,2-Dichloropropane	ug/kg	1000	796	792	80	79	37-126	0	20	
2-Butanone (MEK)	ug/kg	5000	3900	4060	78	81	48-125	4	20	
2-Chlorotoluene	ug/kg	1000	877	832	88	83	62-125	5	20	
4-Chlorotoluene	ug/kg	1000	904	865	90	86	63-125	4	20	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4800	4370	96	87	52-135	9	20	
Acetone	ug/kg	5000	4310	4130	86	83	65-125	4	20	
Allyl chloride	ug/kg	1000	754	760	75	76	52-125	1	20	
Benzene	ug/kg	1000	808	828	81	83	61-125	3	20	
Bromobenzene	ug/kg	1000	909	864	91	86	64-125	5	20	
Bromochloromethane	ug/kg	1000	836	838	84	84	65-125	0	20	
Bromodichloromethane	ug/kg	1000	862	810	86	81	57-125	6	20	
Bromoform	ug/kg	1000	701	642	70	64	57-125	9	20	
Bromomethane	ug/kg	1000	737	778	74	78	60-125	5	20	
Carbon tetrachloride	ug/kg	1000	804	838	80	84	58-125	4	20	
Chlorobenzene	ug/kg	1000	903	844	90	84	66-125	7	20	
Chloroethane	ug/kg	1000	714	740	71	74	62-125	4	20	
Chloroform	ug/kg	1000	776	800	78	80	59-125	3	20	
Chloromethane	ug/kg	1000	740	732	74	73	50-125	1	20	
cis-1,2-Dichloroethene	ug/kg	1000	798	766	80	77	61-125	4	20	
cis-1,3-Dichloropropene	ug/kg	1000	889	876	89	88	61-125	1	20	
Dibromochloromethane	ug/kg	1000	791	735	79	74	60-125	7	20	
Dibromomethane	ug/kg	1000	841	811	84	81	69-125	4	20	
Dichlorodifluoromethane	ug/kg	1000	662	654	66	65	38-125	1	20	
Dichlorofluoromethane	ug/kg	1000	756	765	76	76	67-125	1	20	
Diethyl ether (Ethyl ether)	ug/kg	1000	1700	1530	170	153	60-125	10	20	CH,L3
Ethylbenzene	ug/kg	1000	914	855	91	85	62-125	7	20	
Hexachloro-1,3-butadiene	ug/kg	1000	899	802	90	80	56-125	11	20	
Isopropylbenzene (Cumene)	ug/kg	1000	975	891	98	89	65-125	9	20	
Methyl-tert-butyl ether	ug/kg	1000	820	815	82	82	59-125	1	20	
Methylene Chloride	ug/kg	1000	772	790	77	79	64-125	2	20	
n-Butylbenzene	ug/kg	1000	946	868	95	87	59-125	9	20	
n-Propylbenzene	ug/kg	1000	932	888	93	89	61-125	5	20	
Naphthalene	ug/kg	1000	976	921	98	92	53-125	6	20	
p-Isopropyltoluene	ug/kg	1000	918	858	92	86	63-125	7	20	
sec-Butylbenzene	ug/kg	1000	916	858	92	86	62-125	7	20	
Styrene	ug/kg	1000	922	865	92	86	66-125	6	20	
tert-Butylbenzene	ug/kg	1000	949	892	95	89	64-125	6	20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

LABORATORY CONTROL SAMPLE & LCSD: 2912044 2912045

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/kg	1000	916	851	92	85	67-125	7	20	
Tetrahydrofuran	ug/kg	10000	8660	8850	87	89	62-125	2	20	
Toluene	ug/kg	1000	884	829	88	83	61-125	6	20	
trans-1,2-Dichloroethene	ug/kg	1000	794	775	79	78	64-125	2	20	
trans-1,3-Dichloropropene	ug/kg	1000	886	829	89	83	56-125	7	20	
Trichloroethene	ug/kg	1000	891	805	89	80	67-125	10	20	
Trichlorofluoromethane	ug/kg	1000	717	684	72	68	65-125	5	20	
Vinyl chloride	ug/kg	1000	774	772	77	77	57-125	0	20	
Xylene (Total)	ug/kg	3000	2700	2500	90	83	62-125	8	20	
1,2-Dichloroethane-d4 (S)	%.				101	98	75-125			
4-Bromofluorobenzene (S)	%.				101	103	75-125			
Toluene-d8 (S)	%.				100	99	75-125			

MATRIX SPIKE SAMPLE: 2912046

Parameter	Units	10429096001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	1270	1140	90	64-146	
1,1,1-Trichloroethane	ug/kg	ND	1270	1080	85	56-148	
1,1,2,2-Tetrachloroethane	ug/kg	ND	1270	1260	99	36-150	
1,1,2-Trichloroethane	ug/kg	ND	1270	1210	95	67-148	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	1270	1140	90	60-142	
1,1-Dichloroethane	ug/kg	ND	1270	1100	87	57-140	
1,1-Dichloroethene	ug/kg	ND	1270	1090	86	59-139	
1,1-Dichloropropene	ug/kg	ND	1270	1100	87	61-142	
1,2,3-Trichlorobenzene	ug/kg	ND	1270	1250	98	69-150	
1,2,3-Trichloropropane	ug/kg	ND	1270	1320	104	64-150	
1,2,4-Trichlorobenzene	ug/kg	ND	1270	1240	98	71-149	
1,2,4-Trimethylbenzene	ug/kg	ND	1270	1240	98	67-149	
1,2-Dibromo-3-chloropropane	ug/kg	ND	3160	3090	98	61-150	
1,2-Dibromoethane (EDB)	ug/kg	ND	1270	1190	94	67-147	
1,2-Dichlorobenzene	ug/kg	ND	1270	1170	93	70-142	
1,2-Dichloroethane	ug/kg	ND	1270	1090	86	58-132	
1,2-Dichloropropane	ug/kg	ND	1270	1140	90	64-144	
1,3,5-Trimethylbenzene	ug/kg	ND	1270	1180	93	71-146	
1,3-Dichlorobenzene	ug/kg	ND	1270	1160	92	71-142	
1,3-Dichloropropane	ug/kg	ND	1270	1180	93	68-140	
1,4-Dichlorobenzene	ug/kg	ND	1270	1150	91	68-142	
2,2-Dichloropropane	ug/kg	ND	1270	1060	83	34-150	
2-Butanone (MEK)	ug/kg	ND	6330	5120	81	51-150	
2-Chlorotoluene	ug/kg	ND	1270	1170	92	66-144	
4-Chlorotoluene	ug/kg	ND	1270	1230	97	66-140	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	6330	6280	99	63-150	
Acetone	ug/kg	ND	6330	5800	90	54-150	
Allyl chloride	ug/kg	ND	1270	1000	79	53-135	
Benzene	ug/kg	ND	1270	1230	97	65-135	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

MATRIX SPIKE SAMPLE: 2912046

Parameter	Units	10429096001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/kg	ND	1270	1230	97	71-141	
Bromochloromethane	ug/kg	ND	1270	1090	86	62-145	
Bromodichloromethane	ug/kg	ND	1270	1140	90	59-148	
Bromoform	ug/kg	ND	1270	937	74	57-145	
Bromomethane	ug/kg	ND	1270	918	69	51-129	
Carbon tetrachloride	ug/kg	ND	1270	1070	85	55-144	
Chlorobenzene	ug/kg	ND	1270	1200	95	70-142	
Chloroethane	ug/kg	ND	1270	957	76	61-135	
Chloroform	ug/kg	ND	1270	1030	81	58-135	
Chloromethane	ug/kg	ND	1270	981	78	37-125	
cis-1,2-Dichloroethene	ug/kg	ND	1270	1040	82	60-138	
cis-1,3-Dichloropropene	ug/kg	ND	1270	1180	93	62-142	
Dibromochloromethane	ug/kg	ND	1270	1080	86	65-141	
Dibromomethane	ug/kg	ND	1270	1150	90	72-150	
Dichlorodifluoromethane	ug/kg	ND	1270	819	65	30-125	
Dichlorofluoromethane	ug/kg	ND	1270	1020	81	62-148	
Diethyl ether (Ethyl ether)	ug/kg	ND	1270	4290	339	62-135	CH,M0
Ethylbenzene	ug/kg	ND	1270	1220	96	72-138	
Hexachloro-1,3-butadiene	ug/kg	ND	1270	1220	96	38-150	
Isopropylbenzene (Cumene)	ug/kg	ND	1270	1280	101	75-148	
Methyl-tert-butyl ether	ug/kg	ND	1270	1080	86	63-139	
Methylene Chloride	ug/kg	ND	1270	1030	79	58-135	
n-Butylbenzene	ug/kg	ND	1270	1250	99	63-150	
n-Propylbenzene	ug/kg	ND	1270	1260	100	70-146	
Naphthalene	ug/kg	ND	1270	1300	102	63-150	
p-Isopropyltoluene	ug/kg	ND	1270	1240	98	72-150	
sec-Butylbenzene	ug/kg	ND	1270	1200	95	66-150	
Styrene	ug/kg	ND	1270	1220	96	72-146	
tert-Butylbenzene	ug/kg	ND	1270	1260	100	71-148	
Tetrachloroethene	ug/kg	ND	1270	1220	97	70-150	
Tetrahydrofuran	ug/kg	ND	12700	11800	93	62-150	
Toluene	ug/kg	ND	1270	1170	93	65-142	
trans-1,2-Dichloroethene	ug/kg	ND	1270	1020	81	55-141	
trans-1,3-Dichloropropene	ug/kg	ND	1270	1170	93	57-147	
Trichloroethene	ug/kg	ND	1270	1170	92	62-150	
Trichlorofluoromethane	ug/kg	ND	1270	958	76	51-150	
Vinyl chloride	ug/kg	ND	1270	1010	80	45-132	
Xylene (Total)	ug/kg	ND	3800	3550	93	75-140	
1,2-Dichloroethane-d4 (S)	%.				101	75-125	
4-Bromofluorobenzene (S)	%.				101	75-125	
Toluene-d8 (S)	%.				99	75-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

SAMPLE DUPLICATE: 2912047

Parameter	Units	10429096002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	ND		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	ND		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	
2-Butanone (MEK)	ug/kg	ND	ND		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	ND		30	
Allyl chloride	ug/kg	ND	ND		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Dichlorofluoromethane	ug/kg	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

SAMPLE DUPLICATE: 2912047

Parameter	Units	10429096002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	ND		30	
n-Propylbenzene	ug/kg	ND	ND		30	
Naphthalene	ug/kg	ND	ND		30	
p-Isopropyltoluene	ug/kg	ND	ND		30	
sec-Butylbenzene	ug/kg	ND	ND		30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Tetrahydrofuran	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	98	100	1		
4-Bromofluorobenzene (S)	%.	103	101	5		
Toluene-d8 (S)	%.	98	97	3		

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 534409
QC Batch Method: EPA 3550
Analysis Method: EPA 8081B
Analysis Description: 8081S GCS Pesticides
Associated Lab Samples: 10428176001

METHOD BLANK: 2903518
Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4,4'-DDD	ug/kg	ND	3.3	05/04/18 21:08	
4,4'-DDE	ug/kg	ND	3.3	05/04/18 21:08	
4,4'-DDT	ug/kg	ND	3.3	05/04/18 21:08	
Aldrin	ug/kg	ND	1.7	05/04/18 21:08	
alpha-BHC	ug/kg	ND	1.7	05/04/18 21:08	
alpha-Chlordane	ug/kg	ND	1.7	05/04/18 21:08	
beta-BHC	ug/kg	ND	1.7	05/04/18 21:08	
Chlordane (Technical)	ug/kg	ND	16.7	05/04/18 21:08	
delta-BHC	ug/kg	ND	1.7	05/04/18 21:08	
Dieldrin	ug/kg	ND	3.3	05/04/18 21:08	
Endosulfan I	ug/kg	ND	1.7	05/04/18 21:08	
Endosulfan II	ug/kg	ND	3.3	05/04/18 21:08	
Endosulfan sulfate	ug/kg	ND	3.3	05/04/18 21:08	
Endrin	ug/kg	ND	3.3	05/04/18 21:08	
Endrin aldehyde	ug/kg	ND	3.3	05/04/18 21:08	
Endrin ketone	ug/kg	ND	3.3	05/04/18 21:08	
gamma-BHC (Lindane)	ug/kg	ND	1.7	05/04/18 21:08	
gamma-Chlordane	ug/kg	ND	1.7	05/04/18 21:08	
Heptachlor	ug/kg	ND	1.7	05/04/18 21:08	
Heptachlor epoxide	ug/kg	ND	1.7	05/04/18 21:08	
Methoxychlor	ug/kg	ND	16.7	05/04/18 21:08	
Toxaphene	ug/kg	ND	50.0	05/04/18 21:08	
Decachlorobiphenyl (S)	%.	85	30-150	05/04/18 21:08	
Tetrachloro-m-xylene (S)	%.	92	30-150	05/04/18 21:08	

LABORATORY CONTROL SAMPLE: 2903519

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	ug/kg	33.3	32.8	98	62-127	
4,4'-DDE	ug/kg	33.3	32.3	97	66-125	
4,4'-DDT	ug/kg	33.3	28.6	86	67-128	
Aldrin	ug/kg	16.7	15.8	95	66-125	
alpha-BHC	ug/kg	16.7	16.1	97	64-125	
alpha-Chlordane	ug/kg	16.7	16.1	97	68-125	
beta-BHC	ug/kg	16.7	15.9	95	69-125	
delta-BHC	ug/kg	16.7	13.5	81	42-133	
Dieldrin	ug/kg	33.3	34.6	104	69-126	
Endosulfan I	ug/kg	16.7	15.4	92	63-125	
Endosulfan II	ug/kg	33.3	33.8	101	69-125	
Endosulfan sulfate	ug/kg	33.3	29.3	88	56-137	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

LABORATORY CONTROL SAMPLE: 2903519

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Endrin	ug/kg	33.3	32.2	97	69-125	
Endrin aldehyde	ug/kg	33.3	32.0	96	65-125	
Endrin ketone	ug/kg	33.3	33.7	101	69-129	
gamma-BHC (Lindane)	ug/kg	16.7	16.3	98	67-125	
gamma-Chlordane	ug/kg	16.7	13.5	81	63-125	
Heptachlor	ug/kg	16.7	16.1	96	69-125	
Heptachlor epoxide	ug/kg	16.7	16.4	98	68-125	
Methoxychlor	ug/kg	167	140	84	65-134	
Decachlorobiphenyl (S)	%.			85	30-150	
Tetrachloro-m-xylene (S)	%.			93	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2903520 2903521

Parameter	Units	10428610001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	ug/kg	<0.38	37.6	37.4	38.5	37.7	102	101	56-125	2	20	
4,4'-DDE	ug/kg	0.64J	37.6	37.4	35.3	34.3	92	90	32-150	3	20	
4,4'-DDT	ug/kg	3.1J	37.6	37.4	39.5	38.3	97	94	60-132	3	20	
Aldrin	ug/kg	<0.33	18.8	18.7	17.0	16.8	90	90	56-125	1	20	
alpha-BHC	ug/kg	<0.13	18.8	18.7	17.0	17.0	90	91	54-136	0	20	
alpha-Chlordane	ug/kg	<0.16	18.8	18.7	17.4	17.1	93	91	54-133	2	20	
beta-BHC	ug/kg	<1.0	18.8	18.7	18.2	18.0	97	96	30-150	1	20	
delta-BHC	ug/kg	<0.17	18.8	18.7	15.6	17.8	83	95	45-145	13	20	
Dieldrin	ug/kg	1.3J	37.6	37.4	44.9	45.4	116	118	47-150	1	20	
Endosulfan I	ug/kg	<0.15	18.8	18.7	16.5	16.3	88	87	35-145	1	20	
Endosulfan II	ug/kg	<0.37	37.6	37.4	36.5	35.1	97	94	50-147	4	20	
Endosulfan sulfate	ug/kg	0.37J	37.6	37.4	32.7	32.0	86	85	54-132	2	20	
Endrin	ug/kg	<0.30	37.6	37.4	35.7	34.3	95	92	62-125	4	20	
Endrin aldehyde	ug/kg	<0.36	37.6	37.4	35.3	33.5	94	89	33-150	5	20	
Endrin ketone	ug/kg	<0.41	37.6	37.4	47.3	43.0	125	114	56-144	10	20	
gamma-BHC (Lindane)	ug/kg	<0.13	18.8	18.7	17.4	17.4	93	93	63-125	0	20	
gamma-Chlordane	ug/kg	0.34J	18.8	18.7	14.6	14.1	76	74	45-132	3	20	
Heptachlor	ug/kg	<0.35	18.8	18.7	17.7	17.4	94	93	51-142	2	20	
Heptachlor epoxide	ug/kg	<0.25	18.8	18.7	18.0	17.5	96	93	50-142	3	20	
Methoxychlor	ug/kg	<2.3	188	187	170	163	90	87	58-139	4	20	
Decachlorobiphenyl (S)	%.						96	87	30-150			
Tetrachloro-m-xylene (S)	%.						92	90	30-150			2M,D3

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 533842
QC Batch Method: EPA 3550
Analysis Method: EPA 8082A
Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10428176001

METHOD BLANK: 2899574 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	04/24/18 11:29	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	04/24/18 11:29	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	04/24/18 11:29	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	04/24/18 11:29	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	04/24/18 11:29	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	04/24/18 11:29	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	04/24/18 11:29	
PCB-1262 (Aroclor 1262)	ug/kg	ND	33.0	04/24/18 11:29	
PCB-1268 (Aroclor 1268)	ug/kg	ND	33.0	04/24/18 11:29	
Decachlorobiphenyl (S)	%.	125	30-134	04/24/18 11:29	CH
Tetrachloro-m-xylene (S)	%.	88	48-125	04/24/18 11:29	

LABORATORY CONTROL SAMPLE: 2899575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	667	527	79	66-125	
PCB-1260 (Aroclor 1260)	ug/kg	667	571	86	62-125	
Decachlorobiphenyl (S)	%.			129	30-134	CH
Tetrachloro-m-xylene (S)	%.			89	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2899651 2899652

Parameter	Units	10428176001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	1850	1850	1550	1540	84	84	30-150	0	30	
PCB-1260 (Aroclor 1260)	ug/kg	ND	1850	1850	1580	1560	86	84	30-138	2	30	
Decachlorobiphenyl (S)	%.						93	76	30-134			CH
Tetrachloro-m-xylene (S)	%.						78	68	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 534113 Analysis Method: EPA 8270D
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid MSSV
Associated Lab Samples: 10428176001

METHOD BLANK: 2901626 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	04/25/18 17:49	
1,2-Dichlorobenzene	ug/kg	ND	330	04/25/18 17:49	
1,2-Diphenylhydrazine	ug/kg	ND	330	04/25/18 17:49	
1,3-Dichlorobenzene	ug/kg	ND	330	04/25/18 17:49	
1,4-Dichlorobenzene	ug/kg	ND	330	04/25/18 17:49	
1-Methylnaphthalene	ug/kg	ND	330	04/25/18 17:49	
2,4,5-Trichlorophenol	ug/kg	ND	330	04/25/18 17:49	
2,4,6-Trichlorophenol	ug/kg	ND	330	04/25/18 17:49	
2,4-Dichlorophenol	ug/kg	ND	330	04/25/18 17:49	
2,4-Dimethylphenol	ug/kg	ND	330	04/25/18 17:49	
2,4-Dinitrophenol	ug/kg	ND	330	04/25/18 17:49	
2,4-Dinitrotoluene	ug/kg	ND	330	04/25/18 17:49	
2,6-Dinitrotoluene	ug/kg	ND	330	04/25/18 17:49	
2-Chloronaphthalene	ug/kg	ND	330	04/25/18 17:49	
2-Chlorophenol	ug/kg	ND	330	04/25/18 17:49	
2-Methylnaphthalene	ug/kg	ND	330	04/25/18 17:49	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	04/25/18 17:49	
2-Nitroaniline	ug/kg	ND	330	04/25/18 17:49	
2-Nitrophenol	ug/kg	ND	330	04/25/18 17:49	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	660	04/25/18 17:49	
3,3'-Dichlorobenzidine	ug/kg	ND	330	04/25/18 17:49	
3-Nitroaniline	ug/kg	ND	330	04/25/18 17:49	
4,6-Dinitro-2-methylphenol	ug/kg	ND	1700	04/25/18 17:49	
4-Bromophenylphenyl ether	ug/kg	ND	330	04/25/18 17:49	
4-Chloro-3-methylphenol	ug/kg	ND	330	04/25/18 17:49	
4-Chloroaniline	ug/kg	ND	330	04/25/18 17:49	
4-Chlorophenylphenyl ether	ug/kg	ND	330	04/25/18 17:49	
4-Nitroaniline	ug/kg	ND	330	04/25/18 17:49	
4-Nitrophenol	ug/kg	ND	330	04/25/18 17:49	
Acenaphthene	ug/kg	ND	330	04/25/18 17:49	
Acenaphthylene	ug/kg	ND	330	04/25/18 17:49	
Anthracene	ug/kg	ND	330	04/25/18 17:49	
Benzo(a)anthracene	ug/kg	ND	330	04/25/18 17:49	
Benzo(a)pyrene	ug/kg	ND	330	04/25/18 17:49	
Benzo(b)fluoranthene	ug/kg	ND	330	04/25/18 17:49	
Benzo(g,h,i)perylene	ug/kg	ND	330	04/25/18 17:49	
Benzo(k)fluoranthene	ug/kg	ND	330	04/25/18 17:49	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	04/25/18 17:49	
bis(2-Chloroethyl) ether	ug/kg	ND	330	04/25/18 17:49	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	04/25/18 17:49	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	04/25/18 17:49	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

METHOD BLANK: 2901626 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	04/25/18 17:49	
Carbazole	ug/kg	ND	330	04/25/18 17:49	
Chrysene	ug/kg	ND	330	04/25/18 17:49	
Di-n-butylphthalate	ug/kg	ND	330	04/25/18 17:49	
Di-n-octylphthalate	ug/kg	ND	330	04/25/18 17:49	
Dibenz(a,h)anthracene	ug/kg	ND	330	04/25/18 17:49	
Dibenzofuran	ug/kg	ND	330	04/25/18 17:49	
Diethylphthalate	ug/kg	ND	330	04/25/18 17:49	
Dimethylphthalate	ug/kg	ND	330	04/25/18 17:49	
Fluoranthene	ug/kg	ND	330	04/25/18 17:49	
Fluorene	ug/kg	ND	330	04/25/18 17:49	
Hexachloro-1,3-butadiene	ug/kg	ND	330	04/25/18 17:49	
Hexachlorobenzene	ug/kg	ND	330	04/25/18 17:49	
Hexachloroethane	ug/kg	ND	330	04/25/18 17:49	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	04/25/18 17:49	
Isophorone	ug/kg	ND	330	04/25/18 17:49	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	04/25/18 17:49	
N-Nitrosodimethylamine	ug/kg	ND	330	04/25/18 17:49	
N-Nitrosodiphenylamine	ug/kg	ND	330	04/25/18 17:49	
Naphthalene	ug/kg	ND	330	04/25/18 17:49	
Nitrobenzene	ug/kg	ND	330	04/25/18 17:49	
Pentachlorophenol	ug/kg	ND	670	04/25/18 17:49	
Phenanthrene	ug/kg	ND	330	04/25/18 17:49	
Phenol	ug/kg	ND	330	04/25/18 17:49	
Pyrene	ug/kg	ND	330	04/25/18 17:49	
2,4,6-Tribromophenol (S)	%.	87	60-125	04/25/18 17:49	
2-Fluorobiphenyl (S)	%.	84	30-132	04/25/18 17:49	
2-Fluorophenol (S)	%.	80	40-125	04/25/18 17:49	
Nitrobenzene-d5 (S)	%.	79	43-125	04/25/18 17:49	
p-Terphenyl-d14 (S)	%.	97	62-125	04/25/18 17:49	
Phenol-d6 (S)	%.	79	48-125	04/25/18 17:49	

LABORATORY CONTROL SAMPLE: 2901627

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1340	80	46-125	
1,2-Dichlorobenzene	ug/kg	1670	1330	80	41-125	
1,2-Diphenylhydrazine	ug/kg	1670	1450	87	63-125	
1,3-Dichlorobenzene	ug/kg	1670	1280	77	38-125	
1,4-Dichlorobenzene	ug/kg	1670	1290	77	39-125	
1-Methylnaphthalene	ug/kg	1670	1400	84	56-125	
2,4,5-Trichlorophenol	ug/kg	1670	1480	89	63-125	
2,4,6-Trichlorophenol	ug/kg	1670	1490	89	61-125	
2,4-Dichlorophenol	ug/kg	1670	1450	87	57-125	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

LABORATORY CONTROL SAMPLE: 2901627

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	ug/kg	1670	1400	84	51-125	
2,4-Dinitrophenol	ug/kg	1670	1400	84	30-132	
2,4-Dinitrotoluene	ug/kg	1670	1760	105	62-125	
2,6-Dinitrotoluene	ug/kg	1670	1630	98	63-125	
2-Chloronaphthalene	ug/kg	1670	1440	86	61-125	
2-Chlorophenol	ug/kg	1670	1380	83	46-125	
2-Methylnaphthalene	ug/kg	1670	1380	83	55-125	
2-Methylphenol(o-Cresol)	ug/kg	1670	1350	81	50-125	
2-Nitroaniline	ug/kg	1670	1470	88	61-125	
2-Nitrophenol	ug/kg	1670	1450	87	43-125	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1400	84	54-125	
3,3'-Dichlorobenzidine	ug/kg	1670	1530	92	47-125	
3-Nitroaniline	ug/kg	1670	1480	89	57-125	
4,6-Dinitro-2-methylphenol	ug/kg	1670	1670J	100	30-141	
4-Bromophenylphenyl ether	ug/kg	1670	1460	88	63-125	
4-Chloro-3-methylphenol	ug/kg	1670	1510	90	64-125	
4-Chloroaniline	ug/kg	1670	1190	71	36-125	
4-Chlorophenylphenyl ether	ug/kg	1670	1490	90	64-125	
4-Nitroaniline	ug/kg	1670	1490	89	59-125	
4-Nitrophenol	ug/kg	1670	1440	86	54-125	
Acenaphthene	ug/kg	1670	1440	87	62-125	
Acenaphthylene	ug/kg	1670	1430	86	61-125	
Anthracene	ug/kg	1670	1480	89	66-125	
Benzo(a)anthracene	ug/kg	1670	1610	97	69-125	
Benzo(a)pyrene	ug/kg	1670	1590	95	67-125	
Benzo(b)fluoranthene	ug/kg	1670	1570	94	67-125	
Benzo(g,h,i)perylene	ug/kg	1670	1650	99	63-125	
Benzo(k)fluoranthene	ug/kg	1670	1590	96	68-125	
bis(2-Chloroethoxy)methane	ug/kg	1670	1340	80	52-125	
bis(2-Chloroethyl) ether	ug/kg	1670	1270	76	41-125	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1130	68	37-125	3M
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1850	111	69-131	
Butylbenzylphthalate	ug/kg	1670	1770	106	69-129	
Carbazole	ug/kg	1670	1600	96	66-125	
Chrysene	ug/kg	1670	1580	95	68-125	
Di-n-butylphthalate	ug/kg	1670	1710	102	69-125	
Di-n-octylphthalate	ug/kg	1670	1870	112	69-133	
Dibenz(a,h)anthracene	ug/kg	1670	1690	101	64-125	
Dibenzofuran	ug/kg	1670	1490	90	65-125	
Diethylphthalate	ug/kg	1670	1610	97	67-125	
Dimethylphthalate	ug/kg	1670	1580	95	67-125	
Fluoranthene	ug/kg	1670	1570	94	66-125	
Fluorene	ug/kg	1670	1500	90	66-125	
Hexachloro-1,3-butadiene	ug/kg	1670	1280	77	40-125	
Hexachlorobenzene	ug/kg	1670	1480	89	62-125	
Hexachloroethane	ug/kg	1670	1310	79	33-125	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1660	99	64-125	

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

LABORATORY CONTROL SAMPLE: 2901627

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1350	81	57-125	
N-Nitroso-di-n-propylamine	ug/kg	1670	1350	81	50-125	
N-Nitrosodimethylamine	ug/kg	1670	1350	81	36-125	
N-Nitrosodiphenylamine	ug/kg	1670	1550	93	65-125	
Naphthalene	ug/kg	1670	1330	80	48-125	
Nitrobenzene	ug/kg	1670	1310	79	48-125	
Pentachlorophenol	ug/kg	1670	1140	68	41-125	
Phenanthrene	ug/kg	1670	1480	89	66-125	
Phenol	ug/kg	1670	1320	79	46-125	
Pyrene	ug/kg	1670	1620	97	69-125	
2,4,6-Tribromophenol (S)	%.			86	60-125	
2-Fluorobiphenyl (S)	%.			75	30-132	
2-Fluorophenol (S)	%.			73	40-125	
Nitrobenzene-d5 (S)	%.			70	43-125	
p-Terphenyl-d14 (S)	%.			91	62-125	
Phenol-d6 (S)	%.			71	48-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2901628 2901629

Parameter	Units	10427377010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	<760	1970	1970	1360J	1370J	69	69	30-127		30	
1,2-Dichlorobenzene	ug/kg	<739	1970	1970	1450J	1360J	73	69	30-125		30	
1,2-Diphenylhydrazine	ug/kg	<707	1970	1970	1310J	1300J	66	66	30-150		30	
1,3-Dichlorobenzene	ug/kg	<730	1970	1970	1440J	1320J	73	67	30-125		30	
1,4-Dichlorobenzene	ug/kg	<713	1970	1970	1410J	1380J	71	70	30-125		30	
1-Methylnaphthalene	ug/kg	<615	1970	1970	1490J	1420J	75	72	42-125		30	
2,4,5-Trichlorophenol	ug/kg	<764	1970	1970	1250J	1360J	63	69	30-150		30	
2,4,6-Trichlorophenol	ug/kg	<556	1970	1970	1380J	1310J	70	66	30-150		30	
2,4-Dichlorophenol	ug/kg	<738	1970	1970	1390J	1330J	71	67	30-135		30	
2,4-Dimethylphenol	ug/kg	<1470	1970	1970	ND	ND	73	74	30-148		30	
2,4-Dinitrophenol	ug/kg	<880	1970	1970	ND	ND	0	0	30-125		30	M1
2,4-Dinitrotoluene	ug/kg	<530	1970	1970	904J	789J	46	40	30-150		30	
2,6-Dinitrotoluene	ug/kg	<546	1970	1970	1050J	867J	53	44	30-150		30	
2-Chloronaphthalene	ug/kg	<556	1970	1970	1480J	1410J	75	72	30-138		30	
2-Chlorophenol	ug/kg	<778	1970	1970	1390J	1400J	70	71	30-130		30	
2-Methylnaphthalene	ug/kg	<607	1970	1970	1460J	1440J	74	73	46-125		30	
2-Methylphenol(o-Cresol)	ug/kg	<986	1970	1970	1420J	1380J	72	70	30-133		30	
2-Nitroaniline	ug/kg	<865	1970	1970	1630J	1670J	82	84	30-150		30	
2-Nitrophenol	ug/kg	<737	1970	1970	825J	ND	42	33	30-134		30	
3&4-Methylphenol(m&p Cresol)	ug/kg	<883	1970	1970	1430J	1390J	72	70	30-138		30	
3,3'-Dichlorobenzidine	ug/kg	<936	1970	1970	1190J	1310J	60	66	30-149		30	
3-Nitroaniline	ug/kg	<959	1970	1970	1810J	1880J	92	95	30-150		30	
4,6-Dinitro-2-methylphenol	ug/kg	<1580	1970	1970	ND	ND	0	0	30-133		30	M1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2901628 2901629

Parameter	Units	10427377010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromophenylphenyl ether	ug/kg	<660	1970	1970	1360J	1300J	69	66	44-125		30	
4-Chloro-3-methylphenol	ug/kg	<543	1970	1970	1440J	1350J	73	68	30-150		30	
4-Chloroaniline	ug/kg	<1100	1970	1970	ND	ND	52	56	30-125		30	
4-Chlorophenylphenyl ether	ug/kg	<536	1970	1970	1390J	1440J	70	73	44-125		30	
4-Nitroaniline	ug/kg	<698	1970	1970	1710J	1610J	87	81	30-150		30	
4-Nitrophenol	ug/kg	<1130	1970	1970	ND	ND	46	53	30-150		30	
Acenaphthene	ug/kg	<641	1970	1970	1380J	1400J	70	71	40-125		30	
Acenaphthylene	ug/kg	<537	1970	1970	1480J	1450J	75	73	30-150		30	
Anthracene	ug/kg	<564	1970	1970	1470J	1400J	74	71	30-150		30	
Benzo(a)anthracene	ug/kg	<455	1970	1970	1570J	1600J	79	81	30-150		30	
Benzo(a)pyrene	ug/kg	<443	1970	1970	1520J	1460J	77	74	30-150		30	
Benzo(b)fluoranthene	ug/kg	<474	1970	1970	1570J	1570J	79	79	30-150		30	
Benzo(g,h,i)perylene	ug/kg	<339	1970	1970	1630J	1520J	83	77	30-150		30	
Benzo(k)fluoranthene	ug/kg	<474	1970	1970	1510J	1500J	77	76	30-150		30	
bis(2-Chloroethoxy)methane	ug/kg	<760	1970	1970	1390J	1360J	70	69	30-134		30	
bis(2-Chloroethyl) ether	ug/kg	<858	1970	1970	1360J	1250J	69	63	30-125		30	
bis(2-Chloroisopropyl) ether	ug/kg	<909	1970	1970	1330J	1270J	67	64	30-125		30	
bis(2-Ethylhexyl)phthalate	ug/kg	<1000	1970	1970	1950J	1980J	99	100	30-150		30	
Butylbenzylphthalate	ug/kg	<867	1970	1970	1740J	1710J	88	87	30-150		30	
Carbazole	ug/kg	<526	1970	1970	1520J	1480J	77	75	41-125		30	
Chrysene	ug/kg	<393	1970	1970	1680J	1610J	85	82	30-150		30	
Di-n-butylphthalate	ug/kg	<536	1970	1970	1680J	1540J	85	78	30-150		30	
Di-n-octylphthalate	ug/kg	<1200	1970	1970	1820J	1780J	92	90	30-150		30	
Dibenz(a,h)anthracene	ug/kg	<404	1970	1970	1550J	1530J	78	78	30-150		30	
Dibenzofuran	ug/kg	<569	1970	1970	1480J	1460J	75	74	45-125		30	
Diethylphthalate	ug/kg	<464	1970	1970	1500J	1500J	76	76	30-150		30	
Dimethylphthalate	ug/kg	<603	1970	1970	1450J	1460J	73	74	30-150		30	
Fluoranthene	ug/kg	<418	1970	1970	1580J	1540J	74	72	30-150		30	
Fluorene	ug/kg	<546	1970	1970	1510J	1450J	77	73	30-150		30	
Hexachloro-1,3-butadiene	ug/kg	<903	1970	1970	1350J	1360J	68	69	30-128		30	
Hexachlorobenzene	ug/kg	<506	1970	1970	1450J	1410J	73	71	30-150		30	
Hexachloroethane	ug/kg	<801	1970	1970	ND	ND	33	26	30-125		30	M1
Indeno(1,2,3-cd)pyrene	ug/kg	<456	1970	1970	1580J	1420J	80	72	30-150		30	
Isophorone	ug/kg	<898	1970	1970	1460J	1410J	74	72	30-140		30	
N-Nitroso-di-n-propylamine	ug/kg	<1200	1970	1970	1440J	1400J	73	71	30-147		30	
N-Nitrosodimethylamine	ug/kg	<1020	1970	1970	1430J	1420J	72	72	30-125		30	
N-Nitrosodiphenylamine	ug/kg	<481	1970	1970	1460J	1480J	74	75	30-150		30	
Naphthalene	ug/kg	<745	1970	1970	1460J	1420J	74	72	44-125		30	
Nitrobenzene	ug/kg	<787	1970	1970	1410J	1240J	71	63	30-136		30	
Pentachlorophenol	ug/kg	<1160	1970	1970	ND	ND	15	15	30-150		30	M1
Phenanthrene	ug/kg	<537	1970	1970	1610J	1570J	82	80	30-150		30	
Phenol	ug/kg	<757	1970	1970	1430J	1380J	72	70	30-129		30	
Pyrene	ug/kg	<412	1970	1970	1820J	1860J	81	83	30-150		30	
2,4,6-Tribromophenol (S)	%.						59	58	60-125			S0
2-Fluorobiphenyl (S)	%.						68	64	30-132			
2-Fluorophenol (S)	%.						63	61	40-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2901628 2901629

Parameter	Units	10427377010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrobenzene-d5 (S)	%.						58	57	43-125			P3
p-Terphenyl-d14 (S)	%.						78	77	62-125			
Phenol-d6 (S)	%.						64	60	48-125			

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 533722
QC Batch Method: EPA 3550
Analysis Method: EPA 8270D by SIM
Analysis Description: 8270D Solid PAH by SIM MSSV
Associated Lab Samples: 10428176001

METHOD BLANK: 2899091
Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	10.0	04/24/18 15:03	
Acenaphthylene	ug/kg	ND	10.0	04/24/18 15:03	
Anthracene	ug/kg	ND	10.0	04/24/18 15:03	
Benzo(a)anthracene	ug/kg	ND	10.0	04/24/18 15:03	
Benzo(a)pyrene	ug/kg	ND	10.0	04/24/18 15:03	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/24/18 15:03	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/24/18 15:03	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/24/18 15:03	
Chrysene	ug/kg	ND	10.0	04/24/18 15:03	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/24/18 15:03	
Fluoranthene	ug/kg	ND	10.0	04/24/18 15:03	
Fluorene	ug/kg	ND	10.0	04/24/18 15:03	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/24/18 15:03	
Naphthalene	ug/kg	ND	10.0	04/24/18 15:03	
Phenanthrene	ug/kg	ND	10.0	04/24/18 15:03	
Pyrene	ug/kg	ND	10.0	04/24/18 15:03	
2-Fluorobiphenyl (S)	%.	93	42-125	04/24/18 15:03	
p-Terphenyl-d14 (S)	%.	92	57-125	04/24/18 15:03	

LABORATORY CONTROL SAMPLE: 2899092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	26.7	80	52-125	
Acenaphthylene	ug/kg	33.3	26.2	79	50-125	
Anthracene	ug/kg	33.3	29.7	89	65-125	
Benzo(a)anthracene	ug/kg	33.3	27.0	81	60-125	
Benzo(a)pyrene	ug/kg	33.3	23.6	71	69-125	
Benzo(b)fluoranthene	ug/kg	33.3	27.4	82	61-125	
Benzo(g,h,i)perylene	ug/kg	33.3	24.6	74	60-125	
Benzo(k)fluoranthene	ug/kg	33.3	26.9	81	67-125	
Chrysene	ug/kg	33.3	27.8	83	67-125	
Dibenz(a,h)anthracene	ug/kg	33.3	21.8	65	63-125	
Fluoranthene	ug/kg	33.3	30.7	92	75-125	
Fluorene	ug/kg	33.3	26.4	79	54-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	24.3	73	63-125	
Naphthalene	ug/kg	33.3	26.3	79	49-125	
Phenanthrene	ug/kg	33.3	27.8	84	65-125	
Pyrene	ug/kg	33.3	24.8	74	64-125	
2-Fluorobiphenyl (S)	%.			87	42-125	
p-Terphenyl-d14 (S)	%.			82	57-125	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2899093 2899094

Parameter	Units	10428180001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	35.7	35.7	30.3	29.4	85	82	30-125	3	30	
Acenaphthylene	ug/kg	ND	35.7	35.7	26.0	29.8	73	83	30-133	13	30	
Anthracene	ug/kg	ND	35.7	35.7	42.2	36.4	118	102	30-150	15	30	
Benzo(a)anthracene	ug/kg	0.020 mg/kg	35.7	35.7	67.8	46.1	135	74	30-150	38	30	R1
Benzo(a)pyrene	ug/kg	0.019 mg/kg	35.7	35.7	59.8	43.3	113	67	30-150	32	30	R1
Benzo(b)fluoranthene	ug/kg	0.028 mg/kg	35.7	35.7	68.5	51.4	113	65	30-150	29	30	
Benzo(g,h,i)perylene	ug/kg	0.018 mg/kg	35.7	35.7	63.9	51.6	128	94	30-150	21	30	
Benzo(k)fluoranthene	ug/kg	0.012 mg/kg	35.7	35.7	38.9	37.9	76	74	30-150	3	30	
Chrysene	ug/kg	0.022 mg/kg	35.7	35.7	65.9	46.5	121	67	30-150	35	30	R1
Dibenz(a,h)anthracene	ug/kg	ND	35.7	35.7	38.4	37.7	107	105	30-131	2	30	
Fluoranthene	ug/kg	0.044 mg/kg	35.7	35.7	109	66.2	182	63	30-150	49	30	M1,R1
Fluorene	ug/kg	ND	35.7	35.7	28.1	28.4	79	79	30-147	1	30	
Indeno(1,2,3-cd)pyrene	ug/kg	0.016 mg/kg	35.7	35.7	57.8	47.7	117	89	30-150	19	30	
Naphthalene	ug/kg	ND	35.7	35.7	21.8	26.9	61	75	30-131	21	30	
Phenanthrene	ug/kg	0.020 mg/kg	35.7	35.7	81.1	49.7	171	84	30-150	48	30	M1,R1
Pyrene	ug/kg	0.034 mg/kg	35.7	35.7	98.8	58.0	181	67	30-150	52	30	M1,R1
2-Fluorobiphenyl (S)	%.						70	84	42-125			
p-Terphenyl-d14 (S)	%.						73	80	57-125			

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 533864 Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS
Associated Lab Samples: 10428176001

METHOD BLANK: 2899660 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	ND	10.0	04/25/18 13:36	
n-Triacontane (S)	%.	95	50-150	04/25/18 13:36	

LABORATORY CONTROL SAMPLE & LCSD: 2899661 2899662

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	66.3	60.3	83	75	70-120	9	20	
n-Triacontane (S)	%.				93	93	50-150			

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(612)607-1700

QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 439469
QC Batch Method: EPA 3060A
Analysis Method: EPA 7196A
Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 10428176001

METHOD BLANK: 2030574 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	2.0	04/30/18 13:42	

LABORATORY CONTROL SAMPLE: 2030575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	1100	980	89	80-120	

SAMPLE DUPLICATE: 2030580

Parameter	Units	10427642002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 287059 Analysis Method: EPA 9012
QC Batch Method: EPA 9012A Analysis Description: 9012 Cyanide
Associated Lab Samples: 10428176001

METHOD BLANK: 1679101 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.40	04/26/18 14:20	

LABORATORY CONTROL SAMPLE: 1679102

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1679103 1679104

Parameter	Units	10428176001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	ND	10.3	10.3	8.3	10.9	71	95	80-120	27	20	M0,R1

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QUALITY CONTROL DATA

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

QC Batch: 141540 Analysis Method: EPA 9056A
QC Batch Method: EPA 300.0 Analysis Description: 9056 IC Anions, Soil
Associated Lab Samples: 10428176001

METHOD BLANK: 559769 Matrix: Solid
Associated Lab Samples: 10428176001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/kg	ND	0.99	04/30/18 17:39	

LABORATORY CONTROL SAMPLE: 559768

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/kg	50.3	51.9	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559770 559771

Parameter	Units	10428096003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	ND	50	49.3	11.4	12.3	23	25	80-120	7	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 559772 559773

Parameter	Units	10428159006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/kg	0.97 U	49.7	48.9	35.9	41.7	72	85	80-120	15	20	M1

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(612)607-1700

QUALIFIERS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-I	Pace Analytical Services - Indianapolis
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10428176

[1]	Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

ANALYTE QUALIFIERS

1M	Sample was brown in color.
2M	Sample was yellow in color.
3M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D4	Sample was diluted due to the presence of high levels of target analytes.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.

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Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

ANALYTE QUALIFIERS

L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
T6	High boiling point hydrocarbons are present in the sample.

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(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 18-00383 MPCA Freeway LF Solid
Pace Project No.: 10428176

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10428176001	**FL-TT-08 (1-7 WM)**	EPA 1630 (1998)	142287	EPA 1630 (1998)	142288
10428176001	**FL-TT-08 (1-7 WM)**	EPA 3550	534409	EPA 8081B	534839
10428176001	**FL-TT-08 (1-7 WM)**	EPA 3550	533842	EPA 8082A	533945
10428176001	**FL-TT-08 (1-7 WM)**	WI MOD DRO	533864	WI MOD DRO	534349
10428176001	**FL-TT-08 (1-7 WM)**	EPA 5030 Medium Soil	535880	WI MOD GRO	535956
10428176001	**FL-TT-08 (1-7 WM)**	EPA 3050	533686	EPA 6010C	534230
10428176001	**FL-TT-08 (1-7 WM)**	EPA 3050B	438855	EPA 6020	439080
10428176001	**FL-TT-08 (1-7 WM)**	EPA 3050	533687	EPA 6020A	533858
10428176001	**FL-TT-08 (1-7 WM)**	EPA 7471	533683	EPA 7471	533810
10428176001	**FL-TT-08 (1-7 WM)**	ASTM D2974	535536		
10428176001	**FL-TT-08 (1-7 WM)**	EPA 3550	534113	EPA 8270D	534319
10428176001	**FL-TT-08 (1-7 WM)**	EPA 3550	533722	EPA 8270D by SIM	534081
10428176001	**FL-TT-08 (1-7 WM)**	EPA 5035/5030B	535771	EPA 8260B	536093
10428176001	**FL-TT-08 (1-7 WM)**	EPA 3060A	439469	EPA 7196A	439714
10428176001	**FL-TT-08 (1-7 WM)**	Trivalent Chromium Calculation	440734		
10428176001	**FL-TT-08 (1-7 WM)**	EPA 9012A	287059	EPA 9012	287085
10428176001	**FL-TT-08 (1-7 WM)**	EPA 300.0	141540	EPA 9056A	141561

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WO#: 10428176

10428176

ody Form

Work Order Number:	COC Type:	Page: 1 of 1
Turnaround Time:	COC ID:	FOR LAB USE ONLY

CLIENT INFO		LABORATORY	
Facility Code:	MNSW-057/MPCA Freeway LF	Program Code (MDH Lab Only):	Lab Name:
Project Name:	MPCA Freeway LF Solids	Project Task Code:	Address: 18-00383
Project Manager:			EPIC Profile # 38716
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:

Lab Work Order Sticker

SAMPLE DETAILS | **ANALYSIS REQUESTED**

SAMPLE TYPE CODES: Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES: DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES: Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

PRESERV.

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS: See attached for solids/waste Incld. Dioxin	Lab Sample No.	#
FL-TT-08 (1-7 wm)	S	4/20/18		1	7	C	SD				13	X	001	1
														2
														3
														4
														5
														6
														7
														8
														9
														10

JAK 4/20/18

Sampled By: Jack Kokkinen/Zack Eckstrom | Sampler's Signature: | Phone #: 612-437-5655

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affilliation	Date/Time
(Sampler)	4/20/18 1730	Face	4/20/18 17:30

T=6.5°C

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.22**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: **WO#: 10428176**

PM: JMA Due Date: 05/07/18
CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☑Client ☐Commercial ☐Pace ☐SpeeDee ☐Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☑No **Seals Intact?** ☐Yes ☑No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☑None ☐Other:_____ **Temp Blank?** ☐Yes ☑No

Thermometer Used: ☐151401163 ☑G87A9155100842 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Cooler Temp Read (°C): 6.5 **Cooler Temp Corrected (°C):** 6.5 **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Temp should be above freezing to 6°C **Correction Factor:** True **Date and Initials of Person Examining Contents:** HF 4-20-18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☑No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☑No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑Yes	☐No		1.
Chain of Custody Filled Out?	☑Yes	☐No		2.
Chain of Custody Relinquished?	☑Yes	☐No		3.
Sampler Name and/or Signature on COC?	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☑Yes	☐No		5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No		6.
Rush Turn Around Time Requested?	☐Yes	☑No		7.
Sufficient Volume?	☑Yes	☐No		8.
Correct Containers Used?	☑Yes	☐No		9.
-Pace Containers Used?	☑Yes	☐No		
Containers Intact?	☑Yes	☐No		10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑Yes	☐No		12. No time on CoC or Sample
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☑N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☑N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐Yes	☐No	☑N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☑N/A	14.
Trip Blank Present?	☐Yes	☑No	☐N/A	15.
Trip Blank Custody Seals Present?	☑Yes	☐No	☒N/A	No Trip Blank Received JMA 4/23/18
Pace Trip Blank Lot # (if purchased): ~~030518-3~~				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Brad Jacobson Date/Time: _____

Comments/Resolution: Confirmed collected time for samples is 14:30.

Project Manager Review: _____ **Date:** 04/23/2018

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

March 22, 2018

LABORATORY ANALYTICAL PARAMETER LISTS
SOIL and WASTE MATERIAL
Freeway Landfill and Dump Investigation
Site Investigaiton Plan

Parameter List S	Methods
Metals	
Aluminum, Barium, Boron, Copper, Iron, Manganese, Nickel, Silver, Tin, Titanium, Zinc	EPA 6010C
Add Chromium (*needed for Cr III calc*) Antimony, Arsenic, Beryllium, Cadmium, Chromium III (calculated), Cobalt, Lead, Litium, Selenium, Strontium, Vanadium	EPA 6020A
Chromium VI	EPA 7196
Copper Cyanide Test as Total Cyanide	EPA 9012
Fluoride, test as Total Fluoride	EPA 9056A
Mercury	EPA 7471
Methyl Mercury	EPA 1630
Dioxins 2,3,7,8 TCDD*	EPA 8290
Pesticides (DDT, DDE, DDD, etc)	EPA 8081A
Herbicides	MDA List II
PCBs	EPA 8082
PAHs (standard list)	EPA 8270 SIM
SVOCs	EPA 8270
VOCs	EPA 8260
GRO	WI GRO
DRO	WI DRO

* Assumed that Dioxin analysis shall only be requested for approximately half of the samples. To be determined in the field by MPCA staff.

WO# : 12107527

12107527

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin:

Workorder: 10428176 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 4/20/2018 Results Requested By: 5/7/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

						Preserved Containers						Requested Analysis												
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved						Fluoride by method 9056												LAB USE ONLY
1	FL-TT-08 (1-7 WM)	PS	4/20/2018 14:30	10428176001	Solid	1						X												
2																								
3																								
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] 4.24.18	4/23/18 1500	[signature] 4.24.18	1200
2	[signature] 4.24.18	2315	B. Mathews	4/25/18 0730
3				

Comments

Cooler Temperature on Receipt 2.4 °C | Custody Seal N or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #

WO# : 12107527
PM: HRZ Due Date: 05/07/18
CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☐ Yes ☒ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: 2.1 Cooler Temp Corrected °C: 2.4 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 4/24-18 DC

Comments: BM 4/25/18

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☒ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☒ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: _____ Date: 4/25/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

WO# : 12107527

12107527

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10428176 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 4/20/2018 Results Requested By: 5/7/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

						Preserved Containers						Requested Analysis													
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved						Methyl Mercury by 1630													LAB USE ONLY
1	FL-TT-08 (1-7 WM)	PS	4/20/2018 14:30	10428176001	Solid	1						X													
2																									
3																									
4																									
5																									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PAA	4/23/18 810	[signature] CHP 4.24-18	1900
2	[signature] CHP 4.24-18	2315	B. Mathews	4/25/18 0230
3				

Comments

Cooler Temperature on Receipt 0.8 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: **WO#: 12107527**

PM: HRZ **Due Date: 05/07/18**

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: Temp Blank? ☐ Yes ☑ No

Thermometer Used: ☑ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 0.5 Cooler Temp Corrected °C: 0.8 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: 4-24-18 BL

Comments: BM 4/25/18

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes	☐ No	☑ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Angela Loisel Date: 4/25/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

40167846

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10428176 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 4/20/2018 Results Requested By: 5/7/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Total Cyanide by 9012	LAB USE ONLY
1	FL-TT-08 (1-7 WM)	PS	4/20/2018 14:30	10428176001	Solid	1	X	001
2								
3								
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	Amy Dyd PACE	4/23/18 1720		
2	Walter	4/24/18 0845	Susan Ulfig PACE	4/24/18 0845
3				

Comments

Cooler Temperature on Receipt 3 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: Pace MN

Sample Preservation Receipt Form

Project # 40167896

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☐N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/ Time:

	Glass							Plastic							Vials						Jars			General									
Pace Lab #	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																																	2.5 / 5 / 10
002																																	2.5 / 5 / 10
003																																	2.5 / 5 / 10
004																																	2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:

Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☐N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Pace, MN

Project #: WO#: 40167896

40167896

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: 1699968

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - 4 **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3.5 /Corr: 3

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents: Date: 4-24-18 Initials: BW

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☑N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume: ☑Yes ☐No ☐N/A MS/MSD	☐Yes ☐No ☑N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☐No ☑N/A	
-Pace IR Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S		
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: CW **Date:** 4/24/18

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10428176 **Workorder Name:** 18-00383 MPCA Freeway LF Solid **Owner Received Date:** 4/20/2018 **Results Requested By:** 5/7/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Indianapolis 7726 Moller Road Indianapolis, IN 46268 Phone (317)228-3100

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Chromium III	Chromium VI	Total Cr by 6020	LAB USE ONLY
1	FL-TT-08 (1-7 WM)	PS	4/20/2018 14:30	10428176001	Solid	1	X	X	X	50195169
2										
3										
4										
5										

Transfers	Released By	Date/Time	Received By	Date/Time
1	fedex	4/23/18 1710	fedex	
2	fedex	4-24-18 0825	Jason Hilliff	4-24-18 0825
3				

Comments

Cooler Temperature on Receipt 3.9 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50195169

Date/Time and Initials of person examining contents: JH 4-24-18 1232

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace [ ] Other _____

Tracking #: 7476 9832 2803

Custody Seal on Cooler/Box Present: [X] Yes [ ] No Seals Intact: [X] Yes [ ] No

Packing Material: [X] Bubble Wrap [X] Bubble Bags [ ] None [ ] Other _____

Thermometer: 1 2 3 4 5 6 A (B) C D E F Ice Type: [X] Wet [ ] Blue [ ] None | Samples collected today and on ice: [ ] Yes [ ] No [X] N/A

Cooler Temperature: 3.9/3.9 Ice Visible in Sample Containers?: [ ] Yes [X] No [ ] N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: [ ] Yes [ ] No [X] N/A

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		X	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			X
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		X				
Chain of Custody Present:	X		Dissolved Metals field filtered?:			X
Chain of Custody Filled Out:	X					
Short Hold Time Analysis (<72hr)?: Analysis:		X	Headspace Wisconsin Sulfide			X
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			X
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			X
Rush TAT Requested:		X	Headspace in VOA Vials (>6mm):			X
Containers Intact?:	X		Trip Blank Present?:		X	
Sample Labels Match COC?: Except TCs, which only require sample ID	X		Trip Blank Custody Seals?:		X	

Comments:

Sample Container Count

WO#: 50195169

50195169

CLIENT: Pace MN

COC PAGE ____ of ____

COC ID# _____

Project # 50195169

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	SBS DI Bulk Kit R				Matrix SW/WW (Soil/Water/I Aqueous Liq	pH <2	pH >9	pH>12
1							1														SL			
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved amber vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved clear vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGAU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic	BP3U	250mL unpreserved plastic
BP1N	1 liter HNO3 plastic	BP3Z	250mL NaOH, Zn Ac plastic
BP1S	1 liter H2SO4 plastic		
BP1U	1 liter unpreserved plastic	AF	Air Filter
BP1Z	1 liter NaOH, Zn, Ac	C	Air Cassettes
BP2A	500mL NaOH, Asc Acid plastic	R	Terra core kit
BP2N	500mL HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
BP2O	500mL NaOH plastic	U	Summa Can
BP2S	500mL H2SO4 plastic	ZPLC	Ziploc Bag
BP2U	500mL unpreserved plastic		
BP2Z	500mL NaOH, Zn Ac		
BP3B	250mL NaOH plastic		
BP3N	250mL HNO3 plastic		
BP3S	250mL H2SO4 plastic		

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

May 04, 2018

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: 18-00383 MPCA Freeway LF Solid - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/24/2018.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kari-Ann Killian For Jessica Esser

Project Manager

Certification List			Expires
ADEQ	Arkansas Department of Environmental Quality	17-065-0	09/26/2018
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2019
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2018
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2018
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2018
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2018
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2017-154	08/31/2018
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2018
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2018

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10428176
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL-TT-08 (1-7 WM) (10428176001)	A181703-01	Solid	04/20/2018	04/24/2018

CASE NARRATIVE

Sample Receipt Information:
One sample was received on April 24, 2018. Sample was received at 3.1 degrees Celsius. Sample was received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: 18-00383 MPCA Freeway LF Solid - MN
1700 Elm Street, Suite 200	Project Number: 10428176
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FL-TT-08 (1-7 WM) (10428176001)

A181703-01 (Solid)

Date Sampled
04/20/2018 14:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acid Herbicides by High Performance Liquid Chromatography					**Preparation Batch: A804197**			
2,4-D	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 01:22	EPA 8321B	
2,4-DB	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 06:23	EPA 8321B	
2,4,5-T	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 01:22	EPA 8321B	
2,4,5-TP	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 06:23	EPA 8321B	
Bentazon	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 01:22	EPA 8321B	
Dicamba	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 01:22	EPA 8321B	
MCPA	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 01:22	EPA 8321B	
Picloram	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 01:22	EPA 8321B	
Triclopyr	ND	0.10	mg/kg dry	1	04/26/2018	05/02/2018 01:22	EPA 8321B	
Surrogate: DCAA		*83.2 %*		*70.8-116*	*04/26/2018*	*05/02/2018 01:22*	*EPA 8321B*	
Classical Chemistry Parameters					**Preparation Batch: A804195**			
% Solids	**47.9**	0.00	% by Weight	1	04/25/2018	04/27/2018 09:07	SM 2540B	

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1700 Elm Street, Suite 200	Project Number: 10428176
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804197 - EPA 3570										
Blank (A804197-BLK1)				Prepared: 04/26/2018 Analyzed: 04/27/2018 01:46						
2,4-D	ND	0.10	mg/kg wet							
2,4-D [2C]	ND	0.10	mg/kg wet							
2,4-DB	ND	0.10	mg/kg wet							
2,4-DB [2C]	ND	0.10	mg/kg wet							
2,4,5-T	ND	0.10	mg/kg wet							
2,4,5-T [2C]	ND	0.10	mg/kg wet							
2,4,5-TP	ND	0.10	mg/kg wet							
2,4,5-TP [2C]	ND	0.10	mg/kg wet							
Bentazon	ND	0.10	mg/kg wet							
Bentazon [2C]	ND	0.10	mg/kg wet							
Dicamba	ND	0.10	mg/kg wet							
Dicamba [2C]	ND	0.10	mg/kg wet							
MCPA	ND	0.10	mg/kg wet							
MCPA [2C]	ND	0.10	mg/kg wet							
Picloram	ND	0.10	mg/kg wet							
Picloram [2C]	ND	0.10	mg/kg wet							
Triclopyr	ND	0.10	mg/kg wet							
Triclopyr [2C]	ND	0.10	mg/kg wet							
Surrogate: DCAA	*21.3*		*mg/kg wet*	*20.00*		*107*	*70.8-116*			
Surrogate: DCAA [2C]	*20.2*		*mg/kg wet*	*20.00*		*101*	*62.3-114*			
LCS (A804197-BS1)				Prepared: 04/26/2018 Analyzed: 04/26/2018 23:32						
2,4-D	1.91	0.10	mg/kg wet	2.000		95.3	81.6-107			
2,4-D [2C]	1.87	0.10	mg/kg wet	2.000		93.4	71.8-120			
2,4-DB	1.75	0.10	mg/kg wet	2.000		87.5	76.4-107			
2,4-DB [2C]	1.90	0.10	mg/kg wet	2.000		95.1	62.2-129			
2,4,5-T	1.94	0.10	mg/kg wet	2.000		97.1	81.2-110			
2,4,5-T [2C]	1.99	0.10	mg/kg wet	2.000		99.6	70.6-125			
2,4,5-TP	1.89	0.10	mg/kg wet	2.000		94.3	79.1-106			
2,4,5-TP [2C]	1.93	0.10	mg/kg wet	2.000		96.3	68.2-118			
Bentazon	1.03	0.10	mg/kg wet	1.000		103	82.5-119			
Bentazon [2C]	0.898	0.10	mg/kg wet	1.000		89.8	73.3-125			
Dicamba	2.00	0.10	mg/kg wet	2.000		99.9	85.1-108			
Dicamba [2C]	2.03	0.10	mg/kg wet	2.000		101	71.4-115			
Picloram	0.993	0.10	mg/kg wet	1.000		99.3	86.1-106			
Picloram [2C]	0.891	0.10	mg/kg wet	1.000		89.1	74.5-114			
Triclopyr	1.84	0.10	mg/kg wet	2.000		91.8	78.6-106			
Triclopyr [2C]	1.90	0.10	mg/kg wet	2.000		95.1	69.4-118			
Surrogate: DCAA	*20.6*		*mg/kg wet*	*20.00*		*103*	*70.8-116*			
Surrogate: DCAA [2C]	*19.8*		*mg/kg wet*	*20.00*		*98.8*	*62.3-114*			
LCS (A804197-BS2)				Prepared: 04/26/2018 Analyzed: 04/27/2018 00:39						
MCPA	2.14	0.10	mg/kg wet	2.000		107	79.4-116			
MCPA [2C]	2.26	0.10	mg/kg wet	2.000		113	77-123			

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1700 Elm Street, Suite 200	Project Number: 10428176
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804197 - EPA 3570										
LCS (A804197-BS2)				Prepared: 04/26/2018 Analyzed: 04/27/2018 00:39						
Surrogate: DCAA	*21.0*		*mg/kg wet*	*20.00*		*105*	*70.8-116*			
Surrogate: DCAA [2C]	*22.4*		*mg/kg wet*	*20.00*		*112*	*62.3-114*			
Matrix Spike (A804197-MS1)	**Source: A181702-02**			Prepared: 04/26/2018 Analyzed: 05/01/2018 17:33						
2,4-D	2.39	0.10	mg/kg dry	2.682	ND	89.2	71.4-105			
2,4-D [2C]	2.16	0.10	mg/kg dry	2.682	0.0340	79.1	50.5-123			
2,4-DB	2.20	0.10	mg/kg dry	2.682	ND	82.2	46.4-117			
2,4-DB [2C]	2.12	0.10	mg/kg dry	2.682	0.0486	77.3	44.5-121			
2,4,5-T	2.46	0.10	mg/kg dry	2.682	0.0528	89.8	66.2-110			
2,4,5-T [2C]	2.28	0.10	mg/kg dry	2.682	ND	85.0	43.6-126			
2,4,5-TP	2.37	0.10	mg/kg dry	2.682	ND	88.5	52.4-114			
2,4,5-TP [2C]	2.21	0.10	mg/kg dry	2.682	0.0443	80.7	47.6-117			
Bentazon	1.25	0.10	mg/kg dry	1.341	0.0694	88.0	61.5-117			
Bentazon [2C]	0.896	0.10	mg/kg dry	1.341	0.0365	64.1	50.7-127			
Dicamba	2.06	0.10	mg/kg dry	2.682	ND	76.6	48.4-111			
Dicamba [2C]	1.95	0.10	mg/kg dry	2.682	0.0300	71.6	43.3-108			
Picloram	0.852	0.10	mg/kg dry	1.341	ND	63.5	26.7-110			
Picloram [2C]	0.565	0.10	mg/kg dry	1.341	0.00941	41.4	10.8-110			
Triclopyr	2.34	0.10	mg/kg dry	2.682	ND	87.2	56-113			
Triclopyr [2C]	2.29	0.10	mg/kg dry	2.682	0.0413	83.7	47.9-120			
Surrogate: DCAA	*25.5*		*mg/kg dry*	*26.82*		*95.0*	*70.8-116*			
Surrogate: DCAA [2C]	*21.9*		*mg/kg dry*	*26.82*		*81.8*	*62.3-114*			
Matrix Spike (A804197-MS2)	**Source: A181702-02**			Prepared: 04/26/2018 Analyzed: 05/01/2018 19:47						
MCPA	2.69	0.10	mg/kg dry	2.682	ND	100	74.2-114			
MCPA [2C]	2.57	0.10	mg/kg dry	2.682	0.0400	94.5	60.9-122			
Surrogate: DCAA	*26.5*		*mg/kg dry*	*26.82*		*98.8*	*70.8-116*			
Surrogate: DCAA [2C]	*26.3*		*mg/kg dry*	*26.82*		*98.2*	*62.3-114*			
Matrix Spike Dup (A804197-MSD1)	**Source: A181702-02**			Prepared: 04/26/2018 Analyzed: 05/01/2018 18:40						
2,4-D	2.40	0.10	mg/kg dry	2.682	ND	89.3	71.4-105	0.174	20	
2,4-D [2C]	2.16	0.10	mg/kg dry	2.682	0.0340	79.1	50.5-123	0.0217	20	
2,4-DB	2.19	0.10	mg/kg dry	2.682	ND	81.5	46.4-117	0.805	20	
2,4-DB [2C]	2.14	0.10	mg/kg dry	2.682	0.0486	78.0	44.5-121	0.882	20	
2,4,5-T	2.44	0.10	mg/kg dry	2.682	0.0528	89.0	66.2-110	0.921	20	
2,4,5-T [2C]	2.28	0.10	mg/kg dry	2.682	ND	85.1	43.6-126	0.192	20	
2,4,5-TP	2.40	0.10	mg/kg dry	2.682	ND	89.4	52.4-114	1.02	20	
2,4,5-TP [2C]	2.17	0.10	mg/kg dry	2.682	0.0443	79.3	47.6-117	1.71	20	
Bentazon	1.39	0.10	mg/kg dry	1.341	0.0694	98.4	61.5-117	10.6	20	
Bentazon [2C]	1.03	0.10	mg/kg dry	1.341	0.0365	74.2	50.7-127	14.1	20	
Dicamba	2.18	0.10	mg/kg dry	2.682	ND	81.4	48.4-111	6.02	20	
Dicamba [2C]	2.12	0.10	mg/kg dry	2.682	0.0300	77.9	43.3-108	8.30	20	
Picloram	0.927	0.10	mg/kg dry	1.341	ND	69.1	26.7-110	8.41	20	
Picloram [2C]	0.611	0.10	mg/kg dry	1.341	0.00941	44.9	10.8-110	7.94	20	

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1700 Elm Street, Suite 200	Project Number: 10428176
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by High Performance Liquid Chromatography - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804197 - EPA 3570										
Matrix Spike Dup (A804197-MSD1)	**Source: A181702-02**			Prepared: 04/26/2018 Analyzed: 05/01/2018 18:40						
Triclopyr	2.32	0.10	mg/kg dry	2.682	ND	86.3	56-113	1.05	20	
Triclopyr [2C]	2.16	0.10	mg/kg dry	2.682	0.0413	78.9	47.9-120	5.78	20	
Surrogate: DCAA	*26.2*		*mg/kg dry*	*26.82*		*97.8*	*70.8-116*			
Surrogate: DCAA [2C]	*23.6*		*mg/kg dry*	*26.82*		*88.1*	*62.3-114*			
Matrix Spike Dup (A804197-MSD2)	**Source: A181702-02**			Prepared: 04/26/2018 Analyzed: 05/01/2018 20:54						
MCPA	2.68	0.10	mg/kg dry	2.682	ND	99.8	74.2-114	0.430	20	
MCPA [2C]	2.53	0.10	mg/kg dry	2.682	0.0400	92.7	60.9-122	1.83	20	
Surrogate: DCAA	*25.9*		*mg/kg dry*	*26.82*		*96.7*	*70.8-116*			
Surrogate: DCAA [2C]	*26.3*		*mg/kg dry*	*26.82*		*98.0*	*62.3-114*			

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1700 Elm Street, Suite 200	Project Number: 10428176
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Classical Chemistry Parameters - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A804195 - % Solids										
Duplicate (A804195-DUP1)		**Source: A181708-01**		Prepared: 04/25/2018 Analyzed: 04/27/2018 09:07						
% Solids	79.2	0.00	% by Weight		79.6			0.516	20	

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1700 Elm Street, Suite 200	Project Number: 10428176
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A181703

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Workorder: 10428176 Workorder Name: 18-00383 MPCA Freeway LF Solid Owner Received Date: 4/20/2018 Results Requested By: 5/7/2018

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	MDA List II	LAB USE ONLY
1	FL-TT-08 (1-7 WM)	PS	4/20/2018 14:30	10428176001	Solid	1	X	01
2								
3								
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	Amy Hurd Doet	4/23/18 1645	Kari A Kjelland	4/24/18
2				0924
3				

Comments

Cooler Temperature on Receipt 3.1 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

1601423274 Exp 7/12/18

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Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Brad Jacobson
PACE Minnesota Field
1700 Elm Street
Minneapolis MN 55414

REPORT OF LABORATORY ANALYSIS FOR TCDD

Report Information:

Pace Project #: 10428177
Sample Receipt Date: 04/20/2018
Client Project #: 18-00383
Client Sub PO #: N/A
State Cert #: 027-053-137

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 2,3,7,8-TCDD Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

May 07, 2018

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
May 7, 2018

Report of Laboratory Analysis

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The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analysis performed on one sample submitted by a representative of Pace Analytical Services, Inc. The sample was analyzed for the presence or absence of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. The sample was received above the recommended temperature range of 0-6 degrees Celsius.

The isotopically-labeled TCDD internal standard in the sample extract was recovered at 56%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native TCDD was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that 2,3,7,8-TCDD was not detected, indicating that the sample processing steps were free of background levels of this congener.

A laboratory spike sample was also prepared using clean reference matrix that had been fortified with native standard material. The results show that the spiked native TCDD was recovered at 118%. This result was within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

WO#: 10428177

10428177

dy Form

Work Order Number:	COC Type:	Page: 1 of 1
Turnaround Time:	COC ID:	

CLIENT INFO

Facility Code:	MNSW-057/MPCA Freeway LF
Program Code (MDH Lab Only):	
Project Name:	MPCA Freeway LF Solids
Project Task Code:	
Project Manager:	
Potential Hazard?	If yes, add information to Sampler Comments Section

LABORATORY

Lab Name:

Address: 18-00383

EPIC Profile # 38716

Phone No:

FOR LAB USE ONLY

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: See attached for solids/dioxin Incld. Dioxin						Lab Sample No.	#
FL-TT-08 (1-3 WIM)	S	4/20/18		1	7	C	SD				13		X						001	1
																				2
																				3
																				4
																				5
																				6
																				7
																				8
																				9
																				10

JAK 4/20/18

Sampled By: Jack Kokkinen / Zack Eckstrom

Sampler's Signature:

Phone #: 612-437-5655

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler)	4/20/18 1730	Face	4/20/18 1730

T=6.5°C

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: WO#: 10428177
PM: SCU Due Date: 05/07/18
CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other:_____ **Temp Blank?** ☐ Yes ☑ No

Thermometer Used: ☐ 151401163 ☑ G87A9155100842 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 6.5 **Cooler Temp Corrected (°C):** 6.5 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** True **Date and Initials of Person Examining Contents:** HE 4-20-18

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☑ Yes	☐ No		1.
Chain of Custody Filled Out?	☑ Yes	☐ No		2.
Chain of Custody Relinquished?	☑ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		6.
Rush Turn Around Time Requested?	☐ Yes	☑ No		7.
Sufficient Volume?	☑ Yes	☐ No		8.
Correct Containers Used?	☑ Yes	☐ No		9.
-Pace Containers Used?	☑ Yes	☐ No		
Containers Intact?	☑ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No		12. No time on CoC or Sample
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☑ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	~~☑ No~~	☐ N/A	15.
Trip Blank Custody Seals Present?	~~☐ Yes~~	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased): ~~0318-10-3~~ ME 4/20/18				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: Received during cool down phase.

Project Manager Review: Sara C. Mays Date: 04/24/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

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Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

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Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
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Method 8290 Sample Analysis Results

Client - PACE Minnesota Field

Client's Sample ID	FL-TT-08 (1-7WM)		
Lab Sample ID	10428177001		
Filename	U180507A_07		
Injected By	BAL		
Total Amount Extracted	18.8 g	Matrix	Solid
% Moisture	64.0	Dilution	NA
Dry Weight Extracted	6.77 g	Collected	04/20/2018 00:01
ICAL ID	U180405	Received	04/20/2018 17:30
CCal Filename(s)	U180506B_16 & U180507A_16	Extracted	04/26/2018 14:55
Method Blank ID	BLANK-61977	Analyzed	05/07/2018 02:32

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD	1.5	-----	1.0	2,3,7,8-TCDD-13C	2.00	56
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	59

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range
E = Exceeds calibration range

REPORT OF LABORATORY ANALYSIS

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Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-61977	Matrix	Solid
Filename	U180507A_03	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	04/26/2018 14:55
ICAL ID	U180405	Analyzed	05/06/2018 23:21
CCal Filename(s)	U180506B_16 & U180507A_16	Injected By	BAL

Native Isomers	**Conc** ng/Kg	**EMPC** ng/Kg	**RL** ng/Kg	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	ND	-----	1.0	2,3,7,8-TCDD-13C	2.00	48
				Recovery Standard 1,2,3,4-TCDD-13C	2.00	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	55

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
R = Recovery outside target range

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-61978		
Filename	U180503B_02	Matrix	Solid
Total Amount Extracted	10.4 g	Dilution	NA
ICAL ID	U180405	Extracted	04/26/2018 14:55
CCal Filename(s)	U180503A_13 & U180503B_16	Analyzed	05/03/2018 17:02
Method Blank ID	BLANK-61977	Injected By	SMT

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDD	0.20	0.24	118	2,3,7,8-TCDD-13C	2.0	58
				Recovery Standard 1,2,3,4-TCDD-13C	2.0	NA
				Cleanup Standard 2,3,7,8-TCDD-37Cl4	0.20	60

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

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