TO: Whom It May Concern

FROM: Diane Desotelle, St. Louis River Area of Concern Coordinator
Susan Johnson, Superfund Project Leader

RE: MPCA Disclaimer for this Report – Sediment Assessment Report, Upper St. Louis River - by Weston Solutions, Inc., July 2012

DATE: April 12, 2013

The study for this report was funded by the United States Environmental Protection Agency (U.S. EPA) Great Lakes National Program Office (GLNPO) as part of the sediment investigation work in the St. Louis River.

The values and analysis presented in the report is considered preliminary as the MPCA is aware of some data discrepancies. Since the date of this report, the calculated values and analysis have been modified as part of the MPCA data interpretation effort. In particular, calculated values and summations have been modified to reflect appropriate treatment of non-detect values. The outcome of this report in addition to MPCA's modifications will be included as part of the sediment database for the St. Louis River Area of Concern. Any mention of trade names or commercial products does not constitute endorsement or recommendation for use by the MPCA.

SEDIMENT ASSESSMENT REPORT
UPPER ST. LOUIS RIVER – ST. LOUIS RIVER AOC
CLOQUET, CARLTON AND ST. LOUIS COUNTY, MINNESOTA

Prepared for

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ACRONYMS AND ABBREVIATIONS

µg/kg	microgram per kilogram
Affiliated	Affiliated Researchers
AOC	Area of Concern
bss	Below sediment surface
BUI	Beneficial Use Impairment
CAS	Columbia Analytical Services, Inc.
CLP	U.S. EPA Contract Laboratory Program
cm	Centimeter
COPC	Contaminants of Potential Concern
DO	Dissolved Oxygen
DRO	Diesel Range Organic
EXES	Electronic Data Exchange and Evaluation System
GLLA	Great Lakes Legacy Act
GLNPO	Great Lakes National Program Office
m	meter
MA	Modified Analysis
mg/kg	milligram per kilogram
MPCA	Minnesota Pollution Control Agency
NFG	National Functional Guideline
ng/kg	nanogram per kilogram
OEPA	Ohio Environmental Protection Agency
ORO	Oil Range Organic
ORP	Oxidation Reduction Potential
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated biphenyl
PCDD	Polychlorinated Dibenzo-p-dioxin
PDCF	Polychlorinated Dibenzofuran
QAPP	Quality Assurance Project Plan
QHEI	Qualitative Habitat Evaluation Index
RAP	Remedial Action Plan
RPD	Relative Percent Difference
Shaw	Shaw Environmental and Infrastructure, Inc.
SLRCAC	St. Louis River Citizens Action Committee
SQT	Sediment Quality Target
START	Superfund Technical Assistance and Response Team
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
TCL	Target Compound List
TDD	Technical Directive Document
TEC	Toxicity Equivalence Concentration
TEF	Toxicity Equivalence Factor
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbon
U.S. EPA	United States Environmental Protection Agency
VSP	Visual Sample Plan
WDNR	Wisconsin Department of Natural Resources
WESTON	Weston Solutions, Inc.

EXECUTIVE SUMMARY

Weston Solutions, Inc. (WESTON®) has prepared this Sediment Assessment Report to summarize site characterization activities conducted for the Upper St. Louis River project area in Cloquet, Carlton and St. Louis County, Minnesota. WESTON prepared the Sediment Assessment Report in response to a request from the United States Environmental Protection Agency (U.S. EPA) Great Lakes National Program Office (GLNPO) under the Superfund Technical Assessment and Response Team (START) III contract EP-S5-06-04, Technical Directive Document (TDD) No. S05-0008-1103-010. This site characterization was conducted as part of the St. Louis River Area of Concern (AOC) Great Lakes Legacy Act (GLLA) project. The objectives of this site characterization were as follows:

- Formulate a statistically acceptable sampling design for the Site that focuses on areas of soft sediment deposition and likely contamination.
- Generate characterization of chemical data on the contaminated sediments in the investigation Focus Area as a basis for identifying possible areas of focus for further evaluation and/or remediation at the Site.
- Conduct a preliminary habitat assessment to determine habitat quality and identify Focus Areas where habitat can be created or improved.
- Summarize data in a final report that will allow the U.S. EPA GLNPO and stakeholders to compare data from the Site to other data collected within the St. Louis River in order to make decisions on the future course of remedial work within the St. Louis River AOC.

The data collection activities were conducted in accordance with WESTON's approved Quality Assurance Project Plan (QAPP) dated July 2011.

A total of 112 sediment samples (99 investigative, 6 field split, and 7 duplicate) were collected from 50 sampling locations within the Upper St. Louis River. Where sediment recovery was adequate, samples typically were collected from the following sampling intervals: 0 to 6 inches, 6 to 24 inches, and 24 to 48 inches below sediment surface (bss). If less than 12 inches of sediment was encountered in the bottom interval, it was included with the previous interval. If more than 12 inches of sediment was encountered in the bottom interval, it was considered a new interval. The surface interval, 0 to 6 inches, was collected using a ponar to ensure that the required sample volumes were obtained. Sediment cores were typically completed with the

Affiliated Researchers (Affiliated) pontoon vibracoring system through the sediment depth to refusal or until native material was encountered. In shallower areas that were inaccessible with the Affiliated pontoon, sediment samples were collected with a ponar or hand-driven Lexan tubes. All sediment samples were analyzed for the following contaminants of potential concern (COPC): Target Analyte List (TAL) metals, polychlorinated biphenyls (PCB) (Aroclors), Target Compound List (TCL) semivolatile organic compounds (SVOC)—including polycyclic aromatic hydrocarbons (PAH) 17 list, and total petroleum hydrocarbons (TPH) as diesel-range organics (DRO) corresponding to an alkaline range of C_{10} through C_{28}, and oil range organics (ORO) corresponding to an alkaline range of C_{28} through C_{36}. In addition, approximately 10% of all sediment samples collected were analyzed for TCL pesticides and dioxin/furan. Because of industrial operations in Cloquet, samples collected from all sampling depth intervals collected downstream of Cloquet were analyzed for dioxin/furan. All sediment samples also were analyzed for physical properties, including total organic carbon (TOC) and grain size.

The sampling analytical results for PAHs, TAL metals, PCB Aroclors, TCL pesticides, and dioxin/furans were compared to the Level I and Level II Sediment Quality Targets (SQTs) as set forth in the document "Development of a Framework for Evaluating Numerical Sediment Quality Targets and Sediment Contamination in the St. Louis River Area of Concern" (D.D. MacDonald et al., 2000). The Level I SQTs identify chemical concentrations that will provide a high level of protection for designated water uses in the St. Louis River AOC, specifically for aquatic life. By comparison, a lower level of protection for designated water uses in the St. Louis River AOC will be provided by the Level II SQTs. The sample results for TCL SVOCs (except the PAHs), TPH DRO, TPH ORO, TOC, and grain size are tabulated but are not compared to any numerical screening criteria.

The paragraphs below summarize the comparison of the analytical data to the Level I and Level II SQTs when available for TCL SVOCs, TAL Metals, PCBs, TCL Pesticides, and dioxin/furan.

SVOCs

For Focus Area 1, 2-Methylnaphthalene was detected at a concentration of 41 micrograms per kilogram (µg/kg) exceeding the Level I SQT of 20 µg/kg at sampling location USR11-45 at a

depth of 24 to 39 inches bss. However, total PAH 17 concentrations did not exceed the Level I or Level II SQTs.

For Focus Area 2, the calculated Total PAH 17 concentration exceeded the Level I SQT in five sediment samples but total PAH 17 concentrations did not exceed the Level II SQT. Individual PAH concentrations were detected at concentrations exceeding Level I SQTs in sediment samples collected from USR11-23, USR11-24, and USR11-38. Individual PAH concentrations were detected at concentrations exceeding Level II SQTs in two sediment samples (USR11-23-016 and USR11-34-040). Elevated PAH concentrations were detected throughout Focus Area 2 at all depth intervals. The highest Total PAH concentration, 20,922 µg/kg, was detected at sampling location USR11-23 at a depth of 0 to 16 inches bss.

TAL METALS

For Focus Area 1, nickel was the only metal detected at concentrations exceeding the SQTs. Nickel concentrations exceeded the Level I SQT in three sediment samples (USR11-02-022, USR11-12-040, and USR11-13-006); however, nickel concentrations did not exceed the Level II SQT.

For Focus Area 2, cadmium, copper, lead, mercury, nickel, and zinc were detected at concentrations exceeding the SQTs. At least one metal was detected at a concentration exceeding Level I SQTs in 16 sediment samples. Mercury was detected at a concentration exceeding the Level II SQT at sampling location USR11-41 at a depth of 0 to 16 inches bss and zinc was detected at a concentration exceeding the Level II SQT at sampling location USR11-27 at a depth of 6 to 20 inches bss. Elevated metals concentrations were detected throughout Focus Area 2 at all depth intervals.

PCBs

For Focus Area 1, Total PCB concentrations exceeded the Level I SQT of 60 µg/kg at sampling location USR11-45 at a depth of 24 to 39 inches bss and sampling location USR11-46 at a depth of 0 to 6 inches bss. Both of these locations are downstream of Cloquet and Focus Area 2. Total PCB concentrations did not exceed the Level II SQT. For Focus Area 2, Total PCB concentrations exceeded the Level I SQT at six sampling locations, USR11-23, USR11-27,

USR11-34, USR11-36, USR11-40, and USR11-43. Total PCB concentrations did not exceed the Level II SQT. The highest Total PCB concentration, 580 µg/kg, was detected at sampling location USR11-23 at a depth of 0 to 16 inches bss.

TCL Pesticides

Pesticides were not detected at concentrations exceeding SQTs at Focus Area 1. For Focus Area 2, 4'DDD, 4,4'DDE, 4,4'-DDT, and heptachlor epoxide were detected at concentrations exceeding their respective Level I and Level II SQTs at sampling location USR11-44 at a depth of 0 to 6 inches bss. Endrin was also detected at a concentration exceeding the Level I SQT in this sample. 4,4'-DDT was also detected at a concentration exceeding the Level I SQT at sampling location USR11-23.

Dioxin/Furan

For Focus Area 1, the calculated dioxin equivalent concentrations exceeded the Level I SQT of 0.85 nanograms per kilogram (ng/kg) at sampling locations USR11-45, USR11-46, and USR11-49. All three of these locations are downstream of Cloquet and Focus Area 2. Sampling location USR11-49 is located downstream of the Thomson, Forbay, and Fond du Lac reservoirs.

For Focus Area 2, dioxin equivalent concentrations exceeded the Level I SQT of 0.85 ng/kg in 28 sediment samples. Dioxin equivalent concentrations exceeded the Level II SQT at sampling locations USR11-23, USR11-32, USR11-41, and USR11-44. Elevated dioxin equivalent concentrations were detected throughout Focus Area 2 at all depth intervals.

1. INTRODUCTION

Weston Solutions, Inc. (WESTON®) has prepared this Sediment Assessment Report to summarize site characterization activities conducted for the Upper St. Louis River project area in Cloquet, Carlton and St. Louis County, Minnesota (**Figure 1-1**). WESTON prepared the Sediment Assessment Report in response to a request from the United States Environmental Protection Agency (U.S. EPA) Great Lakes National Program Office (GLNPO) under the Superfund Technical Assessment and Response Team (START) III contract EP-S5-06-04, Technical Directive Document (TDD) No. S05-0008-1103-010. The site characterization activities were conducted as part of the St. Louis River Area of Concern (AOC) Great Lakes Legacy Act (GLLA) project. The objective of this site characterization was to collect geophysical and chemical samples needed to support project area assessment and potential remediation activities. The data collection activities were conducted in accordance with WESTON's approved Quality Assurance Project Plan (QAPP) dated July 2011.

The sections below discuss the report organization, site description, site history, the purpose of the study and project objectives, and contaminants of potential concern (COPC) and target analytes.

1.1 REPORT ORGANIZATION

The Sediment Assessment Report is organized as follows and addresses the following:

- Section 1 – Introduction
- Section 2 – Site Characterization Activities
- Section 3 – Sample Analytical Results
- Section 4 – Preliminary Habitat Assessment
- Section 5 – Data Completeness
- Section 6 – Summary

Tables and figures are included after Section 6. Photographs of sampling activities are included in **Appendix A**, sediment observations for each sediment core are included in **Appendix B**, and the preliminary habitat assessment field sheets are included in **Appendix C**.

1.2 SITE DESCRIPTION

The Upper St. Louis River is located in the St. Louis River AOC from the western edge of the AOC to the end of the Fond du Lac Reservoir (**Figure 1-1**). The project area for the Upper St. Louis River has been segregated into two Focus Areas (**Figure 1-2**). Focus Area 1 consists strictly of river investigation, while Focus Area 2 consists of river and reservoir investigation. River conditions for Focus Area 1 include Class I-VI rapids, with some Focus Areas of slower moving waters, while river and reservoir conditions for Focus Area 2 include slower moving waters. Specifically, the Upper St. Louis River project area was segregated into the following focus areas:

- Focus Area 1
  - River from west of inlet of Knife Falls Reservoir (River Mile 36.5) upstream to River Mile 44
  - River from Highway 61 bridge (River Mile 32.6) downstream to inlet of Thomson Reservoir (River Mile 30)
  - River from outlet of Thomson Reservoir (River Mile 29) downstream to inlet of Fond du Lac Reservoir (River Mile 23.9)
- Focus Area 2
  - River from River Mile 36.5 downstream to the Highway 61 Bridge (River Mile 32.6). The Knife Falls, Cloquet, and Scanlon Reservoirs are included in this Focus Area

The land surrounding the project area is mostly rural and residential with a few industrial sites. The project area includes a portion of the river that runs through Cloquet, Minnesota, alongside a paper mill and railroad. The focus of interest for this sediment assessment project is the river that runs from the western end of the AOC through Cloquet before it reaches the reservoirs. The Thomson, Forbay, and Fond du Lac reservoirs were sampled in 1993. Because of logistical issues and budget considerations, the Thomson, Forbay, and Fond du Lac reservoirs were not sampled as part of this sediment assessment. The reservoirs may be reassessed as a depositional Focus Area for contaminated sediments in future phases of the project.

1.3 SITE HISTORY

The St. Louis River, the largest U.S. tributary to Lake Superior, drains 3,634 square miles, entering the southwestern corner of the lake between Duluth, Minnesota, and Superior,

Wisconsin (U.S. EPA, 2011). It begins near Hoyt Lakes, Minnesota, and flows southwesterly for 179 miles before taking on the characteristics of a 12,000-acre freshwater estuary near Lake Superior. Below Jay Cooke State Park, the river turns to the northeast, and flows between Duluth, Minnesota, and Superior, Wisconsin. The St. Louis River System AOC is being addressed by the St. Louis River System Remedial Action Plan (RAP). The RAP focuses primarily on the 39 miles of the St. Louis River below Cloquet, Minnesota.

In 2004, the St. Louis River Citizens Action Committee (SLRCAC) proposed restoration goals for many of the beneficial use impairments (BUIs) through a citizen process and submitted them to the Wisconsin Department of Natural Resources (WDNR) and the Minnesota Pollution Control Agency (MPCA). The agencies will review the proposed goals in light of environmental data and potential actions. The state agencies' review, revisions and clarifications, and adoption of the delisting targets are the next phase that needs to be accomplished. The targets will serve as the roadmap for actions to lead to delisting the AOC.

Contaminated sediments in the Upper St. Louis River project area are assumed to contribute to BUIs for the AOC. However, adequate historical sampling data for the Upper St. Louis River project area are not available to assess the impact of the contamination. According to the RAP, nine BUIs in the St. Louis River AOC require restoration. These BUIs included the following:

- Restrictions on fish and wildlife consumption
- Excessive loading of sediment and nutrients
- Degradation of fish and wildlife populations
- Beach closings
- Fish tumors or other deformities
- Degradation of aesthetics
- Degradation of benthos
- Restriction on dredging activities
- Loss of fish and wildlife habitat

In 2004, the SLRCAC identified the following goal as part of the AOC's delisting strategy: "clean up all 'hotspot'-contaminated sediment sites by 2020."

1.4 PURPOSE OF STUDY AND PROJECT OBJECTIVE

The purpose of the Upper St. Louis River site characterization activities was to locate focus areas of sediment deposition, define the nature and extent of chemical contaminants in these sediments, identify contaminated areas of focus for further evaluation, conduct a preliminary habitat assessment, delineate hotspots, identify any ongoing sources, and compare these data to data collected in St. Louis Bay and other historical data. The objectives of the site characterization activities were as follows:

- Formulate a statistically acceptable sampling design for the Site that focuses on areas of soft sediment deposition and likely contamination.
- Generate characterization of chemical data on the contaminated sediments in the investigation Focus Area as a basis for identifying possible areas of focus for further evaluation and/or remediation at the Site.
- Conduct a preliminary habitat assessment to determine habitat quality and identify Focus Areas where habitat can be created or improved.
- Summarize data in a final report that will allow the GLNPO and stakeholders to compare data from the Site to other data collected within the St. Louis River in order to make decisions on the future course of remedial work within the St. Louis River AOC.

1.5 COPCs AND TARGET ANALYTES

All sediment samples were analyzed for the following COPCs: Target Analyte List (TAL) metals, polychlorinated biphenyls (PCB) (Aroclors), Target Compound List (TCL) semivolatile organic compounds (SVOC)—including polycyclic aromatic hydrocarbons (PAH) 17 list, and total petroleum hydrocarbons (TPH) as diesel-range organics (DRO) corresponding to an alkaline range of C_{10} through C_{28}, and oil range organics (ORO) corresponding to an alkaline range of C_{28} through C_{36}. In addition, approximately 10% of all sediment samples collected were analyzed for TCL pesticides and dioxin/furan. Because of industrial operations in Cloquet, samples collected from all sampling depth intervals collected downstream of Cloquet were analyzed for dioxin/furan. All sediment samples also were analyzed for physical properties, including total organic carbon (TOC) and grain size.

2. SITE CHARACTERIZATION ACTIVITIES

Sediment characterization activities were conducted from July 19 through 24, 2011, and included sediment sample collection and sediment characterization as discussed below.

2.1 SEDIMENT SAMPLE COLLECTION

The sample collection procedures are detailed in WESTON's approved QAPP dated July 2011. The data collected during characterization activities will be used to (1) evaluate the locations of the most heavily contaminated sediments and (2) determine focus areas for further evaluation and/or remediation.

The Upper St. Louis River project area extends from the western edge of the AOC to the end of the Fond du Lac Reservoir (**Figure 1-1**). The approximate area of the Upper St. Louis River project is 934 acres (Focus Area 1 = 839 acres and Focus Area 2 = 95 acres). Most sediment sampling locations were selected using Visual Sample Plan (VSP) software with a sample design based on detecting "hotspots" (local areas of elevated concentrations). Focus Area 1 consisted of sampling locations USR11-01 through USR11-14 and USR11-45 through USR11-50. Focus Area 2 consisted of sampling locations USR11-15 through USR11-44. **Table 2-1** presents the sediment sample location coordinates for Focus Area 1 and Focus Area 2. **Figure 2-1** presents the sediment sampling locations for Focus Area 1 and Focus Area 2.

Sediment cores were typically completed with team subcontractor Affiliated Researchers' (Affiliated) pontoon vibracoring system through the sediment depth to refusal or until native material was encountered. In shallower areas that were inaccessible with the pontoon, sediment samples were collected with a ponar or hand-driven Lexan tubes. The maximum water depth encountered during sediment sampling was approximately 10 feet and the maximum sediment depth measured was 53 inches.

Where sediment recovery was adequate, samples typically were collected from the following sampling intervals: 0 to 6 inches, 6 to 24 inches, and 24 to 48 inches, and below sediment surface (bss). If less than 12 inches of sediment was encountered in the bottom interval, it was included

with the previous interval. If more than 12 inches of sediment was encountered in the bottom interval, it was considered a new interval. The surface interval, 0 to 6 inches, was collected using a ponar to ensure that the required sample volumes were obtained. Sediment collected from each sampling depth interval, noted above, was homogenized and an aliquot of each sediment sample was submitted for laboratory analysis.

A total of 48 sediment samples (43 investigative, 3 field split, and 2 duplicate samples) were collected from 20 locations within Focus Area 1. A total of 64 sediment samples (56 investigative, 3 field split, and 5 duplicate samples) were collected from 30 locations within Focus Area 2.

A U.S. EPA Contract Laboratory Program (CLP) laboratory analyzed the samples for TAL metals, PCB Aroclors, TCL pesticides, TCL SVOC, and dioxin/furan. A WESTON-procured laboratory, Columbia Analytical Services, Inc. (CAS) in Kelso, Washington, analyzed the samples for TOC, grain size, TPH DRO, and TPH ORO. A summary of the sample information and analyses for Focus Area 1 and Focus Area 2 are presented on **Table 2-2**. The results of the sediment sampling investigation are discussed in Section 3.

2.2 SEDIMENT CHARACTERISTICS

2.2.1 Focus Area 1

During site characterization activities, sediment from Focus Area 1 consisted mostly of brown medium-grained sand with trace silt and some organics. Brown silt was encountered in the areas of USR11-08 through USR11-11, USR11-13, USR11-49, and USR11-50 and brown/gray silty clay was encountered in the areas of USR11-02, USR11-03, and USR11-07. Wood chips were encountered in the area of USR11-08 and sheen was encountered in the area of USR11-45. Depth of sediment recovery at Focus Area 1 ranged from 6 to 51 inches. Additional detail regarding geologic profile, water depth, and sediment depth are included in the database deliverable.

2.2.2 Focus Area 2

During site characterization activities, sediment from Focus Area 2 consisted mostly of brown medium-grained sand with trace silt and some organics. Brown/gray silt with trace sands was encountered in the areas of USR11-22, USR11-25 through USR11-32, and USR11-38 through USR11-43. Depth of sediment recovery at Focus Area 2 ranged from 6 to 53 inches. Wood chips were encountered in the areas of USR11-16, USR11-17, USR11-19 through USR11-22, USR11-34, and USR11-41. Odor was encountered in the areas of USR11-23, USR11-27, USR11-34, and USR11-41. Additional detail regarding geologic profile, water depth, and sediment depth are included in the database deliverable.

3. SAMPLE ANALYTICAL RESULTS

This section summarizes analytical results for the site characterization samples collected from July 19 to 24, 2011. A total of 112 sediment samples (99 investigative, 6 field split, and 7 duplicate samples) were collected from 50 sampling locations within the Upper St. Louis River project area. The table below summarizes the analytical parameters for the samples collected:

Analysis	Sample Depth (inches bss)	Focus Area 1 No. Samples	Focus Area 2 No. Samples	Total Sediment Samples
TCL SVOCs	All depths	48	64	112
TAL Metals	All depths	48	64	112
PCB Aroclors	All depths	48	64	112
TCL Pesticides	0-6, 0-7, 0-16, 0-17	13	11	24
TPH DRO/ORO	All depths	48	64	112
Dioxin/Furans	All depths	18	40	58
Grain Size	All depths	44	61	105
TOC	All depths	48	64	112

The sampling analytical results for PAHs, TAL metals, PCB Aroclors, TCL pesticides, and dioxin/furans were compared to the Level I and Level II Sediment Quality Targets (SQTs) as set forth in the document “Development of a Framework for Evaluating Numerical Sediment Quality Targets and Sediment Contamination in the St. Louis River Area of Concern” (D.D. MacDonald et al., 2000). The Level I SQTs identify chemical concentrations that will provide a

high level of protection for designated water uses in the St. Louis River AOC, specifically for aquatic life. By comparison, a lower level of protection for designated water uses in the St. Louis River AOC will be provided by the Level II SQTs. The sample results for TCL SVOCs (except for PAHs), TPH DRO, TPH ORO, TOC, and grain size are tabulated but are not compared to any numerical screening criteria.

Tables 3-1a through **3-1c** summarize the analytical results by sediment depth interval. These tables include the number of samples analyzed per depth interval; the number of detected results; number and percent of non-detect results; maximum, minimum, and average detected concentrations; screening criteria; and the percent of sample exceeding the screening criteria. **Tables 3-2a** through **3-8a** present the analytical results for Focus Area 1 and **Tables 3-2b** through **3-8b** present the analytical results for Focus Area 2. **Figure 3-1** shows the locations where concentrations of COPCs exceeded SQTs for the entire Upper St. Louis River project area. The sections below compare the analytical data for Focus Areas 1 and 2 to the SQTs.

3.1 FOCUS AREA 1

A total of 48 sediment samples (43 investigative, 3 field split, and 2 duplicate samples) were collected from 20 locations within Focus Area 1 and consisted of sampling locations USR11-01 through USR11-14 and USR11-45 through USR11-50. **Table 3-1b** summarizes the analytical results by sediment depth interval. A comparison of the analytical data to the respective SQTs, when available, is discussed in the following sections per parameter group.

3.1.1 TCL SVOCs

A total of 48 sediment samples from Focus Area 1 were analyzed for TCL SVOC (including PAH 17 list). Twelve TCL SVOCs were detected in the sediment samples:

- 2-Methylphenol
- 4-Methylphenol
- Acetophenone
- Benzaldehyde
- Benzyl butyl phthalate
- Bis(2-ethylhexyl)phthalate
- Caprolactam
- Carbazole
- Diethyl phthalate
- Di-n-butylphthalate
- Di-n-octylphthalate
- Phenol

Thirteen PAHs were detected in the sediment samples:

- 1,2-Benzphenanthracene
- 2-Methylnaphthalene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Fluoranthene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

2-Methylnaphthalene was the only PAH detected at a concentration exceeding the respective Level I SQT. 2-Methylnaphthalene was detected at a concentration of 41 micrograms per kilogram (µg/kg) exceeding the Level I SQT of 20 µg/kg at sampling location USR11-45 at a depth of 24 to 39 inches bss. The calculated Total PAH 17 concentrations did not exceed the Level I or Level II SQTs for Focus Area 1.

The complete SVOC and PAH analytical results are presented on **Table 3-2a**. SQTs have not been developed for SVOCs other than the PAHs; thus, concentrations of the 12 detected SVOCs were not compared to a screening level. Detected concentrations of SVOCs are shown on **Figure 3-2**.

3.1.2 TAL Metals

A total of 48 sediment samples from Focus Area 1 were analyzed for TAL metals. Twenty-one TAL metals were detected in the sediment samples:

- Aluminum
- Antimony
- Arsenic
- Barium
- Beryllium
- Calcium
- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Magnesium
- Manganese
- Mercury
- Nickel
- Potassium
- Selenium
- Silver
- Sodium
- Vanadium
- Zinc

Nickel was the only metal detected at concentrations exceeding the Level I SQT. Nickel concentrations exceeded the Level I SQT in three sediment samples (USR11-02-022, USR11-12-040, and USR11-13-006); however, nickel concentrations did not exceed the Level II SQT.

SQTs are not available for aluminum, antimony, barium, beryllium, calcium, cobalt, iron, magnesium, manganese, potassium, selenium, silver, sodium, and vanadium. Thus, detected concentrations of these chemicals were not compared to screening levels. The complete TAL metals analytical results are presented on **Table 3-3a**. Sampling locations where TAL metal concentrations exceeded the SQTs are shown on **Figure 3-3**.

3.1.3 PCBs

A total of 48 sediment samples from Focus Area 1 were analyzed for PCB Aroclors. One PCB Aroclor (Aroclor-1254) was detected in the sediment samples. SQTs are not available for individual PCBs. A total PCB concentration was calculated for each of the 48 sediment samples analyzed for PCB Aroclors. Total PCBs for PCB Aroclors was calculated by summing the detections for each sample. Total PCB concentrations exceeded the Level I SQT of 60 µg/kg at USR11-45 at a depth of 24 to 39 inches bss and USR11-46 at a depth of 0 to 6 inches bss. Total PCB concentrations did not exceed the Level II SQT. The complete PCB Aroclor analytical results are presented on **Table 3-4a**. Sampling locations where Total PCB concentrations exceed the SQTs are shown on **Figure 3-4**.

3.1.4 TCL Pesticides

A total of 13 sediment samples from Focus Area 1 were analyzed for TCL pesticides. Endosulfan sulfate is the only pesticide detected in the sediment samples. Endosulfan sulfate was detected at a concentration of 12 µg/kg at sampling location USR11-09 at a depth of 0 to 6 inches bss. A SQT is not available for endosulfan sulfate. The complete TCL pesticides analytical results are presented on **Table 3-5a**. Sampling locations where samples were collected for TCL pesticide analysis are shown on **Figure 3-5**.

3.1.5 TPH

A total of 48 sediment samples from Focus Area 1 were analyzed for TPH DRO and TPH ORO. TPH DRO was detected in 25 sediment samples at concentrations ranging from 32 to 280 milligrams per kilogram (mg/kg). The highest concentration was detected in sediment sample USR11-45 at a depth of 24 to 39 inches bss. TPH ORO was detected in 42 sediment samples at

concentrations ranging from 42 to 750 mg/kg. The highest concentration was detected in sediment sample USR11-49 at a depth of 0 to 6 inches bss. Ranges of TPH DRO and TPH ORO concentrations and the highest detected values are presented on **Figures 3-6** and **3-7**, respectively. The complete TPH DRO and ORO analytical results are presented on **Table 3-6a**.

3.1.6 Dioxin/Furan

A total of 18 sediment samples from Focus Area 1 were analyzed for dioxin/furans. All 17 dioxin/furans were detected in the sediment samples. Dioxin equivalent concentrations were calculated for each of the 18 sediment samples. Based on the "Framework for Application of the Toxicity Equivalence Methodology for Polychlorinated Dioxins, Furans, and Biphenyls in Ecological Risk Assessment," the 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxicity equivalence concentration (TEC) is the primary expression of exposure to an organism. The dioxin equivalent concentration in a sample is estimated by multiplying the concentration of each dioxin/furan in the sample by its appropriate fish toxicity equivalence factor (TEF) and summing the equivalents. TEFs are numerical factors that express the toxicity of an individual polychlorinated dibenzo-p-dioxin (PCDD), dibenzofuran (PCDF), and PCB relative to the toxicity of TCDD, the highly toxic and best-studied among the 210 congeners. The calculated dioxin equivalent concentrations exceeded the Level I SQT of 0.85 nanograms per kilogram (ng/kg) at sampling location USR11-45, USR11-46, and USR11-49. The maximum dioxin equivalent concentration (20.84 ng/kg collected from USR11-45 at a depth of 24 to 39 inches bss) did not exceed the Level II SQT of 21.5 ng/kg.

The complete dioxin/furan analytical results are presented on **Table 3-7a**. Sampling locations where dioxin equivalent concentrations exceeded the SQTs are shown on **Figure 3-8**.

3.1.7 Physical Properties

From Focus Area 1, a total of 44 sediment samples were analyzed for grain size and a total of 48 sediment samples were analyzed for TOC. The analytical results are presented on **Table 3-8a**.

3.2 FOCUS AREA 2

A total of 64 sediment samples (56 investigative, 3 field split, and 5 duplicate samples) were collected from 30 locations within Focus Area 2 and consisted of sampling locations USR11-15 through USR11-44. **Table 3-1c** summarizes the analytical results by sediment depth interval. A comparison of the analytical data to the respective SQTs, when available, is discussed in the following sections per parameter group.

3.2.1 TCL SVOCs

A total of 64 sediment samples from Focus Area 2 were analyzed for TCL SVOC (including PAH 17 list). Thirteen TCL SVOCs were detected in the sediment samples:

- 2,4,6-Trichlorophenol
- 2-Methylphenol
- 4-Methylphenol
- Acetophenone
- Benzaldehyde
- Benzyl butyl phthalate
- Bis(2-ethylhexyl)phthalate
- Carbazole
- Dibenzofuran
- Dimethyl phthalate
- Di-n-butylphthalate
- Pentachlorophenol
- Phenol

Sixteen PAHs were detected in the sediment samples:

- 1,2-Benzphenanthracene
- 2-Methylnaphthalene
- Acenaphthene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Dibenzo(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

Total PAH 17 and several individual PAHs (1,2-benzphenanthracene [chrysene], 2-methylnaphthalene, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, dibenzo(a,h)anthracene, fluoranthene, fluorene, phenanthrene, and pyrene) were detected at concentrations that exceeded their respective Level I and/or Level II SQTs as summarized below:

Analyte	No. of Results	Level I Exceedances			Level II Exceedances			Maximum Detection	
		SQT (µg/kg)	No.	%	SQT (µg/kg)	No.	%	Result (µg/kg)	Sample ID
1,2-Benzphenanthracene	64	170	4	6.25	1,300	1	1.56	2,100	USR11-23-016
2-Methylnaphthalene	64	20	1	1.56	200	1	1.56	240	USR11-34-040
Acenaphthene	64	6.7	1	1.56	89	1	1.56	170	USR11-23-016
Anthracene	64	57	3	4.69	850	0	0	460	USR11-23-016
Benzo(a)anthracene	64	110	5	7.81	1,100	1	1.56	1,600	USR11-23-016
Benzo(a)pyrene	64	150	3	4.69	1,500	0	0	1,500	USR11-23-016
Dibenzo(a,h)anthracene	64	33	2	3.13	140	1	1.56	240	USR11-23-016
Fluoranthene	64	420	3	4.69	2,200	1	1.56	4,400	USR11-23-016
Fluorene	64	77	1	1.56	540	0	0	150	USR11-23-016
Phenanthrene	64	200	4	6.25	1,200	1	1.56	2,300	USR11-23-016
Pyrene	64	200	5	7.81	1,500	1	1.56	3,400	USR11-23-016
Total PAHs 17	64	1,600	5	7.81	23,000	0	0	20,922	USR11-23-016

Notes:
BOLD – Chemical detected at a concentration exceeding Level I and Level II SQTs in at least one sample
No. – Number
SQT – Sediment Quality Target
µg/kg – Microgram per kilogram

The complete PAH analytical results are presented on **Table 3-2b**. The calculated Total PAH 17 concentration exceeded the Level I SQT in five sediment samples but total PAH 17 concentrations did not exceed the Level II SQT. Individual PAH concentrations were detected at concentrations exceeding Level I SQTs in sediment samples collected from USR11-23, USR11-24, and USR11-38. Individual PAH concentrations were detected at concentrations exceeding Level II SQTs in two sediment samples (USR11-23-016 and USR11-34-040). Sampling locations where Total PAH 17 concentrations exceeded the SQTs are shown on **Figure 3-9**.

The complete TCL SVOC analytical results are presented on **Table 3-2b**. SQTs have not been developed for SVOCs other than PAHs; thus, concentrations of the 13 detected SVOCs were not compared to a screening level. Detected concentrations of SVOCs are shown on **Figure 3-10**.

3.2.2 TAL Metals

A total of 64 sediment samples from Focus Area 2 were analyzed for TAL metals. Twenty-two TAL metals were detected in the sediment samples:

- Aluminum
- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Calcium
- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Magnesium
- Manganese
- Mercury
- Nickel
- Potassium
- Selenium
- Silver
- Sodium
- Vanadium
- Zinc

Cadmium, copper, lead, mercury, nickel, and zinc were detected at concentrations that exceeded their respective Level I and/or Level II SQTs as summarized below:

Analyte	No. of Results	Level I Exceedances			Level II Exceedances			Maximum Detection	
		SQT (mg/kg)	No.	%	SQT (mg/kg)	No.	%	Result (mg/kg)	Sample ID
Cadmium	64	0.99	1	1.56	5	0	0	2.1	USR11-34-040
Copper	64	32	7	10.94	150	0	0	91.9	USR11-23-016
Lead	64	36	2	3.13	130	0	0	51.8	USR11-34-040
Mercury	64	0.18	10	15.63	1.1	1	1.56	1.4	USR11-41-016
Nickel	64	23	5	7.81	49	0	0	29.9	USR11-23-016
Zinc	64	120	6	9.38	460	1	1.56	585	USR11-27-020

Notes:
BOLD – Chemical detected at a concentration exceeding Level I and Level II SQTs in at least one sample
No. – Number
SQT – Sediment Quality Target
mg/kg – Milligram per kilogram

SQTs are not available for aluminum, antimony, barium, beryllium, calcium, cobalt, iron, magnesium, manganese, potassium, selenium, silver, sodium, and vanadium. Thus, detected concentrations of these chemicals were not compared to screening levels. The complete TAL metals analytical results are presented on **Table 3-3b**. At least one metal was detected at a concentration exceeding Level I SQTs in 16 sediment samples. Mercury was detected at a concentration exceeding the Level II SQT at sampling location USR11-41 at a depth of 0 to 16 inches bss. Zinc was detected at a concentration exceeding the Level II SQT at sampling location USR11-27 at a depth of 6 to 20 inches bss. Sampling locations where TAL metal concentrations exceeded the SQTs are shown on **Figure 3-11**.

3.2.3 PCBs

A total of 64 sediment samples from Focus Area 2 were analyzed for PCB Aroclors. Three PCB Aroclors—Aroclor-1248, Aroclor-1254, and Aroclor-1260—were detected in the sediment samples. SQTs are not available for individual PCBs.

A total PCB concentration was calculated for each of the 64 sediment samples analyzed for PCB Aroclors. Total PCBs for PCB Aroclors was calculated by summing the detections for each sample. Total PCB concentrations exceeded the Level I SQT in six samples as shown on **Figure 3-12**. Total PCB concentrations did not exceed the Level II SQT. The complete PCB Aroclors analytical results are presented on **Table 3-4b**.

3.2.4 TCL Pesticides

A total of 11 sediment samples from Focus Area 2 were analyzed for TCL pesticides. Nine TCL pesticides were detected in the sediment samples:

- 4,4'-DDD
- 4,4'-DDE
- 4,4'-DDT
- Delta-BHC
- Endosulfan Sulfate
- Endrin
- Endrin Aldehyde
- Endrin Ketone
- Heptachlor Epoxide

4,4'-DDD, 4,4'-DDE, 4,4-DDT, endrin, and heptachlor epoxide were detected at concentrations that exceeded their respective Level I and/or Level II SQTs as summarized below:

Analyte	No. of Results	Level I Exceedances			Level II Exceedances			Maximum Detection	
		SQT (µg/kg)	No.	%	SQT (µg/kg)	No.	%	Result (µg/kg)	Sample ID
4,4'-DDD	11	4.9	1	9.09	28	1	9.09	72	USR11-44-006
4,4'-DDE	11	3.2	1	9.09	31	1	9.09	64	USR11-44-006
4,4'-DDT	11	4.2	2	18.18	63	1	9.09	150	USR11-44-006
Endrin	11	2.2	1	9.09	210	0	0	10	USR11-44-006
Heptachlor epoxide	11	2.5	1	9.09	16	1	9.09	61	USR11-44-006

Notes:
BOLD – Chemical detected at a concentration exceeding Level I and Level II SQTs in at least one sample
SQT – Sediment Quality Target
µg/kg – Microgram per kilogram

SQTs are not available for delta-BHC, endosulfan sulfate, endrin aldehyde, and endrin ketone. Thus, detected concentrations of these chemicals were not compared to screening levels. The complete TCL pesticides analytical results are presented on **Table 3-5b**. 4,4'DDD, 4,4'DDE, 4,4'-DDT, and heptachlor epoxide were detected at concentrations exceeding their respective Level I and Level II SQTs at sampling location USR11-44 at a depth of 0 to 6 inches bss. Endrin was also detected at a concentration exceeding the Level I SQT in this sample. 4,4'-DDT was also detected at a concentration exceeding the Level I SQT at sampling location USR11-23. Sampling locations where TCL pesticide concentrations exceeded the SQTs are shown on **Figure 3-13**.

3.2.5 TPH

A total of 64 sediment samples from Focus Area 2 were analyzed for TPH DRO and TPH ORO. TPH DRO was detected in 51 sediment samples at concentrations ranging from 43 to 5,100 mg/kg. TPH ORO was detected in 62 sediment samples at concentrations ranging from 38 to 9,100 mg/kg. The highest TPH DRO and ORO concentrations were detected at sampling location USR11-34 at a depth of 24 to 40 inches bss. Ranges of TPH DRO and TPH ORO concentrations and the highest detected values are presented on **Figures 3-14** and **3-15**, respectively. The complete TPH DRO and ORO analytical results are presented on **Table 3-6b**.

3.2.6 Dioxin/Furan

Dioxin/furan analysis was conducted on a total of 40 sediment samples from Focus Area 2. All 17 dioxin/furans were detected in the sediment samples. Dioxin equivalent concentrations were calculated for each of the 40 sediment samples as described in Section 3.1.6.

The complete dioxin/furan analytical results are presented on **Table 3-7b**. Dioxin equivalent concentrations exceeded the Level I SQT of 0.85 ng/kg in 28 sediment samples. Dioxin equivalent concentrations exceeded the Level II SQT at sampling locations USR11-23, USR11-32, USR11-41, and USR11-44. Sampling locations where dioxin equivalent concentrations exceeded the SQTs are shown on **Figure 3-16**.

3.2.7 Physical Properties

From Focus Area 2, at total of 61 sediment samples were analyzed for grain size analysis and a total of 64 sediment samples were analyzed for TOC. The analytical results are presented on **Table 3-8b**.

4. PRELIMINARY HABITAT ASSESSMENT

A preliminary habitat assessment was conducted at 10 locations in order to determine habitat quality and identify areas where habitat can be created or improved. The 10 preliminary habitat assessment locations were co-located with sediment sampling locations and were evenly distributed between the two Focus Areas (**Figure 2-1**). No water chemistry sampling (except for dissolved oxygen [DO], temperature, pH, oxidation reduction potential [ORP], and conductivity), fish studies, or macro invertebrate studies were completed as part of the assessment. The assessment included the following:

- Qualitative Habitat Evaluation Index (QHEI)
- Water quality measurements, including DO, temperature, pH, ORP, and conductivity
- Identification and classification of invasive species

The "Concepts and Approaches for the Bio-assessment of Non-Wadeable Streams and Rivers" (U.S. EPA, 2006) cites the use of "Methods for Assessing Habitat in Flowing Waters: Using the QHEI Qualitative Habitat Evaluation Index" (Ohio Environmental Protection Agency [OEPA], 2006) for evaluating habitat to understand biological conditions. The OEPA QHEI and Use Assessment Field Sheet were used to document the preliminary habitat assessment efforts.

QHEI uses numerical scores to rate various aspects of habitat including substrate, instream cover, channel morphology, bank erosion, riparian vegetation and use, pool/glide/riffle quality, and gradient. The habitat aspects are scored according to individual metrics as provided on the QHEI and Use Assessment Field Sheet. An overall QHEI score is obtained from the summation of the habitat aspect scores, with a maximum value of 100. The QHEI also has additional non-scored categories for more description of the sampling station including the methods used for the assessment (i.e., boat, wading), the distance of stream used in completing the data form, canopy

cover in percent, river stage, water clarity, aesthetics, maintenance (i.e., flood control, impoundment, armoring), issues (i.e., industry, landfills, construction), and physical measurements (i.e., width, depth).

In addition to the data entered onto the QHEI and Use Assessment Field Sheet (**Appendix C**), water quality measurements (DO, temperature, pH, ORP, and conductivity) were collected using a YSI® water quality meter. Several water depth measurements were collected at each station using a HawkEye® CE handheld digital sonar; water clarity was determined using a Secchi disk; and stream canopy cover was measured using a Lemmon Model A spherical densiometer. A Ponar grab was used to determine the substrate type because water depth and limited water clarity prevented visual observations of the substrates.

The results of the preliminary habitat assessment determined the locations to belong to three reaches (upper, middle, and lower). QHEI scores for the preliminary habitat assessment locations are presented on **Table 4-1** and water quality measurements for the preliminary habitat assessment locations are presented on **Table 4-2**.

4.1 UPPER REACH

The upper reach consisted of locations USR11-03, USR11-08, and USR11-12. These locations were natural in character, contained natural vegetation within the riparian zones, and were un-impounded. The average QHEI overall score for the upper reach was 71.7, with ranges from 64 to 78.

Substrate type and quality was primarily boulder and sand with normal amounts of silt and embeddedness. Some increased levels of silt and detritus were identified at USR11-08. QHEI scores for substrate type and quality ranged from 11 to 20.

Instream cover was moderate to extensive and consisted of overhanging vegetation, shallows in slow water, deep pools (>70 centimeter [cm]), boulders, backwaters, aquatic macrophytes, and coarse woody debris. QHEI scores for instream cover ranged from 14 to 15.

Channel morphology was relatively good with moderate sinuosity, good development, no channelization, and high stability. QHEI scores for channel morphology at all locations were 17.

No bank erosion was seen. Riparian width was considered moderate (10 to 50 meter [m]), and the floodplains consisted of forest and swamp. QHEI scores for bank erosion and riparian zone at all locations were 9.

Pool and glide quality were relatively good. The presence of water depths greater than 1 m, pool widths greater than riffle widths, and moderate currents were noted. QHEI scores for pool and glide quality ranged from 8 to 9.

Riffle/run quality was variable because no riffles were present at locations USR11-08 and USR11-12 and because of the presence of a large area of boulder rapids upstream of location USR11-03. QHEI scores for riffle/run quality at all locations ranged from 0 to 8.

Gradient was very low in this reach, giving a QHEI score of 4 at all locations.

Non-scored measurements from the upper reach were as follows:

- Canopy cover exceeded 85% at all three locations
- Water depth was highly variable, ranging from 4 to 27.5 feet

No problems with aesthetics or other issues were seen; however, artificial-looking rock-pile islands were observed in the vicinity of locations USR11-1-8 and USR11-1-12 with shrubs and small trees growing on them.

It should be noted that numerous cast nymphal skins of *Hexagenia* mayflies (Ephemeroptera: Ephemeridae) were observed floating on the surface of the water, indicating a hatch of adults from the previous evening at some unknown upstream location. The presence of the *Hexagenia* is generally considered to be an indicator of good water quality.

The waters were observed to be heavily stained with tannins, limiting water clarity.

4.2 MIDDLE REACH

The middle reach consisted of locations USR11-25, USR11-29, USR11-34, USR11-39, and USR11-44. These locations were impounded and have some industrial and urban development within certain areas of the riparian zones. The average QHEI overall score for the middle reach was 60.4, with ranges from 45.5 to 70.

Substrate type and quality included boulder, gravel, sand, bedrock, detritus, and normal to no silt and normal to no embeddedness. QHEI scores for substrate type and quality ranged from 7 to 20.

Instream cover ranged from nearly absent at locations USR11-29 and USR11-34, sparse at locations USR11-25 and USR11-44, and moderate at location USR11-39. Instream cover consisted of overhanging vegetation, shallows in slow water, deep pools (>70 cm), boulders, backwaters, and coarse woody debris. QHEI scores for instream cover ranged from 5 to 15.

Channel morphology was good with moderate to high development; fair to good sinuosity; no channelization; and high stability. QHEI scores for channel morphology ranged from 15 to 18.

No bank erosion was observed. Riparian width ranged from moderate to very narrow or none. Floodplains were mostly forested, except as noted at locations USR11-25, USR11-29, USR11-34, and USR11-44. QHEI scores for bank erosion and riparian zone ranged from 5.5 to 9.

Pool and glide quality was good with pools greater than 1 m in depth and slow currents. QHEI scores for pool and glide quality ranged from 8 to 9.

No riffles were observed at any sampling locations, resulting in a QHEI score of 0.

Gradient was very low in this reach, giving a QHEI score of 4 at all locations.

Non-scored measurements from the middle reach were as follows:

- Canopy cover exceeded 85% at all five locations
- Water depth was highly variable from 4 to 25 feet

No problems with aesthetics were seen; however, the entire reach was impounded from several dams. There was a large industrial facility (paper mill) located adjacent to USR11-29 and USR11-34, lowering the overall QHEI scores for this portion of the reach.

The waters were observed to be heavily stained with tannins as was seen in the upper reach.

4.3 LOWER REACH

The lower reach consisted of locations USR11-48 and USR11-50 and is natural in character and un-impounded. The average QHEI overall score for the lower reach was 62.3, with ranges from 61 to 63.5.

Substrate type and quality at location USR11-48 was boulder and at location USR11-50 was a mixture of cobble, gravel, and silt. No embeddedness was observed at either location. QHEI scores for substrate type and quality ranged from 11 to 19.

Instream cover was sparse at location USR11-48 and nearly absent at location USR11-50, and consisted of overhanging vegetation, shallows in slow water, deep pools, boulders, aquatic macrophytes, and coarse woody debris. QHEI scores for instream cover ranged from 7 to 8.

Channel morphology was considered good with moderate sinuosity, fair to good development, no channelization, and high stability. QHEI scores for channel morphology ranged from 15 to 17.

Some moderate bank erosion was observed on the right bank at USR11-48; otherwise, no erosion was observed. Riparian width, however, was very narrow overall in the lower reach because of vertical rock faces or near-vertical hills composing the shoreline at both stations. These shorelines were also forested. QHEI scores for bank erosion and riparian zone ranged from 6.5 to 7.

Pool and glide quality were fairly high with deep pools, pool width exceeding riffle width, and slow-to-moderate currents. QHEI scores for pool and glide quality at all locations were 9.

USR11-50 had no riffle habitat; however, USR11-48 had high-quality riffle areas. QHEI scores for riffle/run quality at all locations ranged from 0 to 8.

Gradient was very low in this reach, giving a QHEI score of 4 at all locations.

Non-scored measurements from the lower reach were as follows:

- Canopy cover exceeded 85% at both locations
- Water depth ranged from 6 to 13 feet

No problems with aesthetics or issues were seen; however, USR11-50 was impounded by a dam.

Water was observed to be heavily stained with tannins as seen in the upper and middle reaches.

4.4 SUMMARY

The overall average QHEI score for the study area (**Table 4-1**) was 64.2; this is considered to be in the "good" range for larger streams. The lowest score was 45.5 at USR11-34, which was near the paper mill; this rates at the very lowest end of the "fair" range. The second lowest score was 53 at USR11-29, also located near the paper mill, and was also rated "fair." The highest score was 78 at USR11-03, near the upper end of the upper reach, which rates as "excellent."

Low scores in the overall QHEI were generally due to lack of instream cover and/or lack of diversity in substrate types. However, station USR11-34 also scored lowest for riparian habitat, primarily because the paper mill is adjacent to the riverbank. Riffle habitat was present at only two stations (USR11-03 and USR11-48). Pool and glide habitat, as well as channel morphology, generally scored high. Water quality measurements (**Table 4-2**) were within normally expected ranges and showed no extreme values.

5. DATA COMPLETENESS

Data validation summaries were produced for each chemical group. Data generated through the U.S. EPA CLP had an initial performance assessment and compliance screening check that was performed and uploaded by the Sample Management Office to the Electronic Data Exchange and

Evaluation System (EXES) website. These checks were to confirm conformance with the U.S. EPA CLP National Functional Guidelines (NFGs). After this assessment, Shaw Environmental and Infrastructure Inc., (Shaw) under subcontract to GLNPO, completed validation of the data generated by the U.S. EPA CLP (TAL metals, PCB Aroclors, TCL pesticides, TCL SVOC, and dioxin/furan analyses). Shaw performed Tier 2 validation on 5 to 10% of the samples and Tier 1 validation on the remaining 90 to 95%.

During the validation process, Shaw may have removed data qualifiers for following reasons:

- The EXES Software often J or R flag analytical results for temperature more precisely than U.S. CLP NFG standards. Data flags may have been removed in some instances where temperature was not out of range, but the software indicated it was.
- EXES generated flags may have been removed by a validator because EXES does not decipher between multiple columns/calibrations.
- U.S. CLP NFG does not qualify for matrix spikes; EXES qualifies for spikes based on R2 guidance. Validation was conducted following U.S. EPA CLP NFGs and some flags may have been removed by the validator.
- Relative percent difference (RPD) over 40 are noted by a validator and flagged with the dataset.

Data received from a subcontracted laboratory were run through the Automated Data Review checker. This was conducted for all parameters except grain size. WESTON completed a 5% full manual data validation for all of the analyses conducted by the WESTON-procured subcontractor laboratories (grain size, TOC, TPH DRO, and TPH ORO). The following are the general guidelines for the data validation:

- NFGs for Superfund Organics Method Data Review, U.S. EPA, June 2008
- NFGs for Superfund Inorganics Method Data Review, U.S. EPA, January 2010
- NFGs for Inorganic Data Review, U.S. EPA, January 2010
- NFGs for Chlorinated Dioxin/Furan Data Review, U.S. EPA September 2005
- Data not covered in the NFGs were compared to the applicable analytical methods, the laboratory standard operating procedures, and guidelines described in WESTON's approved QAPP dated July 2011

The data validation consisted of completing the GLNPO Quality Assurance/Quality Control checklist and preparing a data narrative summary report for each chemical parameter, which included the following completeness and usability components:

- Summary of Data Review
- Minor problems
  - Holding times
  - Matrix Spike/Matrix Spike Duplicates
  - Surrogates, as applicable
  - Calibration
  - Laboratory Control Samples
  - Field Replicate Results
- Data Quality Indicator Review
  - Sensitivity
  - Precision
  - Accuracy
  - Completeness

Based on the data validation and data usability assessment, all data are considered suitable for project decisions per the QAPP. All of the data validation summaries have been previously submitted to GLNPO under separate cover along with all of the Shaw and WESTON Data Validation Summaries for inclusion into GLNPO's GLSED.

The PAH 17 list was analyzed under the U.S. EPA CLP Statement of Work SOM01.2 following Modified Analysis (MA) 2149.0 (SVOA analysis by Soxhlet). The PAHs were reported as part of the overall SVOA list. The contract required reporting limits stated in the MA varied from 100 to 200 µg/kg for each individual SVOA/PAH compound. However, actual reporting limits for each compound vary from 100 to almost 300 µg/kg since the final reported value takes into account the moisture content of that specific sample. Per the QAPP, the total PAH 17 was proposed to be the sum of detected results plus one-half the detection limit of non-detects. However, with the actual non-detect results varying from 100 to almost 300 µg/kg, this summation calculation resulted in total PAH 17 concentrations that exceeded the Level I SQT of 1,600 µg/kg including samples which did not include any detected individual PAHs. Therefore,

the total PAH 17 summation was modified to include the sum of detected concentrations with non-detects factored in as zero.

6. SUMMARY

A total of 112 sediment samples (99 investigative, 6 field split, and 7 duplicate) were collected from the 50 sampling locations within the Upper St. Louis River. Where sediment recovery was adequate, samples typically were collected from the following sampling intervals: 0 to 6 inches, 6 to 24 inches, and 24 to 48 inches bss. All sediment samples were analyzed for the following COPCs: TAL metals, PCB (Aroclors), TCL SVOC—including PAH 17 list, and TPH as DRO corresponding to an alkaline range of C_{10} through C_{28}, and TPH as ORO corresponding to an alkaline range of C_{28} through C_{36}. In addition, approximately 10% of all sediment samples collected were analyzed for TCL pesticides and dioxin/furan. Because of industrial operations in Cloquet, dioxin/furan analysis was also conducted at all sampling intervals collected from USR11-29 through USR11-47. All sediment samples also were analyzed for physical properties including TOC and grain size.

The sampling analytical results for PAHs, TAL metals, PCB Aroclors, TCL pesticides, and dioxin/furans were compared to the Level I and Level II SQTs as set forth in the document "Development of a Framework for Evaluating Numerical Sediment Quality Targets and Sediment Contamination in the St. Louis River Area of Concern" (D.D. MacDonald et al., 2000). The Level I SQTs identify chemical concentrations that will provide a high level of protection for designated water uses in the St. Louis River AOC, specifically for aquatic life. By comparison, a lower level of protection for designated water uses in the St. Louis River AOC will be provided by the Level II SQTs. The sample results for TCL SVOCs (except for the PAHs), TPH DRO, TPH ORO, TOC, and grain size are tabulated but are not compared to any numerical screening criteria.

The sections below summarize the comparison of the analytical data to the Level I and II SQTs when available for TCL SVOCs, TAL metals, PCBs, TCL pesticides, and dioxin/furan.

6.1 SVOCS

For Focus Area 1, 2-Methylnaphthalene was detected at a concentration of 41 µg/kg exceeding the Level I SQT of 20 µg/kg at sampling location USR11-45 at a depth of 24 to 39 inches bss. However, total PAH 17 concentrations did not exceed the Level I or Level II SQTs.

For Focus Area 2, the calculated Total PAH 17 concentration exceeded the Level I SQT in 5 sediment samples but total PAH 17 concentrations did not exceed the Level II SQT. Individual PAH concentrations were detected at concentrations exceeding Level I SQTs in sediment samples collected from USR11-23, USR11-24, and USR11-38. Individual PAH concentrations were detected at concentrations exceeding Level II SQTs in two sediment samples (USR11-23-016 and USR11-34-040). Elevated PAH concentrations were detected throughout Focus Area 2 at all depth intervals. The highest Total PAH concentration, 20,922 µg/kg, was detected at sampling location USR11-23 at a depth of 0 to 16 inches bss.

6.2 TAL METALS

For Focus Area 1, nickel was the only metal detected at concentrations exceeding the SQTs. Nickel concentrations exceeded the Level I SQT in three sediment samples (USR11-02-022, USR11-12-040, and USR11-13-006); however, nickel concentrations did not exceed the Level II SQT.

For Focus Area 2, cadmium, copper, lead, mercury, nickel, and zinc were detected at concentrations exceeding the SQTs. At least one metal was detected at a concentration exceeding Level I SQTs in 16 sediment samples. Mercury was detected at a concentration exceeding the Level II SQT at sampling location USR11-41 at a depth of 0 to 16 inches bss and zinc was detected at a concentration exceeding the Level II SQT at sampling location USR11-27 at a depth of 6 to 20 inches bss. Elevated metals concentrations were detected throughout Focus Area 2 at all depth intervals.

6.3 PCBs

For Focus Area 1, Total PCB concentrations exceeded the Level I SQT of 60 µg/kg at sampling location USR11-45 at a depth of 24 to 39 inches bss and sampling location USR11-46 at a depth

of 0 to 6 inches bss. Both of these locations are downstream of Cloquet and Focus Area 2. Total PCB concentrations did not exceed the Level II SQT. For Focus Area 2, Total PCB concentrations exceeded the Level I SQT at six sampling locations—USR11-23, USR11-27, USR11-34, USR11-36, USR11-40, and USR11-43. Total PCB concentrations did not exceed the Level II SQT. The highest Total PCB concentration, 580 µg/kg, was detected at sampling location USR11-23 at a depth of 0 to 16 inches bss.

6.4 TCL PESTICIDES

Pesticides were not detected at concentrations exceeding SQTs at Focus Area 1. For Focus Area 2, 4'DDD, 4,4'DDE, 4,4'-DDT, and heptachlor epoxide were detected at concentrations exceeding their respective Level I and Level II SQTs at sampling location USR11-44 at a depth of 0 to 6 inches bss. Endrin was also detected at a concentration exceeding the Level I SQT in this sample. 4,4'-DDT was also detected at a concentration exceeding the Level I SQT at sampling location USR11-23.

6.5 DIOXIN/FURAN

For Focus Area 1, the calculated dioxin equivalent concentrations exceeded the Level I SQT of 0.85 ng/kg at sampling location USR11-45, USR11-46, and USR11-49. All three of these locations are downstream of Cloquet and Focus Area 2. Sampling location USR11-49 is located downstream of the Thomson, Forbay, and Fond du Lac reservoirs.

For Focus Area 2, dioxin equivalent concentrations exceeded the Level I SQT of 0.85 ng/kg in 28 sediment samples. Dioxin equivalent concentrations exceeded the Level II SQT at sampling locations USR11-23, USR11-32, USR11-41, and USR11-44. Elevated dioxin equivalent concentrations were detected throughout Focus Area 2 at all depth intervals.

TABLES

Table 2-1
Sampling Location Coordinates
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Location ID	Longitude (D.d)	Latitude (D.d)
Focus Area 1		
USR11-01	46.74663615	-92.48563157
USR11-02	46.74188329	-92.48469213
USR11-03	46.79205267	-92.4612421
USR11-04	46.78735283	-92.45766969
USR11-05	46.78506514	-92.46111765
USR11-06	46.78165629	-92.46886783
USR11-07	46.77471178	-92.47921409
USR11-08	46.76883749	-92.49061641
USR11-09	46.76559166	-92.49257517
USR11-10	46.75969827	-92.49420301
USR11-11	46.74041826	-92.4838037
USR11-12	46.73729431	-92.48129419
USR11-13	46.7341472	-92.47815035
USR11-14	46.7308781	-92.47586807
USR11-45	46.70365441	-92.41833234
USR11-46	46.70053746	-92.41869665
USR11-47	46.65087242	-92.33887793
USR11-48	46.6563303	-92.33060704
USR11-49	46.66031331	-92.32620922
USR11-50	46.66875231	-92.31710811
Focus Area 2		
USR11-15	46.7288987	-92.47390482
USR11-16	46.7274901	-92.47206697
USR11-17	46.72621387	-92.47018204
USR11-18	46.72765573	-92.4663866
USR11-19	46.72750838	-92.46319789
USR11-20	46.72904794	-92.46008478
USR11-21	46.72894403	-92.45644321
USR11-22	46.72871075	-92.45251233
USR11-23	46.72501893	-92.46544408
USR11-24	46.72460625	-92.46149943
USR11-25	46.72732475	-92.45718671
USR11-26	46.72590603	-92.45288346
USR11-27	46.725393	-92.45008324
USR11-28	46.72852133	-92.44550327
USR11-29	46.72808628	-92.43997171
USR11-30	46.72710576	-92.43707648
USR11-31	46.7275247	-92.43399539
USR11-32	46.72667225	-92.43216054
USR11-33	46.71938216	-92.4264968
USR11-34	46.72128633	-92.42816808
USR11-35	46.71817157	-92.42515242
USR11-36	46.71545988	-92.42056674
USR11-37	46.71559767	-92.41918594
USR11-38	46.71365964	-92.42102823
USR11-39	46.710891	-92.42019268
USR11-40	46.71016053	-92.42029384
USR11-41	46.71085325	-92.41671169
USR11-42	46.7075264	-92.41773248
USR11-43	46.70671361	-92.41684617
USR11-44	46.70467829	-92.41860118

Notes:
AOC - Area of Concern
D.d - Decimal Degrees
ID - Identification

Table 2-2
Sampling and Analysis Summary
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Location ID	Field Sample ID	Sampling Depth (inches bss)	Sampling Date	SVOC	TAL Metal	PCB Aroclor	TCL Pesticide	TPH DRO/ ORO	Dioxin/ Furan	Grain Size	TOC
FOCUS AREA 1											
USR11-01	USR11-01-006	0 - 6	7/24/11	X	X	X	X	X	X	X	X
	USR11-01-024	6 - 24	7/24/11	X	X	X		X		X	X
	USR11-01-047	24 - 47	7/24/11	X	X	X		X		X	X
USR11-02	USR11-02-006	0 - 6	7/24/11	X	X	X		X		X	X
	USR11-02-022	6 - 22	7/24/11	X	X	X		X		X	X
USR11-03	USR11-03-017	0 - 17	7/24/11	X	X	X	X	X	X	X	X
USR11-04	USR11-04-016	0 - 16	7/24/11	X	X	X		X		X	X
USR11-05	USR11-05-006	0 - 6	7/24/11	X	X	X	X	X	X	X	X
	USR11-05-007-FS	0 - 7	7/24/11	X	X	X	X	X	X	X	X
	USR11-05-024	6 - 24	7/24/11	X	X	X		X		X	X
	USR11-05-051	24 - 51	7/24/11	X	X	X		X		X	X
USR11-06	USR11-06-006	0 - 6	7/24/11	X	X	X		X		X	X
	USR11-06-006-DP	0 - 6	7/24/11	X	X	X		X			X
	USR11-06-022	6 - 22	7/24/11	X	X	X		X		X	X
	USR11-06-022-DP	6 - 22	7/24/11	X	X	X		X			X
USR11-07	USR11-07-017	0 - 17	7/24/11	X	X	X	X	X	X	X	X
USR11-08	USR11-08-006	0 - 6	7/21/11	X	X	X		X		X	X
	USR11-08-024	6 - 24	7/21/11	X	X	X		X		X	X
	USR11-08-043	24 - 43	7/21/11	X	X	X		X		X	X
USR11-09	USR11-09-006	0 - 6	7/21/11	X	X	X	X	X	X	X	X
	USR11-09-024	6 - 24	7/21/11	X	X	X		X		X	X
	USR11-09-036	24 - 36	7/21/11	X	X	X		X		X	X
USR11-10	USR11-10-006	0 - 6	7/21/11	X	X	X		X		X	X
	USR11-10-030	6 - 30	7/21/11	X	X	X		X		X	X
USR11-11	USR11-11-006	0 - 6	7/21/11	X	X	X	X	X	X	X	X
	USR11-11-026	6 - 26	7/21/11	X	X	X		X		X	X
USR11-12	USR11-12-006	0 - 6	7/21/11	X	X	X		X		X	X
	USR11-12-024	6 - 24	7/21/11	X	X	X		X		X	X
	USR11-12-040	24 - 40	7/21/11	X	X	X		X		X	X
USR11-13	USR11-13-006	0 - 6	7/21/11	X	X	X	X	X	X	X	X
	USR11-13-018	6 - 18	7/21/11	X	X	X		X		X	X
USR11-14	USR11-14-006	0 - 6	7/21/11	X	X	X		X		X	X
	USR11-14-022	6 - 22	7/21/11	X	X	X		X		X	X
USR11-45	USR11-45-006	0 - 6	7/23/11	X	X	X	X	X	X	X	X
	USR11-45-006-FS	0 - 6	7/23/11	X	X	X	X	X	X		X
	USR11-45-024	6 - 24	7/23/11	X	X	X		X	X	X	X
	USR11-45-039	24 - 39	7/23/11	X	X	X		X	X	X	X
USR11-46	USR11-46-006	0 - 6	7/23/11	X	X	X		X	X	X	X
	USR11-46-024	6 - 24	7/23/11	X	X	X		X	X	X	X
	USR11-46-051	24 - 51	7/23/11	X	X	X		X	X	X	X
USR11-47	USR11-47-006	0 - 6	7/24/11	X	X	X	X	X	X	X	X
	USR11-47-006-FS	0 - 6	7/24/11	X	X	X	X	X	X		X
USR11-48	USR11-48-006	0 - 6	7/24/11	X	X	X		X		X	X
	USR11-48-019	6 - 19	7/24/11	X	X	X		X		X	X
USR11-49	USR11-49-006	0 - 6	7/24/11	X	X	X	X	X	X	X	X
	USR11-49-034	6 - 34	7/24/11	X	X	X		X		X	X
USR11-50	USR11-50-006	0 - 6	7/24/11	X	X	X		X		X	X
	USR11-50-026	6 - 26	7/24/11	X	X	X		X		X	X
Total number of samples analyzed for Focus Area 1:				48	48	48	13	48	18	44	48

Table 2-2
Sampling and Analysis Summary
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Location ID	Field Sample ID	Sampling Depth (inches bss)	Sampling Date	SVOC	TAL Metal	PCB Aroclor	TCL Pesticide	TPH DRO/ ORO	Dioxin/ Furan	Grain Size	TOC
FOCUS AREA 2											
USR11-15	USR11-15-017	0 - 17	7/21/11	X	X	X	X	X	X	X	X
	USR11-15-017-FS	0 - 17	7/21/11	X	X	X	X	X	X	X	X
USR11-16	USR11-16-019	0 - 19	7/21/11	X	X	X		X		X	X
USR11-17	USR11-17-006	0 - 6	7/19/11	X	X	X		X		X	X
	USR11-17-006-FS	0 - 6	7/19/11	X	X	X		X		X	X
	USR11-17-016	6 - 16	7/19/11	X	X	X		X		X	X
USR11-18	USR11-18-006	0 - 6	7/19/11	X	X	X		X		X	X
USR11-19	USR11-19-006	0 - 6	7/20/11	X	X	X		X		X	X
USR11-20	USR11-20-006	0 - 6	7/20/11	X	X	X		X		X	X
	USR11-20-027	6 - 27	7/20/11	X	X	X		X		X	X
USR11-21	USR11-21-006	0 - 6	7/20/11	X	X	X	X	X	X	X	X
USR11-22	USR11-22-006	0 - 6	7/20/11	X	X	X		X		X	X
	USR11-22-033	6 - 33	7/20/11	X	X	X		X		X	X
	USR11-22-033-FS	6 - 33	7/20/11	X	X	X		X		X	X
USR11-23	USR11-23-016	0 - 16	7/21/11	X	X	X	X	X	X	X	X
USR11-24	USR11-24-006	0 - 6	7/21/11	X	X	X		X		X	X
	USR11-24-024	6 - 24	7/21/11	X	X	X		X		X	X
	USR11-24-048	24 - 48	7/21/11	X	X	X		X		X	X
USR11-25	USR11-25-006	0 - 6	7/20/11	X	X	X		X		X	X
	USR11-25-006-DP	0 - 6	7/20/11	X	X	X		X			X
	USR11-25-024	6 - 24	7/20/11	X	X	X		X		X	X
	USR11-25-024-DP	6 - 24	7/20/11	X	X	X		X			X
	USR11-25-048	24 - 48	7/20/11	X	X	X		X		X	X
	USR11-25-048-DP	24 - 48	7/20/11	X	X	X		X			X
USR11-26	USR11-26-006	0 - 6	7/20/11	X	X	X		X		X	X
	USR11-26-030	6 - 30	7/20/11	X	X	X		X		X	X
USR11-27	USR11-27-006	0 - 6	7/21/11	X	X	X	X	X	X	X	X
	USR11-27-020	6 - 20	7/21/11	X	X	X		X		X	X
USR11-28	USR11-28-006	0 - 6	7/23/11	X	X	X		X		X	X
USR11-29	USR11-29-006	0 - 6	7/23/11	X	X	X	X	X	X	X	X
	USR11-29-021	6 - 21	7/23/11	X	X	X		X	X	X	X
USR11-30	USR11-30-006	0 - 6	7/23/11	X	X	X		X	X	X	X
	USR11-30-021	6 - 21	7/23/11	X	X	X		X	X	X	X
USR11-31	USR11-31-006	0 - 6	7/23/11	X	X	X		X	X	X	X
	USR11-31-026	6 - 26	7/23/11	X	X	X		X	X	X	X
USR11-32	USR11-32-006	0 - 6	7/23/11	X	X	X	X	X	X	X	X
	USR11-32-006-DP	0 - 6	7/23/11	X	X	X	X	X	X	X	X
	USR11-32-025	6 - 25	7/23/11	X	X	X		X	X	X	X
	USR11-32-025-DP	6 - 25	7/23/11	X	X	X		X	X	X	X
USR11-33	USR11-33-006	0 - 6	7/22/11	X	X	X		X	X	X	X
	USR11-33-022	6 - 22	7/22/11	X	X	X		X	X	X	X
USR11-34	USR11-34-006	0 - 6	7/22/11	X	X	X	X	X	X	X	X
	USR11-34-024	6 - 24	7/22/11	X	X	X		X	X	X	X
	USR11-34-040	24 - 40	7/22/11	X	X	X		X	X	X	X
USR11-35	USR11-35-006	0 - 6	7/22/11	X	X	X		X	X	X	X
	USR11-35-026	6 - 26	7/22/11	X	X	X		X	X	X	X
USR11-36	USR11-36-006	0 - 6	7/22/11	X	X	X		X	X	X	X
	USR11-36-032	6 - 32	7/22/11	X	X	X		X	X	X	X
USR11-37	USR11-37-017	0 - 17	7/22/11	X	X	X		X	X	X	X
USR11-38	USR11-38-006	0 - 6	7/22/11	X	X	X		X	X	X	X
	USR11-38-019	6 - 19	7/22/11	X	X	X		X	X	X	X
USR11-39	USR11-39-006	0 - 6	7/22/11	X	X	X		X	X	X	X
	USR11-39-024	6 - 24	7/22/11	X	X	X		X	X	X	X
USR11-40	USR11-40-006	0 - 6	7/22/11	X	X	X		X	X	X	X
	USR11-40-034	6 - 34	7/22/11	X	X	X		X	X	X	X

Table 2-2
Sampling and Analysis Summary
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Location ID	Field Sample ID	Sampling Depth (inches bss)	Sampling Date	SVOC	TAL Metal	PCB Aroclor	TCL Pesticide	TPH DRO/ ORO	Dioxin/ Furan	Grain Size	TOC
USR11-41	USR11-41-016	0 - 16	7/22/11	X	X	X		X	X	X	X
USR11-42	USR11-42-006	0 - 6	7/23/11	X	X	X	X	X	X	X	X
	USR11-42-033	6 - 33	7/23/11	X	X	X		X	X	X	X
USR11-43	USR11-43-006	0 - 6	7/23/11	X	X	X		X	X	X	X
	USR11-43-024	6 - 24	7/23/11	X	X	X		X	X	X	X
	USR11-43-053	24 - 53	7/23/11	X	X	X		X	X	X	X
USR11-44	USR11-44-006	0 - 6	7/23/11	X	X	X	X	X	X	X	X
	USR11-44-024	6 - 24	7/23/11	X	X	X		X	X	X	X
	USR11-44-037	24 - 37	7/23/11	X	X	X		X	X	X	X
Total number of samples analyzed for Focus Area 2:				64	64	64	11	64	40	61	64
Total number of samples analyzed for Upper St. Louis River:				112	112	112	24	112	58	105	112

Notes:
AOC - Area of Concern
bss - below sediment surface
DP - Duplicate
DRO - Diesel Range Organic
FS - Field Split
ID - Identification
ORO - Oil Range Organic
PCB - Polychlorinated Biphenyls
SVOC - Semivolatile Organic Compound
TAL - Target Analyte List
TCL - Target Compound List
TOC - Total Organic Carbon
TPH - Total Petroleum Hydrocarbon

Table 3-1a
Summary of Upper St. Louis River Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
TCL SVOCs - Including PAHs (17 List) (µg/kg)										
1,2-BENZPHENANTHRACENE	0-6	58	9	15.5	24	2100	170	3	1300	1
	6-24	41	12	29.3	38	180	170	1	1300	0
	24-48	13	4	30.8	77	140	170	0	1300	0
2-METHYLNAPHTHALENE	0-6	58	0	0.0	ND	ND	20	--	200	--
	6-24	41	0	0.0	ND	ND	20	--	200	--
	24-48	13	2	15.4	41	240	20	2	200	1
ACENAPHTHENE	0-6	58	1	1.7	170	170	6.7	1	89	1
	6-24	41	0	0.0	ND	ND	6.7	--	89	--
	24-48	13	0	0.0	ND	ND	6.7	--	89	--
ACENAPHTHYLENE	0-6	58	0	0.0	ND	ND	5.9	--	130	--
	6-24	41	0	0.0	ND	ND	5.9	--	130	--
	24-48	13	0	0.0	ND	ND	5.9	--	130	--
ANTHRACENE	0-6	58	2	3.4	58	460	57	2	850	0
	6-24	41	2	4.9	34	52	57	0	850	0
	24-48	13	1	7.7	180	180	57	1	850	0
BENZO(A)ANTHRACENE	0-6	58	8	13.8	27	1600	110	3	1100	1
	6-24	41	10	24.4	31	130	110	1	1100	0
	24-48	13	3	23.1	71	140	110	1	1100	0
BENZO(A)PYRENE	0-6	58	7	12.1	26	1500	150	3	1500	0
	6-24	41	12	29.3	29	140	150	0	1500	0
	24-48	13	3	23.1	61	120	150	0	1500	0
BENZO(B)FLUORANTHENE	0-6	58	8	13.8	27	2200	NL	--	NL	--
	6-24	41	8	19.5	28	140	NL	--	NL	--
	24-48	13	3	23.1	79	130	NL	--	NL	--
BENZO(G,H,I)PERYLENE	0-6	58	4	6.9	83	670	NL	--	NL	--
	6-24	41	7	17.1	42	98	NL	--	NL	--
	24-48	13	2	15.4	53	100	NL	--	NL	--
BENZO(K)FLUORANTHENE	0-6	58	5	8.6	49	980	NL	--	NL	--
	6-24	41	4	9.8	30	140	NL	--	NL	--
	24-48	13	3	23.1	64	97	NL	--	NL	--
DIBENZO(A,H)ANTHRACENE	0-6	58	2	3.4	43	240	33	2	140	1
	6-24	41	0	0.0	ND	ND	33	--	140	--
	24-48	13	0	0.0	ND	ND	33	--	140	--
FLUORANTHENE	0-6	58	10	17.2	43	4400	420	2	2200	1
	6-24	41	8	19.5	25	430	420	1	2200	0
	24-48	13	4	30.8	70	270	420	0	2200	0
FLUORENE	0-6	58	1	1.7	150	150	77	1	540	0
	6-24	41	0	0.0	ND	ND	77	--	540	--
	24-48	13	1	7.7	58	58	77	0	540	0
INDENO(1,2,3-CD)PYRENE	0-6	58	4	6.9	38	720	NL	--	NL	--
	6-24	41	1	2.4	76	76	NL	--	NL	--
	24-48	13	2	15.4	39	55	NL	--	NL	--
NAPHTHALENE	0-6	58	1	1.7	32	32	180	0	560	0
	6-24	41	0	0.0	ND	ND	180	--	560	--
	24-48	13	3	23.1	56	86	180	0	560	0
PHENANTHRENE	0-6	58	9	15.5	24	2300	200	2	1200	1
	6-24	41	5	12.2	25	220	200	1	1200	0
	24-48	13	4	30.8	110	600	200	1	1200	0
PYRENE	0-6	58	11	19.0	26	3400	200	2	1500	1
	6-24	41	9	22.0	31	370	200	1	1500	0
	24-48	13	3	23.1	66	300	200	2	1500	0
TOTAL PAH 17	0-6	58	11	19.0	117	20922	1600	3	23000	0
	6-24	41	16	39.0	34	1942	1600	1	23000	0
	24-48	13	4	30.8	787	1630	1600	1	23000	0

Table 3-1a
Summary of Upper St. Louis River Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
1,1'-BIPHENYL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
1,2,4,5-TETRACHLOROBENZENE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2,2'-OXYBIS(1-CHLOROPROPANE)	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2,4,5-TRICHLOROPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2,4,6-TRICHLOROPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	1	7.7	89	89	NL	--	NL	--
2,4-DICHLOROPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2,4-DIMETHYLPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2,4-DINITROPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2,4-DINITROTOLUENE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2,6-DINITROTOLUENE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2-CHLORONAPHTHALENE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2-CHLOROPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2-METHYLPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	1	2.4	88	88	NL	--	NL	--
	24-48	13	2	15.4	49	170	NL	--	NL	--
2-NITROANILINE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
2-NITROPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
3,3'-DICHLOROBENZIDINE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
3-NITROANILINE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--

Table 3-1a
Summary of Upper St. Louis River Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
4,6-DINITRO-2-METHYLPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
4-BROMOPHENYL PHENYL ETHER	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
4-CHLORO-3-METHYLPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
4-CHLOROPHENYL PHENYL ETHER	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
4-METHYLPHENOL	0-6	58	11	19.0	50	910	NL	--	NL	--
	6-24	41	17	41.5	31	3000	NL	--	NL	--
	24-48	13	4	30.8	450	1700	NL	--	NL	--
4-NITROPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
ACETOPHENONE	0-6	58	1	1.7	31	31	NL	--	NL	--
	6-24	41	1	2.4	37	37	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
ATRAZINE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
BENZALDEHYDE	0-6	58	5	8.6	31	300	NL	--	NL	--
	6-24	41	4	9.8	33	78	NL	--	NL	--
	24-48	13	2	15.4	77	130	NL	--	NL	--
BENZYL BUTYL PHTHALATE	0-6	58	2	3.4	29	40	NL	--	NL	--
	6-24	41	1	2.4	47	47	NL	--	NL	--
	24-48	13	1	7.7	190	190	NL	--	NL	--
BIS(2-CHLOROETHOXY)METHANE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
BIS(2-CHLOROETHYL)ETHER	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
BIS(2-ETHYLHEXYL)PHTHALATE	0-6	58	20	34.5	37	1400	NL	--	NL	--
	6-24	41	15	36.6	47	310	NL	--	NL	--
	24-48	13	4	30.8	32	110	NL	--	NL	--
CAPROLACTAM	0-6	58	1	1.7	32	32	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
CARBAZOLE	0-6	58	3	5.2	30	260	NL	--	NL	--
	6-24	41	2	4.9	32	63	NL	--	NL	--
	24-48	13	2	15.4	31	47	NL	--	NL	--
CHLOROPHENOLS	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
DIBENZOFURAN	0-6	58	1	1.7	70	70	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
DIETHYL PHTHALATE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	1	2.4	40	40	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--

Table 3-1a
Summary of Upper St. Louis River Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
DIMETHYL PHTHALATE	0-6	58	4	6.9	61	98	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
DI-N-BUTYLPHTHALATE	0-6	58	7	12.1	23	600	NL	--	NL	--
	6-24	41	6	14.6	25	1200	NL	--	NL	--
	24-48	13	3	23.1	31	220	NL	--	NL	--
DI-N-OCTYLPHTHALATE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	1	2.4	49	49	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
HEXACHLORO-1,3-BUTADIENE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
HEXACHLOROBENZENE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
HEXACHLOROCYCLOPENTADIENE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
HEXACHLOROETHANE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
NITROBENZENE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
N-NITROSO-DI-N-PROPYLAMINE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
N-NITROSODIPHENYLAMINE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
P-CHLOROANILINE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
PENTACHLOROPHENOL	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	1	2.4	55	55	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
PHENOL	0-6	58	4	6.9	56	140	NL	--	NL	--
	6-24	41	6	14.6	51	180	NL	--	NL	--
	24-48	13	4	30.8	50	350	NL	--	NL	--
P-NITROANILINE	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
TAL Metals (mg/kg)										
ALUMINUM	0-6	58	58	100.0	3940	12300	NL	--	NL	--
	6-24	41	41	100.0	3630	13700	NL	--	NL	--
	24-48	13	13	100.0	3960	11900	NL	--	NL	--
ANTIMONY	0-6	58	18	31.0	0.27	2.4	NL	--	NL	--
	6-24	41	10	24.4	0.3	1.4	NL	--	NL	--
	24-48	13	6	46.2	0.32	0.45	NL	--	NL	--
ARSENIC	0-6	58	58	100.0	1.6	7.7	9.8	0	33	0
	6-24	41	41	100.0	1.6	5.5	9.8	0	33	0
	24-48	13	13	100.0	1.5	3.8	9.8	0	33	0
BARIUM	0-6	58	54	93.1	26.5	108	NL	--	NL	--
	6-24	41	38	92.7	26.3	600	NL	--	NL	--
	24-48	13	9	69.2	32.5	91.9	NL	--	NL	--

Table 3-1a
Summary of Upper St. Louis River Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
BERYLLIUM	0-6	58	3	5.2	0.0082	0.014	NL	--	NL	--
	6-24	41	4	9.8	0.052	0.14	NL	--	NL	--
	24-48	13	1	7.7	0.12	0.12	NL	--	NL	--
CADMIUM	0-6	58	0	0.0	ND	ND	0.99	--	5	--
	6-24	41	0	0.0	ND	ND	0.99	--	5	--
	24-48	13	1	7.7	2.1	2.1	0.99	1	5	0
CALCIUM	0-6	58	58	100.0	2140	28000	NL	--	NL	--
	6-24	41	41	100.0	2240	41900	NL	--	NL	--
	24-48	13	13	100.0	2010	16700	NL	--	NL	--
CHROMIUM	0-6	58	58	100.0	9.4	33.3	43	0	110	0
	6-24	41	41	100.0	8.3	39.5	43	0	110	0
	24-48	13	13	100.0	8.6	33.9	43	0	110	0
COBALT	0-6	58	51	87.9	6.3	17.7	NL	--	NL	--
	6-24	41	36	87.8	6.8	19.2	NL	--	NL	--
	24-48	13	9	69.2	5.4	12.7	NL	--	NL	--
COPPER	0-6	58	57	98.3	3.6	91.9	32	4	150	0
	6-24	41	40	97.6	3.5	54.6	32	2	150	0
	24-48	13	12	92.3	3.3	36.8	32	1	150	0
IRON	0-6	58	58	100.0	10400	57300	NL	--	NL	--
	6-24	41	41	100.0	9110	27900	NL	--	NL	--
	24-48	13	13	100.0	8220	23700	NL	--	NL	--
LEAD	0-6	58	58	100.0	2.5	33.2	36	0	130	0
	6-24	41	41	100.0	2.5	43.4	36	1	130	0
	24-48	13	13	100.0	2.2	51.8	36	1	130	0
MAGNESIUM	0-6	58	58	100.0	1540	4830	NL	--	NL	--
	6-24	41	41	100.0	1480	5240	NL	--	NL	--
	24-48	13	13	100.0	1580	4620	NL	--	NL	--
MANGANESE	0-6	58	58	100.0	155	1190	NL	--	NL	--
	6-24	41	41	100.0	111	875	NL	--	NL	--
	24-48	13	13	100.0	130	743	NL	--	NL	--
MERCURY	0-6	58	13	22.4	0.027	1.4	0.18	2	1.1	1
	6-24	41	11	26.8	0.036	1.1	0.18	7	1.1	0
	24-48	13	1	7.7	0.39	0.39	0.18	1	1.1	0
NICKEL	0-6	58	58	100.0	8	29.9	23	3	49	0
	6-24	41	41	100.0	8.7	28	23	4	49	0
	24-48	13	13	100.0	8.6	25.9	23	1	49	0
POTASSIUM	0-6	58	47	81.0	228	1220	NL	--	NL	--
	6-24	41	30	73.2	255	1430	NL	--	NL	--
	24-48	13	10	76.9	296	1230	NL	--	NL	--
SELENIUM	0-6	58	38	65.5	0.71	2.5	NL	--	NL	--
	6-24	41	26	63.4	0.61	2.1	NL	--	NL	--
	24-48	13	8	61.5	0.67	1.7	NL	--	NL	--
SILVER	0-6	58	2	3.4	0.37	0.38	NL	--	NL	--
	6-24	41	2	4.9	0.37	2.1	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
SODIUM	0-6	58	9	15.5	139	418	NL	--	NL	--
	6-24	41	7	17.1	103	371	NL	--	NL	--
	24-48	13	4	30.8	168	345	NL	--	NL	--
THALLIUM	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
VANADIUM	0-6	58	58	100.0	14.5	51.5	NL	--	NL	--
	6-24	41	41	100.0	11.9	46.5	NL	--	NL	--
	24-48	13	13	100.0	14	37.7	NL	--	NL	--

Table 3-1a
Summary of Upper St. Louis River Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
ZINC	0-6	58	58	100.0	24.9	295	120	2	460	0
	6-24	41	41	100.0	23.1	585	120	3	460	1
	24-48	13	13	100.0	36.8	207	120	1	460	0
PCB Aroclors (µg/kg)										
AROCLOR-1016	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1221	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1232	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1242	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1248	0-6	58	1	1.7	390	390	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1254	0-6	58	3	5.2	25	190	NL	--	NL	--
	6-24	41	6	14.6	54	340	NL	--	NL	--
	24-48	13	2	15.4	200	280	NL	--	NL	--
AROCLOR-1260	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	1	7.7	140	140	NL	--	NL	--
AROCLOR-1262	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1268	0-6	58	0	0.0	ND	ND	NL	--	NL	--
	6-24	41	0	0.0	ND	ND	NL	--	NL	--
	24-48	13	0	0.0	ND	ND	NL	--	NL	--
TOTAL PCBs	0-6	58	3	5.2	25	580	60	2	680	0
	6-24	41	6	14.6	54	340	60	4	680	0
	24-48	13	2	15.4	280	340	60	2	680	0
TCL Pesticides (µg/kg)										
1,1,1-TRICHLORO-2,2-BIS (P-METHOXPHENYL)-ETHANE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
4,4'-DDD	0-6	24	1	4.2	72	72	4.9	1	28	1
4,4'-DDE	0-6	24	1	4.2	64	64	3.2	1	31	1
4,4'-DDT	0-6	24	2	8.3	4.8	150	4.2	2	63	1
ALDRIN	0-6	24	0	0.0	ND	ND	NL	--	NL	--
ALPHA-BHC	0-6	24	0	0.0	ND	ND	NL	--	NL	--
ALPHA-CHLORDANE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
BETA-BHC	0-6	24	0	0.0	ND	ND	NL	--	NL	--
CAMPHECHLOR	0-6	24	0	0.0	ND	ND	0.1	--	32	--
DELTA-BHC	0-6	24	1	4.2	10	10	NL	--	NL	--
DIELDRIN	0-6	24	0	0.0	ND	ND	1.9	--	62	--
ENDOSULFAN I	0-6	24	0	0.0	ND	ND	NL	--	NL	--
ENDOSULFAN II	0-6	24	0	0.0	ND	ND	NL	--	NL	--
ENDOSULFAN SULFATE	0-6	24	2	8.3	2.6	12	NL	--	NL	--
ENDRIN	0-6	24	1	4.2	10	10	2.2	1	210	0
ENDRIN ALDEHYDE	0-6	24	1	4.2	7.3	7.3	NL	--	NL	--
ENDRIN KETONE	0-6	24	1	4.2	2.2	2.2	NL	--	NL	--
GAMMA-BHC (LINDANE)	0-6	24	0	0.0	ND	ND	2.4	--	5	--
GAMMA-CHLORDANE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
HEPTACHLOR	0-6	24	0	0.0	ND	ND	NL	--	NL	--

Table 3-1a
Summary of Upper St. Louis River Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
HEPTACHLOR EPOXIDE	0-6	24	1	4.2	61	61	2.5	1	16	1
TPH (mg/kg)										
DRO	0-6	58	38	65.5	41	1900	NL	--	NL	--
	6-24	41	30	73.2	40	1400	NL	--	NL	--
	24-48	13	8	61.5	32	5100	NL	--	NL	--
ORO	0-6	58	55	94.8	38	6100	NL	--	NL	--
	6-24	41	36	87.8	73	3800	NL	--	NL	--
	24-48	13	13	100.0	49	9100	NL	--	NL	--
Dioxin/Furan (ng/kg)										
1,2,3,4,6,7,8,9-OCDF	0-6	36	32	88.9	0.199	1640	NL	--	NL	--
	6-24	17	17	100.0	5.6	2710	NL	--	NL	--
	24-48	5	5	100.0	0.274	227	NL	--	NL	--
1,2,3,4,6,7,8,9-OCDD	0-6	36	32	88.9	1.43	65100	NL	--	NL	--
	6-24	17	17	100.0	60.9	9180	NL	--	NL	--
	24-48	5	4	80.0	15.5	21300	NL	--	NL	--
1,2,3,4,6,7,8-HpCDF	0-6	36	34	94.4	0.175	2160	NL	--	NL	--
	6-24	17	17	100.0	3.77	7140	NL	--	NL	--
	24-48	5	4	80.0	31.9	201	NL	--	NL	--
1,2,3,4,6,7,8-HpCDD	0-6	36	32	88.9	0.355	3480	NL	--	NL	--
	6-24	17	17	100.0	7.03	791	NL	--	NL	--
	24-48	5	4	80.0	0.282	3890	NL	--	NL	--
1,2,3,4,7,8,9-HpCDF	0-6	36	19	52.8	0.117	26.2	NL	--	NL	--
	6-24	17	15	88.2	0.353	47.1	NL	--	NL	--
	24-48	5	4	80.0	0.352	5.41	NL	--	NL	--
1,2,3,4,7,8-HxCDF	0-6	36	21	58.3	0.0363	40.2	NL	--	NL	--
	6-24	17	13	76.5	0.195	48.7	NL	--	NL	--
	24-48	5	4	80.0	0.403	10.1	NL	--	NL	--
1,2,3,4,7,8-HxCDD	0-6	36	21	58.3	0.0874	27.7	NL	--	NL	--
	6-24	17	15	88.2	0.344	8.35	NL	--	NL	--
	24-48	5	3	60.0	0.465	12.6	NL	--	NL	--
1,2,3,6,7,8-HxCDF	0-6	36	18	50.0	0.0413	48.2	NL	--	NL	--
	6-24	17	14	82.4	0.193	217	NL	--	NL	--
	24-48	5	4	80.0	0.578	2.8	NL	--	NL	--
1,2,3,6,7,8-HxCDD	0-6	36	28	77.8	0.0918	140	NL	--	NL	--
	6-24	17	17	100.0	0.407	85	NL	--	NL	--
	24-48	5	4	80.0	0.954	203	NL	--	NL	--
1,2,3,7,8,9-HxCDF	0-6	36	11	30.6	0.0838	7.85	NL	--	NL	--
	6-24	17	12	70.6	0.142	17.6	NL	--	NL	--
	24-48	5	1	20.0	0.678	0.678	NL	--	NL	--
1,2,3,7,8,9-HxCDD	0-6	36	23	63.9	0.163	106	NL	--	NL	--
	6-24	17	16	94.1	0.585	40.9	NL	--	NL	--
	24-48	5	3	60.0	1.89	102	NL	--	NL	--
1,2,3,7,8-PeCDF	0-6	36	11	30.6	0.0717	4.71	NL	--	NL	--
	6-24	17	13	76.5	0.0993	10.9	NL	--	NL	--
	24-48	5	2	40.0	0.331	1.04	NL	--	NL	--
1,2,3,7,8-PeCDD	0-6	36	17	47.2	0.0897	54.3	NL	--	NL	--
	6-24	17	15	88.2	0.2	10	NL	--	NL	--
	24-48	5	3	60.0	0.749	1.86	NL	--	NL	--
2,3,4,6,7,8-HxCDF	0-6	36	22	61.1	0.044	28.2	NL	--	NL	--
	6-24	17	16	94.1	0.387	37.8	NL	--	NL	--
	24-48	5	3	60.0	0.515	2.31	NL	--	NL	--
2,3,4,7,8-PeCDF	0-6	36	22	61.1	0.0624	10.3	NL	--	NL	--
	6-24	17	10	58.8	0.124	13.7	NL	--	NL	--
	24-48	5	4	80.0	0.188	1.45	NL	--	NL	--

Table 3-1a
Summary of Upper St. Louis River Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
2,3,7,8-TCDF	0-6	36	19	52.8	0.284	26.9	NL	--	NL	--
	6-24	17	7	41.2	0.744	8.99	NL	--	NL	--
	24-48	5	3	60.0	0.35	29	NL	--	NL	--
2,3,7,8-TCDD	0-6	36	12	33.3	0.0723	21.7	NL	--	NL	--
	6-24	17	14	82.4	0.124	3.3	NL	--	NL	--
	24-48	5	3	60.0	0.402	4.43	NL	--	NL	--
TOTAL HpCDF	0-6	36	36	100.0	0.341	3990	NL	--	NL	--
	6-24	17	17	100.0	9.39	12700	NL	--	NL	--
	24-48	5	5	100.0	0.746	562	NL	--	NL	--
TOTAL HpCDD	0-6	36	36	100.0	0.643	8800	NL	--	NL	--
	6-24	17	17	100.0	13.6	1610	NL	--	NL	--
	24-48	5	5	100.0	0.506	6350	NL	--	NL	--
TOTAL HxCDF	0-6	36	36	100.0	0.101	1700	NL	--	NL	--
	6-24	17	17	100.0	3.76	3140	NL	--	NL	--
	24-48	5	5	100.0	0.206	209	NL	--	NL	--
TOTAL HxCDD	0-6	36	36	100.0	0.357	1260	NL	--	NL	--
	6-24	17	17	100.0	2.83	628	NL	--	NL	--
	24-48	5	5	100.0	0.508	1630	NL	--	NL	--
TOTAL PeCDF	0-6	36	34	94.4	0.0624	309	NL	--	NL	--
	6-24	17	17	100.0	0.272	142	NL	--	NL	--
	24-48	5	5	100.0	0.0624	14.8	NL	--	NL	--
TOTAL PeCDD	0-6	36	36	100.0	0.227	318	NL	--	NL	--
	6-24	17	16	94.1	2.23	149	NL	--	NL	--
	24-48	5	5	100.0	0.482	65.4	NL	--	NL	--
TOTAL TCDF	0-6	36	36	100.0	0.501	124	NL	--	NL	--
	6-24	17	17	100.0	0.857	23.3	NL	--	NL	--
	24-48	5	5	100.0	0.688	78.7	NL	--	NL	--
TOTAL TCDD	0-6	36	33	91.7	0.0828	158	NL	--	NL	--
	6-24	17	16	94.1	0.693	24.5	NL	--	NL	--
	24-48	5	4	80.0	0.952	8.87	NL	--	NL	--
Dioxin Equivalent Concentration	0-6	36	36	100.0	0.1531133	135.4135	0.85	14	21.50	2
	6-24	17	17	100.0	0.4845	118.26238	0.85	16	21.50	2
	24-48	5	5	100.0	0.1611244	20.83775	0.85	4	21.50	0

Notes:
"--" - Not Applicable
% - Percent
µg/kg - Microgram per kilogram
AOC - Area of Concern
bss - below sediment surface
DL - Detection Limit
DRO - Diesel Range Organic
mg/kg - Milligram per kilogram
ND - Non-Detect
ng/kg - Nanogram per kilogram
NL - Not Listed
ORO - Oil Range Organic
PAH - Polycylic Aromatic Hydrocarbon
PCB - Polychlorinated Biphenyls
SQT - Sediment Quality Targets
SVOC - Semivolatile Organic Compound
TAL - Target Analyte List
TCL - Target Compound List
TPH - Total Petroleum Hydrocarbon
TOTAL PAHs 17 - Sum of detections
TOTAL PCBs - Sum of Detections

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I

[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-1b
Summary of Focus Area 1 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
TCL SVOCs - Including PAHs (17 List) (µg/kg)										
1,2-BENZPHENANTHRACENE	0-6	24	2	8.0	25	63	170	0	1300	0
	6-24	17	2	12.0	38	53	170	0	1300	0
	24-48	7	1	14.0	77	77	170	0	1300	0
2-METHYLNAPHTHALENE	0-6	24	0	0.0	ND	ND	20	--	200	--
	6-24	17	0	0.0	ND	ND	20	--	200	--
	24-48	7	1	14.0	41	41	20	1	200	0
ACENAPHTHENE	0-6	24	0	0.0	ND	ND	6.7	--	89	--
	6-24	17	0	0.0	ND	ND	6.7	--	89	--
	24-48	7	0	0.0	ND	ND	6.7	--	89	--
ACENAPHTHYLENE	0-6	24	0	0.0	ND	ND	5.9	--	130	--
	6-24	17	0	0.0	ND	ND	5.9	--	130	--
	24-48	7	0	0.0	ND	ND	5.9	--	130	--
ANTHRACENE	0-6	24	0	0.0	ND	ND	57	--	850	--
	6-24	17	1	6.0	34	34	57	0	850	0
	24-48	7	0	0.0	ND	ND	57	--	850	--
BENZO(A)ANTHRACENE	0-6	24	2	8.0	27	53	110	0	1100	0
	6-24	17	1	6.0	35	35	110	0	1100	0
	24-48	7	1	14.0	71	71	110	0	1100	0
BENZO(A)PYRENE	0-6	24	1	4.0	78	78	150	0	1500	0
	6-24	17	2	12.0	29	29	150	0	1500	0
	24-48	7	1	14.0	120	120	150	0	1500	0
BENZO(B)FLUORANTHENE	0-6	24	2	8.0	27	43	NL	--	NL	--
	6-24	17	2	12.0	28	37	NL	--	NL	--
	24-48	7	1	14.0	79	79	NL	--	NL	--
BENZO(G,H,I)PERYLENE	0-6	24	1	4.0	83	83	NL	--	NL	--
	6-24	17	1	6.0	42	42	NL	--	NL	--
	24-48	7	1	14.0	100	100	NL	--	NL	--
BENZO(K)FLUORANTHENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	1	6.0	38	38	NL	--	NL	--
	24-48	7	1	14.0	97	97	NL	--	NL	--
DIBENZO(A,H)ANTHRACENE	0-6	24	0	0.0	ND	ND	33	--	140	--
	6-24	17	0	0.0	ND	ND	33	--	140	--
	24-48	7	0	0.0	ND	ND	33	--	140	--
FLUORANTHENE	0-6	24	2	8.0	47	70	420	0	2200	0
	6-24	17	1	6.0	43	43	420	0	2200	0
	24-48	7	1	14.0	79	79	420	0	2200	0
FLUORENE	0-6	24	0	0.0	ND	ND	77	--	540	--
	6-24	17	0	0.0	ND	ND	77	--	540	--
	24-48	7	0	0.0	ND	ND	77	--	540	--
INDENO(1,2,3-CD)PYRENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	1	14.0	39	39	NL	--	NL	--
NAPHTHALENE	0-6	24	0	0.0	ND	ND	180	--	560	--
	6-24	17	0	0.0	ND	ND	180	--	560	--
	24-48	7	1	14.0	56	56	180	0	560	0
PHENANTHRENE	0-6	24	2	8.0	25	60	200	0	1200	0
	6-24	17	1	6.0	32	32	200	0	1200	0
	24-48	7	1	14.0	110	110	200	0	1200	0
PYRENE	0-6	24	2	8.0	41	74	200	0	1500	0
	6-24	17	1	6.0	48	48	200	0	1500	0
	24-48	7	1	14.0	66	66	200	0	1500	0
TOTAL PAH 17	0-6	24	2	8.0	192	524	1600	0	23000	0
	6-24	17	3	18.0	71	305	1600	0	23000	0
	24-48	7	1	14.0	935	935	1600	0	23000	0

Table 3-1b
Summary of Focus Area 1 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
1,1'-BIPHENYL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
1,2,4,5-TETRACHLOROBENZENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2,2'-OXYBIS(1-CHLOROPROPANE)	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2,4,5-TRICHLOROPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2,4,6-TRICHLOROPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2,4-DICHLOROPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2,4-DIMETHYLPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2,4-DINITROPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2,4-DINITROTOLUENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2,6-DINITROTOLUENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2-CHLORONAPHTHALENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2-CHLOROPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2-METHYLPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	1	14.0	49	49	NL	--	NL	--
2-NITROANILINE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
2-NITROPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
3,3'-DICHLOROBENZIDINE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
3-NITROANILINE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--

Table 3-1b
Summary of Focus Area 1 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
4,6-DINITRO-2-METHYLPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
4-BROMOPHENYL PHENYL ETHER	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
4-CHLORO-3-METHYLPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
4-CHLOROPHENYL PHENYL ETHER	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
4-METHYLPHENOL	0-6	24	1	4.0	180	180	NL	--	NL	--
	6-24	17	2	12.0	220	580	NL	--	NL	--
	24-48	7	1	14.0	1700	1700	NL	--	NL	--
4-NITROPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
ACETOPHENONE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	1	6.0	37	37	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
ATRAZINE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
BENZALDEHYDE	0-6	24	1	4.0	86	86	NL	--	NL	--
	6-24	17	2	12.0	33	42	NL	--	NL	--
	24-48	7	1	14.0	77	77	NL	--	NL	--
BENZYL BUTYL PHTHALATE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	1	6.0	47	47	NL	--	NL	--
	24-48	7	1	14.0	190	190	NL	--	NL	--
BIS(2-CHLOROETHOXY)METHANE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
BIS(2-CHLOROETHYL)ETHER	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
BIS(2-ETHYLHEXYL)PHTHALATE	0-6	24	7	29.0	69	370	NL	--	NL	--
	6-24	17	5	29.0	50	120	NL	--	NL	--
	24-48	7	2	29.0	32	71	NL	--	NL	--
CAPROLACTAM	0-6	24	1	4.0	32	32	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
CARBAZOLE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	1	6.0	63	63	NL	--	NL	--
	24-48	7	1	14.0	31	31	NL	--	NL	--
CHLOROPHENOLS	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
DIBENZOFURAN	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
DIETHYL PHTHALATE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	1	6.0	40	40	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--

Table 3-1b
Summary of Focus Area 1 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
DIMETHYL PHTHALATE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
DI-N-BUTYLPHTHALATE	0-6	24	2	8.0	35	600	NL	--	NL	--
	6-24	17	4	24.0	25	1200	NL	--	NL	--
	24-48	7	1	14.0	31	31	NL	--	NL	--
DI-N-OCTYLPHTHALATE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	1	6.0	49	49	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
HEXACHLORO-1,3-BUTADIENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
HEXACHLOROBENZENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
HEXACHLOROCYCLOPENTADIENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
HEXACHLOROETHANE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
NITROBENZENE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
N-NITROSO-DI-N-PROPYLAMINE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
N-NITROSODIPHENYLAMINE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
P-CHLOROANILINE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
PENTACHLOROPHENOL	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
PHENOL	0-6	24	1	4.0	140	140	NL	--	NL	--
	6-24	17	1	6.0	88	88	NL	--	NL	--
	24-48	7	1	14.0	130	130	NL	--	NL	--
P-NITROANILINE	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
TAL Metals (mg/kg)										
ALUMINUM	0-6	24	24	100.0	4120	12300	NL	--	NL	--
	6-24	17	17	100.0	3630	12600	NL	--	NL	--
	24-48	7	7	100.0	3960	11800	NL	--	NL	--
ANTIMONY	0-6	24	9	38.0	0.37	0.54	NL	--	NL	--
	6-24	17	2	12.0	0.36	0.37	NL	--	NL	--
	24-48	7	3	43.0	0.34	0.43	NL	--	NL	--
ARSENIC	0-6	24	24	100.0	1.6	3.9	9.8	0	33	0
	6-24	17	17	100.0	1.6	3	9.8	0	33	0
	24-48	7	7	100.0	1.5	3.8	9.8	0	33	0
BARIUM	0-6	24	23	96.0	26.5	81.5	NL	--	NL	--
	6-24	17	14	82.0	26.3	69.5	NL	--	NL	--
	24-48	7	4	57.0	32.5	82.5	NL	--	NL	--

Table 3-1b
Summary of Focus Area 1 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
BERYLLIUM	0-6	24	2	8.0	0.011	0.014	NL	--	NL	--
	6-24	17	1	6.0	0.052	0.052	NL	--	NL	--
	24-48	7	1	14.0	0.12	0.12	NL	--	NL	--
CADMIUM	0-6	24	0	0.0	ND	ND	0.99	--	5	--
	6-24	17	0	0.0	ND	ND	0.99	--	5	--
	24-48	7	0	0.0	ND	ND	0.99	--	5	--
CALCIUM	0-6	24	24	100.0	2140	21200	NL	--	NL	--
	6-24	17	17	100.0	2240	13100	NL	--	NL	--
	24-48	7	7	100.0	2010	14000	NL	--	NL	--
CHROMIUM	0-6	24	24	100.0	9.4	29.5	43	0	110	0
	6-24	17	17	100.0	8.3	31.6	43	0	110	0
	24-48	7	7	100.0	8.6	29.8	43	0	110	0
COBALT	0-6	24	21	88.0	6.3	17.7	NL	--	NL	--
	6-24	17	14	82.0	7	12.3	NL	--	NL	--
	24-48	7	4	57.0	7.9	12.7	NL	--	NL	--
COPPER	0-6	24	23	96.0	3.6	18.6	32	0	150	0
	6-24	17	16	94.0	4.3	13.6	32	0	150	0
	24-48	7	6	86.0	3.3	13.4	32	0	150	0
IRON	0-6	24	24	100.0	10500	21900	NL	--	NL	--
	6-24	17	17	100.0	9110	21000	NL	--	NL	--
	24-48	7	7	100.0	9740	21500	NL	--	NL	--
LEAD	0-6	24	24	100.0	2.5	22.2	36	0	130	0
	6-24	17	17	100.0	2.5	13.5	36	0	130	0
	24-48	7	7	100.0	2.2	30.8	36	0	130	0
MAGNESIUM	0-6	24	24	100.0	1540	4620	NL	--	NL	--
	6-24	17	17	100.0	1480	4550	NL	--	NL	--
	24-48	7	7	100.0	1580	4480	NL	--	NL	--
MANGANESE	0-6	24	24	100.0	155	600	NL	--	NL	--
	6-24	17	17	100.0	129	483	NL	--	NL	--
	24-48	7	7	100.0	141	539	NL	--	NL	--
MERCURY	0-6	24	3	12.0	0.027	0.18	0.18	0	1.1	0
	6-24	17	2	12.0	0.038	0.084	0.18	0	1.1	0
	24-48	7	0	0.0	ND	ND	0.18	--	1.1	--
NICKEL	0-6	24	24	100.0	8.8	23.3	23	1	49	0
	6-24	17	17	100.0	8.7	24.8	23	1	49	0
	24-48	7	7	100.0	8.6	25.9	23	1	49	0
POTASSIUM	0-6	24	20	83.0	288	1200	NL	--	NL	--
	6-24	17	11	65.0	255	1210	NL	--	NL	--
	24-48	7	5	71.0	296	1180	NL	--	NL	--
SELENIUM	0-6	24	17	71.0	0.71	1.9	NL	--	NL	--
	6-24	17	10	59.0	0.61	1.2	NL	--	NL	--
	24-48	7	4	57.0	0.67	1.2	NL	--	NL	--
SILVER	0-6	24	2	8.0	0.37	0.38	NL	--	NL	--
	6-24	17	1	6.0	0.37	0.37	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
SODIUM	0-6	24	6	25.0	139	312	NL	--	NL	--
	6-24	17	5	29.0	103	307	NL	--	NL	--
	24-48	7	3	43.0	168	345	NL	--	NL	--
THALLIUM	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
VANADIUM	0-6	24	24	100.0	14.5	41.9	NL	--	NL	--
	6-24	17	17	100.0	12.7	46.5	NL	--	NL	--
	24-48	7	7	100.0	14	36.3	NL	--	NL	--

Table 3-1b
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Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
ZINC	0-6	24	24	100.0	24.9	112	120	0	460	0
	6-24	17	17	100.0	23.1	75.1	120	0	460	0
	24-48	7	7	100.0	36.8	92.2	120	0	460	0
PCB Aroclors (µg/kg)										
AROCLOR-1016	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1221	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1232	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1242	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1248	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1254	0-6	24	1	4.0	70	70	NL	--	NL	--
	6-24	17	1	6.0	54	54	NL	--	NL	--
	24-48	7	1	14.0	280	280	NL	--	NL	--
AROCLOR-1260	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1262	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
AROCLOR-1268	0-6	24	0	0.0	ND	ND	NL	--	NL	--
	6-24	17	0	0.0	ND	ND	NL	--	NL	--
	24-48	7	0	0.0	ND	ND	NL	--	NL	--
TOTAL PCBs	0-6	24	1	4.0	70	70	60	1	680	0
	6-24	17	1	6.0	54	54	60	0	680	0
	24-48	7	1	14.0	280	280	60	1	680	0
TCL Pesticides (µg/kg)										
1,1,1-TRICHLORO-2,2-BIS (P-METHOXPHENYL)-ETHANE	0-6	13	0	0.0	ND	ND	NL	--	NL	--
4,4'-DDD	0-6	13	0	0.0	ND	ND	4.9	--	28	--
4,4'-DDE	0-6	13	0	0.0	ND	ND	3.2	--	31	--
4,4'-DDT	0-6	13	0	0.0	ND	ND	4.2	--	63	--
ALDRIN	0-6	13	0	0.0	ND	ND	NL	--	NL	--
ALPHA-BHC	0-6	13	0	0.0	ND	ND	NL	--	NL	--
ALPHA-CHLORDANE	0-6	13	0	0.0	ND	ND	NL	--	NL	--
BETA-BHC	0-6	13	0	0.0	ND	ND	NL	--	NL	--
CAMPHECHLOR	0-6	13	0	0.0	ND	ND	0.1	--	32	--
DELTA-BHC	0-6	13	0	0.0	ND	ND	NL	--	NL	--
DIELDRIN	0-6	13	0	0.0	ND	ND	1.9	--	62	--
ENDOSULFAN I	0-6	13	0	0.0	ND	ND	NL	--	NL	--
ENDOSULFAN II	0-6	13	0	0.0	ND	ND	NL	--	NL	--
ENDOSULFAN SULFATE	0-6	13	1	8.0	12	12	NL	--	NL	--
ENDRIN	0-6	13	0	0.0	ND	ND	2.2	--	210	--
ENDRIN ALDEHYDE	0-6	13	0	0.0	ND	ND	NL	--	NL	--
ENDRIN KETONE	0-6	13	0	0.0	ND	ND	NL	--	NL	--
GAMMA-BHC (LINDANE)	0-6	13	0	0.0	ND	ND	2.4	--	5	--
GAMMA-CHLORDANE	0-6	13	0	0.0	ND	ND	NL	--	NL	--

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Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
HEPTACHLOR	0-6	13	0	0.0	ND	ND	NL	--	NL	--
HEPTACHLOR EPOXIDE	0-6	13	0	0.0	ND	ND	2.5	--	16	--
TPH (mg/kg)										
DRO	0-6	24	13	54.0	41	200	NL	--	NL	--
	6-24	17	9	53.0	40	150	NL	--	NL	--
	24-48	7	3	43.0	32	280	NL	--	NL	--
ORO	0-6	24	22	92.0	42	750	NL	--	NL	--
	6-24	17	13	76.0	73	320	NL	--	NL	--
	24-48	7	7	100.0	49	700	NL	--	NL	--
Dioxin/Furan (ng/kg)										
1,2,3,4,6,7,8,9-OCDF	0-6	14	10	71.0	0.531	108	NL	--	NL	--
	6-24	2	2	100.0	47.9	135	NL	--	NL	--
	24-48	2	2	100.0	0.274	168	NL	--	NL	--
1,2,3,4,6,7,8,9-OCDD	0-6	14	10	71.0	4.87	2650	NL	--	NL	--
	6-24	2	2	100.0	828	2530	NL	--	NL	--
	24-48	2	1	50.0	6140	6140	NL	--	NL	--
1,2,3,4,6,7,8-HpCDF	0-6	14	12	86.0	0.211	97.6	NL	--	NL	--
	6-24	2	2	100.0	53.2	263	NL	--	NL	--
	24-48	2	1	50.0	201	201	NL	--	NL	--
1,2,3,4,6,7,8-HpCDD	0-6	14	10	71.0	0.893	328	NL	--	NL	--
	6-24	2	2	100.0	102	550	NL	--	NL	--
	24-48	2	2	100.0	0.282	3890	NL	--	NL	--
1,2,3,4,7,8,9-HpCDF	0-6	14	5	36.0	0.133	2.29	NL	--	NL	--
	6-24	2	2	100.0	1.43	1.8	NL	--	NL	--
	24-48	2	1	50.0	5.41	5.41	NL	--	NL	--
1,2,3,4,7,8-HxCDF	0-6	14	6	43.0	0.0363	0.453	NL	--	NL	--
	6-24	2	1	50.0	6.33	6.33	NL	--	NL	--
	24-48	2	1	50.0	10.1	10.1	NL	--	NL	--
1,2,3,4,7,8-HxCDD	0-6	14	6	43.0	0.0874	1.84	NL	--	NL	--
	6-24	2	2	100.0	1.13	8.35	NL	--	NL	--
	24-48	2	1	50.0	12.6	12.6	NL	--	NL	--
1,2,3,6,7,8-HxCDF	0-6	14	4	29.0	0.0413	0.869	NL	--	NL	--
	6-24	2	1	50.0	2.11	2.11	NL	--	NL	--
	24-48	2	1	50.0	2.8	2.8	NL	--	NL	--
1,2,3,6,7,8-HxCDD	0-6	14	10	71.0	0.0918	11.1	NL	--	NL	--
	6-24	2	2	100.0	11.7	31.1	NL	--	NL	--
	24-48	2	1	50.0	203	203	NL	--	NL	--
1,2,3,7,8,9-HxCDF	0-6	14	2	14.0	0.244	0.474	NL	--	NL	--
	6-24	2	2	100.0	0.368	0.829	NL	--	NL	--
	24-48	2	0	0.0	ND	ND	NL	--	NL	--
1,2,3,7,8,9-HxCDD	0-6	14	8	57.0	0.183	4.6	NL	--	NL	--
	6-24	2	2	100.0	6.19	34.1	NL	--	NL	--
	24-48	2	1	50.0	102	102	NL	--	NL	--
1,2,3,7,8-PeCDF	0-6	14	3	21.0	0.0854	0.203	NL	--	NL	--
	6-24	2	2	100.0	0.362	0.532	NL	--	NL	--
	24-48	2	1	50.0	0.331	0.331	NL	--	NL	--
1,2,3,7,8-PeCDD	0-6	14	8	57.0	0.111	1.45	NL	--	NL	--
	6-24	2	2	100.0	1.11	8.58	NL	--	NL	--
	24-48	2	1	50.0	1.86	1.86	NL	--	NL	--
2,3,4,6,7,8-HxCDF	0-6	14	5	36.0	0.044	1.06	NL	--	NL	--
	6-24	2	2	100.0	1.56	1.68	NL	--	NL	--
	24-48	2	1	50.0	2.31	2.31	NL	--	NL	--
2,3,4,7,8-PeCDF	0-6	14	6	43.0	0.0863	0.215	NL	--	NL	--
	6-24	2	1	50.0	0.526	0.526	NL	--	NL	--
	24-48	2	1	50.0	1.11	1.11	NL	--	NL	--

Table 3-1b
Summary of Focus Area 1 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
2,3,7,8-TCDF	0-6	14	5	36.0	0.284	1.74	NL	--	NL	--
	6-24	2	0	0.0	ND	ND	NL	--	NL	--
	24-48	2	1	50.0	2.41	2.41	NL	--	NL	--
2,3,7,8-TCDD	0-6	14	6	43.0	0.0723	0.712	NL	--	NL	--
	6-24	2	2	100.0	0.436	2.18	NL	--	NL	--
	24-48	2	1	50.0	0.801	0.801	NL	--	NL	--
TOTAL HpCDF	0-6	14	14	100.0	0.465	281	NL	--	NL	--
	6-24	2	2	100.0	147	503	NL	--	NL	--
	24-48	2	2	100.0	0.746	562	NL	--	NL	--
TOTAL HpCDD	0-6	14	14	100.0	0.944	700	NL	--	NL	--
	6-24	2	2	100.0	208	1040	NL	--	NL	--
	24-48	2	2	100.0	0.506	6350	NL	--	NL	--
TOTAL HxCDF	0-6	14	14	100.0	0.344	82	NL	--	NL	--
	6-24	2	2	100.0	67.1	138	NL	--	NL	--
	24-48	2	2	100.0	0.206	209	NL	--	NL	--
TOTAL HxCDD	0-6	14	14	100.0	0.775	79	NL	--	NL	--
	6-24	2	2	100.0	86.3	306	NL	--	NL	--
	24-48	2	2	100.0	0.508	1630	NL	--	NL	--
TOTAL PeCDF	0-6	14	13	93.0	0.0869	8.55	NL	--	NL	--
	6-24	2	2	100.0	9.3	10.3	NL	--	NL	--
	24-48	2	2	100.0	0.0624	14.8	NL	--	NL	--
TOTAL PeCDD	0-6	14	14	100.0	0.379	15.3	NL	--	NL	--
	6-24	2	2	100.0	12.6	63.3	NL	--	NL	--
	24-48	2	2	100.0	0.482	65.4	NL	--	NL	--
TOTAL TCDF	0-6	14	14	100.0	0.535	7.52	NL	--	NL	--
	6-24	2	2	100.0	3.67	3.72	NL	--	NL	--
	24-48	2	2	100.0	0.688	7.76	NL	--	NL	--
TOTAL TCDD	0-6	14	14	100.0	0.212	8.74	NL	--	NL	--
	6-24	2	2	100.0	5.76	13.3	NL	--	NL	--
	24-48	2	2	100.0	0.952	5.91	NL	--	NL	--
Dioxin Equivalent Concentration	0-6	14	14	100.0	0.153113	5.39325	0.85	3	21.5	0
	6-24	2	2	100.0	5.968725	18.30134	0.85	2	21.5	0
	24-48	2	2	100.0	0.161124	20.83775	0.85	1	21.5	0

Notes:
"--" - Not Applicable
% - Percent
µg/kg - Microgram per kilogram
AOC - Area of Concern
bss - below sediment surface
DL - Detection Limit
DRO - Diesel Range Organic
mg/kg - Milligram per kilogram
ND - Non-Detect
ng/kg - Nanogram per kilogram
NL - Not Listed
ORO - Oil Range Organic
PAH - Polycylic Aromatic Hydrocarbon
PCB - Polychlorinated Biphenyls
SQT - Sediment Quality Targets
SVOC - Semivolatile Organic Compound
TAL - Target Analyte List
TCL - Target Compound List
TPH - Total Petroleum Hydrocarbon
TOTAL PAHs 17 - Sum of detections
TOTAL PCBs - Sum of Detections

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I

[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-1c
Summary of Focus Area 2 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
TCL SVOCs - Including PAHs (17 List) (µg/kg)										
1,2-BENZPHENANTHRACENE	0-6	34	7	21	24	2100	170	3	1300	1
	6-24	24	10	42	42	180	170	1	1300	0
	24-48	6	3	50	120	140	170	0	1300	0
2-METHYLNAPHTHALENE	0-6	34	0	0	ND	ND	20	--	200	--
	6-24	24	0	0	ND	ND	20	--	200	--
	24-48	6	1	17	240	240	20	1	200	1
ACENAPHTHENE	0-6	34	1	3	170	170	6.7	1	89	1
	6-24	24	0	0	ND	ND	6.7	--	89	--
	24-48	6	0	0	ND	ND	6.7	--	89	--
ACENAPHTHYLENE	0-6	34	0	0	ND	ND	5.9	--	130	--
	6-24	24	0	0	ND	ND	5.9	--	130	--
	24-48	6	0	0	ND	ND	5.9	--	130	--
ANTHRACENE	0-6	34	2	6	58	460	57	2	850	0
	6-24	24	1	4	52	52	57	0	850	0
	24-48	6	1	17	180	180	57	1	850	0
BENZO(A)ANTHRACENE	0-6	34	6	18	33	1600	110	3	1100	1
	6-24	24	9	38	31	130	110	1	1100	0
	24-48	6	2	33	73	140	110	1	1100	0
BENZO(A)PYRENE	0-6	34	6	18	26	1500	150	3	1500	0
	6-24	24	10	42	32	140	150	0	1500	0
	24-48	6	2	33	61	110	150	0	1500	0
BENZO(B)FLUORANTHENE	0-6	34	6	18	27	2200	NL	--	NL	--
	6-24	24	6	25	33	140	NL	--	NL	--
	24-48	6	2	33	98	130	NL	--	NL	--
BENZO(G,H,I)PERYLENE	0-6	34	3	9	86	670	NL	--	NL	--
	6-24	24	6	25	46	98	NL	--	NL	--
	24-48	6	1	17	53	53	NL	--	NL	--
BENZO(K)FLUORANTHENE	0-6	34	5	15	49	980	NL	--	NL	--
	6-24	24	3	12	30	140	NL	--	NL	--
	24-48	6	2	33	64	82	NL	--	NL	--
DIBENZO(A,H)ANTHRACENE	0-6	34	2	6	43	240	33	2	140	1
	6-24	24	0	0	ND	ND	33	--	140	--
	24-48	6	0	0	ND	ND	33	--	140	--
FLUORANTHENE	0-6	34	8	24	43	4400	420	2	2200	1
	6-24	24	7	29	25	430	420	1	2200	0
	24-48	6	3	50	70	270	420	0	2200	0
FLUORENE	0-6	34	1	3	150	150	77	1	540	0
	6-24	24	0	0	ND	ND	77	--	540	--
	24-48	6	1	17	58	58	77	0	540	0
INDENO(1,2,3-CD)PYRENE	0-6	34	4	12	38	720	NL	--	NL	--
	6-24	24	1	4	76	76	NL	--	NL	--
	24-48	6	1	17	55	55	NL	--	NL	--
NAPHTHALENE	0-6	34	1	3	32	32	180	0	560	0
	6-24	24	0	0	ND	ND	180	--	560	--
	24-48	6	2	33	71	86	180	0	560	0
PHENANTHRENE	0-6	34	7	21	24	2300	200	2	1200	1
	6-24	24	4	17	25	220	200	1	1200	0
	24-48	6	3	50	170	600	200	1	1200	0
PYRENE	0-6	34	9	26	26	3400	200	2	1500	1
	6-24	24	8	33	31	370	200	1	1500	0
	24-48	6	2	33	240	300	200	2	1500	0
TOTAL PAH 17	0-6	34	9	26	117	20922	1600	3	23000	0
	6-24	24	13	54	34	1942	1600	1	23000	0
	24-48	6	3	50	787	1630	1600	1	23000	0

Table 3-1c
Summary of Focus Area 2 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
1,1'-BIPHENYL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
1,2,4,5-TETRACHLOROBENZENE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2,2'-OXYBIS(1-CHLOROPROPANE)	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2,4,5-TRICHLOROPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2,4,6-TRICHLOROPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	1	17	89	89	NL	--	NL	--
2,4-DICHLOROPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2,4-DIMETHYLPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2,4-DINITROPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2,4-DINITROTOLUENE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2,6-DINITROTOLUENE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2-CHLORONAPHTHALENE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2-CHLOROPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2-METHYLPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	1	4	88	88	NL	--	NL	--
	24-48	6	1	17	170	170	NL	--	NL	--
2-NITROANILINE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
2-NITROPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
3,3'-DICHLOROBENZIDINE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
3-NITROANILINE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--

Table 3-1c
Summary of Focus Area 2 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
4,6-DINITRO-2-METHYLPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
4-BROMOPHENYL PHENYL ETHER	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
4-CHLORO-3-METHYLPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
4-CHLOROPHENYL PHENYL ETHER	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
4-METHYLPHENOL	0-6	34	10	29	50	910	NL	--	NL	--
	6-24	24	15	62	31	3000	NL	--	NL	--
	24-48	6	3	50	450	1500	NL	--	NL	--
4-NITROPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
ACETOPHENONE	0-6	34	1	3	31	31	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
ATRAZINE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
BENZALDEHYDE	0-6	34	4	12	31	300	NL	--	NL	--
	6-24	24	2	8	45	78	NL	--	NL	--
	24-48	6	1	17	130	130	NL	--	NL	--
BENZYL BUTYL PHTHALATE	0-6	34	2	6	29	40	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
BIS(2-CHLOROETHOXY)METHANE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
BIS(2-CHLOROETHYL)ETHER	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
BIS(2-ETHYLHEXYL)PHTHALATE	0-6	34	13	38	37	1400	NL	--	NL	--
	6-24	24	10	42	47	310	NL	--	NL	--
	24-48	6	2	33	100	110	NL	--	NL	--
CAPROLACTAM	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
CARBAZOLE	0-6	34	3	9	30	260	NL	--	NL	--
	6-24	24	1	4	32	32	NL	--	NL	--
	24-48	6	1	17	47	47	NL	--	NL	--
CHLOROPHENOLS	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
DIBENZOFURAN	0-6	34	1	3	70	70	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
DIETHYL PHTHALATE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--

Table 3-1c
Summary of Focus Area 2 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
DIMETHYL PHTHALATE	0-6	34	4	12	61	98	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
DI-N-BUTYLPHTHALATE	0-6	34	5	15	23	340	NL	--	NL	--
	6-24	24	2	8	42	380	NL	--	NL	--
	24-48	6	2	33	46	220	NL	--	NL	--
DI-N-OCTYLPHTHALATE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
HEXACHLORO-1,3-BUTADIENE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
HEXACHLOROBENZENE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
HEXACHLOROCYCLOPENTADIENE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
HEXACHLOROETHANE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
NITROBENZENE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
N-NITROSO-DI-N-PROPYLAMINE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
N-NITROSODIPHENYLAMINE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
P-CHLOROANILINE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
PENTACHLOROPHENOL	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	1	4	55	55	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
PHENOL	0-6	34	3	9	56	120	NL	--	NL	--
	6-24	24	5	21	51	180	NL	--	NL	--
	24-48	6	3	50	50	350	NL	--	NL	--
P-NITROANILINE	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
TAL Metals (mg/kg)										
ALUMINUM	0-6	34	34	100	3940	12000	NL	--	NL	--
	6-24	24	24	100	4240	13700	NL	--	NL	--
	24-48	6	6	100	4960	11900	NL	--	NL	--
ANTIMONY	0-6	34	9	26	0.27	2.4	NL	--	NL	--
	6-24	24	8	33	0.3	1.4	NL	--	NL	--
	24-48	6	3	50	0.32	0.45	NL	--	NL	--
ARSENIC	0-6	34	34	100	1.8	7.7	9.8	0	33	0
	6-24	24	24	100	1.8	5.5	9.8	0	33	0
	24-48	6	6	100	1.9	3.4	9.8	0	33	0
BARIUM	0-6	34	31	91	30.7	108	NL	--	NL	--
	6-24	24	24	100	30.1	600	NL	--	NL	--
	24-48	6	5	83	34.3	91.9	NL	--	NL	--

Table 3-1c
Summary of Focus Area 2 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
BERYLLIUM	0-6	34	1	3	0.0082	0.0082	NL	--	NL	--
	6-24	24	3	12	0.085	0.14	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
CADMIUM	0-6	34	0	0	ND	ND	0.99	--	5	--
	6-24	24	0	0	ND	ND	0.99	--	5	--
	24-48	6	1	17	2.1	2.1	0.99	1	5	0
CALCIUM	0-6	34	34	100	2350	28000	NL	--	NL	--
	6-24	24	24	100	2480	41900	NL	--	NL	--
	24-48	6	6	100	3460	16700	NL	--	NL	--
CHROMIUM	0-6	34	34	100	9.9	33.3	43	0	110	0
	6-24	24	24	100	9.4	39.5	43	0	110	0
	24-48	6	6	100	9.1	33.9	43	0	110	0
COBALT	0-6	34	30	88	6.9	15.5	NL	--	NL	--
	6-24	24	22	92	6.8	19.2	NL	--	NL	--
	24-48	6	5	83	5.4	11.5	NL	--	NL	--
COPPER	0-6	34	34	100	4.9	91.9	32	4	150	0
	6-24	24	24	100	3.5	54.6	32	2	150	0
	24-48	6	6	100	10.2	36.8	32	1	150	0
IRON	0-6	34	34	100	10400	57300	NL	--	NL	--
	6-24	24	24	100	9730	27900	NL	--	NL	--
	24-48	6	6	100	8220	23700	NL	--	NL	--
LEAD	0-6	34	34	100	2.8	33.2	36	0	130	0
	6-24	24	24	100	4	43.4	36	1	130	0
	24-48	6	6	100	7.9	51.8	36	1	130	0
MAGNESIUM	0-6	34	34	100	1640	4830	NL	--	NL	--
	6-24	24	24	100	1910	5240	NL	--	NL	--
	24-48	6	6	100	1660	4620	NL	--	NL	--
MANGANESE	0-6	34	34	100	161	1190	NL	--	NL	--
	6-24	24	24	100	111	875	NL	--	NL	--
	24-48	6	6	100	130	743	NL	--	NL	--
MERCURY	0-6	34	10	29	0.052	1.4	0.18	2	1.1	1
	6-24	24	9	38	0.036	1.1	0.18	7	1.1	0
	24-48	6	1	17	0.39	0.39	0.18	1	1.1	0
NICKEL	0-6	34	34	100	8	29.9	23	2	49	0
	6-24	24	24	100	10.2	28	23	3	49	0
	24-48	6	6	100	10.1	21.1	23	0	49	0
POTASSIUM	0-6	34	27	79	228	1220	NL	--	NL	--
	6-24	24	19	79	306	1430	NL	--	NL	--
	24-48	6	5	83	421	1230	NL	--	NL	--
SELENIUM	0-6	34	21	62	0.85	2.5	NL	--	NL	--
	6-24	24	16	67	0.64	2.1	NL	--	NL	--
	24-48	6	4	67	0.84	1.7	NL	--	NL	--
SILVER	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	1	4	2.1	2.1	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
SODIUM	0-6	34	3	9	209	418	NL	--	NL	--
	6-24	24	2	8	366	371	NL	--	NL	--
	24-48	6	1	17	259	259	NL	--	NL	--
THALLIUM	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
VANADIUM	0-6	34	34	100	15	51.5	NL	--	NL	--
	6-24	24	24	100	11.9	42.6	NL	--	NL	--
	24-48	6	6	100	17.1	37.7	NL	--	NL	--

Table 3-1c
Summary of Focus Area 2 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
ZINC	0-6	34	34	100	40.7	295	120	2	460	0
	6-24	24	24	100	32	585	120	3	460	1
	24-48	6	6	100	44.4	207	120	1	460	0
PCB Aroclors (µg/kg)										
AROCLOR-1016	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
AROCLOR-1221	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
AROCLOR-1232	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
AROCLOR-1242	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
AROCLOR-1248	0-6	34	1	3	390	390	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
AROCLOR-1254	0-6	34	2	6	25	190	NL	--	NL	--
	6-24	24	5	21	56	340	NL	--	NL	--
	24-48	6	1	17	200	200	NL	--	NL	--
AROCLOR-1260	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	1	17	140	140	NL	--	NL	--
AROCLOR-1262	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
AROCLOR-1268	0-6	34	0	0	ND	ND	NL	--	NL	--
	6-24	24	0	0	ND	ND	NL	--	NL	--
	24-48	6	0	0	ND	ND	NL	--	NL	--
TOTAL PCBs	0-6	34	2	6	25	580	60	1	680	0
	6-24	24	5	21	56	340	60	4	680	0
	24-48	6	1	17	340	340	60	1	680	0
TCL Pesticides (µg/kg)										
1,1,1-TRICHLORO-2,2-BIS (P-	0-6	11	0	0	ND	ND	NL	--	NL	--
4,4'-DDD	0-6	11	1	9	72	72	4.9	1	28	1
4,4'-DDE	0-6	11	1	9	64	64	3.2	1	31	1
4,4'-DDT	0-6	11	2	18	4.8	150	4.2	2	63	1
ALDRIN	0-6	11	0	0	ND	ND	NL	--	NL	--
ALPHA-BHC	0-6	11	0	0	ND	ND	NL	--	NL	--
ALPHA-CHLORDANE	0-6	11	0	0	ND	ND	NL	--	NL	--
BETA-BHC	0-6	11	0	0	ND	ND	NL	--	NL	--
CAMPHECHLOR	0-6	11	0	0	ND	ND	0.1	--	32	--
DELTA-BHC	0-6	11	1	9	10	10	NL	--	NL	--
DIELDRIN	0-6	11	0	0	ND	ND	1.9	--	62	--
ENDOSULFAN I	0-6	11	0	0	ND	ND	NL	--	NL	--
ENDOSULFAN II	0-6	11	0	0	ND	ND	NL	--	NL	--
ENDOSULFAN SULFATE	0-6	11	1	9	2.6	2.6	NL	--	NL	--
ENDRIN	0-6	11	1	9	10	10	2.2	1	210	0
ENDRIN ALDEHYDE	0-6	11	1	9	7.3	7.3	NL	--	NL	--
ENDRIN KETONE	0-6	11	1	9	2.2	2.2	NL	--	NL	--
GAMMA-BHC (LINDANE)	0-6	11	0	0	ND	ND	2.4	--	5	--
GAMMA-CHLORDANE	0-6	11	0	0	ND	ND	NL	--	NL	--
HEPTACHLOR	0-6	11	0	0	ND	ND	NL	--	NL	--

Table 3-1c
Summary of Focus Area 2 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
HEPTACHLOR EPOXIDE	0-6	11	1	9	61	61	2.5	1	16	1
TPH (mg/kg)										
DRO	0-6	34	25	74	43	1900	NL	--	NL	--
	6-24	24	21	88	45	1400	NL	--	NL	--
	24-48	6	5	83	49	5100	NL	--	NL	--
ORO	0-6	34	33	97	38	6100	NL	--	NL	--
	6-24	24	23	96	84	3800	NL	--	NL	--
	24-48	6	6	100	150	9100	NL	--	NL	--
Dioxin/Furan (ng/kg)										
1,2,3,4,6,7,8,9-OCDF	0-6	22	22	100	0.199	1640	NL	--	NL	--
	6-24	15	15	100	5.6	2710	NL	--	NL	--
	24-48	3	3	100	13.5	227	NL	--	NL	--
1,2,3,4,6,7,8,9-OCDD	0-6	22	22	100	1.43	65100	NL	--	NL	--
	6-24	15	15	100	60.9	9180	NL	--	NL	--
	24-48	3	3	100	15.5	21300	NL	--	NL	--
1,2,3,4,6,7,8-HpCDF	0-6	22	22	100	0.175	2160	NL	--	NL	--
	6-24	15	15	100	3.77	7140	NL	--	NL	--
	24-48	3	3	100	31.9	38.1	NL	--	NL	--
1,2,3,4,6,7,8-HpCDD	0-6	22	22	100	0.355	3480	NL	--	NL	--
	6-24	15	15	100	7.03	791	NL	--	NL	--
	24-48	3	2	67	96.6	837	NL	--	NL	--
1,2,3,4,7,8,9-HpCDF	0-6	22	14	64	0.117	26.2	NL	--	NL	--
	6-24	15	13	87	0.353	47.1	NL	--	NL	--
	24-48	3	3	100	0.352	3.01	NL	--	NL	--
1,2,3,4,7,8-HxCDF	0-6	22	15	68	0.157	40.2	NL	--	NL	--
	6-24	15	12	80	0.195	48.7	NL	--	NL	--
	24-48	3	3	100	0.403	1.61	NL	--	NL	--
1,2,3,4,7,8-HxCDD	0-6	22	15	68	0.118	27.7	NL	--	NL	--
	6-24	15	13	87	0.344	6.55	NL	--	NL	--
	24-48	3	2	67	0.465	1.07	NL	--	NL	--
1,2,3,6,7,8-HxCDF	0-6	22	14	64	0.289	48.2	NL	--	NL	--
	6-24	15	13	87	0.193	217	NL	--	NL	--
	24-48	3	3	100	0.578	0.905	NL	--	NL	--
1,2,3,6,7,8-HxCDD	0-6	22	18	82	0.306	140	NL	--	NL	--
	6-24	15	15	100	0.407	85	NL	--	NL	--
	24-48	3	3	100	0.954	11.7	NL	--	NL	--
1,2,3,7,8,9-HxCDF	0-6	22	9	41	0.0838	7.85	NL	--	NL	--
	6-24	15	10	67	0.142	17.6	NL	--	NL	--
	24-48	3	1	33	0.678	0.678	NL	--	NL	--
1,2,3,7,8,9-HxCDD	0-6	22	15	68	0.163	106	NL	--	NL	--
	6-24	15	14	93	0.585	40.9	NL	--	NL	--
	24-48	3	2	67	1.89	6.37	NL	--	NL	--
1,2,3,7,8-PeCDF	0-6	22	8	36	0.0717	4.71	NL	--	NL	--
	6-24	15	11	73	0.0993	10.9	NL	--	NL	--
	24-48	3	1	33	1.04	1.04	NL	--	NL	--
1,2,3,7,8-PeCDD	0-6	22	9	41	0.0897	54.3	NL	--	NL	--
	6-24	15	13	87	0.2	10	NL	--	NL	--
	24-48	3	2	67	0.749	1.11	NL	--	NL	--
2,3,4,6,7,8-HxCDF	0-6	22	17	77	0.13	28.2	NL	--	NL	--
	6-24	15	14	93	0.387	37.8	NL	--	NL	--
	24-48	3	2	67	0.515	0.883	NL	--	NL	--
2,3,4,7,8-PeCDF	0-6	22	16	73	0.0624	10.3	NL	--	NL	--
	6-24	15	9	60	0.124	13.7	NL	--	NL	--
	24-48	3	3	100	0.188	1.45	NL	--	NL	--

Table 3-1c
Summary of Focus Area 2 Sediment Sample Results
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Analyte	Sampling Depth (inches bss)	No. of Results	No. of Detections	% Detected	Minimum Detection	Maximum Detection	Level I SQT[1]	No. of Results Above Level I[1]	Level II SQT[2]	No. of Results Above Level II[2]
2,3,7,8-TCDF	0-6	22	14	64	0.291	26.9	NL	--	NL	--
	6-24	15	7	47	0.744	8.99	NL	--	NL	--
	24-48	3	2	67	0.35	29	NL	--	NL	--
2,3,7,8-TCDD	0-6	22	6	27	0.0895	21.7	NL	--	NL	--
	6-24	15	12	80	0.124	3.3	NL	--	NL	--
	24-48	3	2	67	0.402	4.43	NL	--	NL	--
TOTAL HpCDF	0-6	22	22	100	0.341	3990	NL	--	NL	--
	6-24	15	15	100	9.39	12700	NL	--	NL	--
	24-48	3	3	100	57	148	NL	--	NL	--
TOTAL HpCDD	0-6	22	22	100	0.643	8800	NL	--	NL	--
	6-24	15	15	100	13.6	1610	NL	--	NL	--
	24-48	3	3	100	6.15	1820	NL	--	NL	--
TOTAL HxCDF	0-6	22	22	100	0.101	1700	NL	--	NL	--
	6-24	15	15	100	3.76	3140	NL	--	NL	--
	24-48	3	3	100	16.4	36.1	NL	--	NL	--
TOTAL HxCDD	0-6	22	22	100	0.357	1260	NL	--	NL	--
	6-24	15	15	100	2.83	628	NL	--	NL	--
	24-48	3	3	100	5.56	92.3	NL	--	NL	--
TOTAL PeCDF	0-6	22	21	95	0.0624	309	NL	--	NL	--
	6-24	15	15	100	0.272	142	NL	--	NL	--
	24-48	3	3	100	1.13	12.6	NL	--	NL	--
TOTAL PeCDD	0-6	22	22	100	0.227	318	NL	--	NL	--
	6-24	15	14	93	2.23	149	NL	--	NL	--
	24-48	3	3	100	1.62	6.97	NL	--	NL	--
TOTAL TCDF	0-6	22	22	100	0.501	124	NL	--	NL	--
	6-24	15	15	100	0.857	23.3	NL	--	NL	--
	24-48	3	3	100	0.733	78.7	NL	--	NL	--
TOTAL TCDD	0-6	22	19	86	0.0828	158	NL	--	NL	--
	6-24	15	14	93	0.693	24.5	NL	--	NL	--
	24-48	3	2	67	3.61	8.87	NL	--	NL	--
Dioxin Equivalent Concentration	0-6	22	22	100	0.2019844	135.4135	0.85	11	21.5	2
	6-24	15	15	100	0.4845	118.26238	0.85	14	21.5	2
	24-48	3	3	100	0.960925	12.2561	0.85	3	21.5	0

Notes:
"--" - Not Applicable
% - Percent
µg/kg - Microgram per kilogram
AOC - Area of Concern
bss - below sediment surface
DL - Detection Limit
DRO - Diesel Range Organic
mg/kg - Milligram per kilogram
ND - Non-Detect
ng/kg - Nanogram per kilogram
NL - Not Listed
ORO - Oil Range Organic
PAH - Polycylic Aromatic Hydrocarbon
PCB - Polychlorinated Biphenyls
SQT - Sediment Quality Targets
SVOC - Semivolatile Organic Compound
TAL - Target Analyte List
TCL - Target Compound List
TPH - Total Petroleum Hydrocarbon
TOTAL PAHs 17 - Sum of detections
TOTAL PCBs - Sum of Detections

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I

[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-01	USR11-01	USR11-01	USR11-02	USR11-02
			Field Sample ID	USR11-01-006	USR11-01-024	USR11-01-047	USR11-02-006	USR11-02-022
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 6	6- 24	24- 47	0- 6	6- 22
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	130 U	130 U	150 U	200 U	140 U
2-METHYLNAPHTHALENE	20	200	µg/kg	130 U	130 U	150 U	200 U	140 U
ACENAPHTHENE	6.7	89	µg/kg	130 U	130 U	150 U	200 U	140 U
ACENAPHTHYLENE	5.9	130	µg/kg	130 U	130 U	150 U	200 U	140 U
ANTHRACENE	57	850	µg/kg	130 U	130 U	150 U	200 U	140 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	130 U	130 U	150 U	200 U	140 U
BENZO(A)PYRENE	150	1500	µg/kg	130 U	130 U	150 U	200 U	140 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	130 U	130 U	150 U	200 U	140 U
FLUORANTHENE	420	2200	µg/kg	130 U	130 U	150 U	200 U	140 U
FLUORENE	77	540	µg/kg	130 U	130 U	150 U	200 U	140 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
NAPHTHALENE	180	560	µg/kg	130 U	130 U	150 U	200 U	140 U
PHENANTHRENE	200	1200	µg/kg	130 U	130 U	150 U	200 U	140 U
PYRENE	200	1500	µg/kg	130 U	130 U	150 U	200 U	140 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2,4-DINITROPHENOL	NL	NL	µg/kg	250 U	240 U	290 U	390 U	260 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2-CHLOROPHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2-METHYLPHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
2-NITROANILINE	NL	NL	µg/kg	250 U	240 U	290 U	390 U	260 U
2-NITROPHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
3-NITROANILINE	NL	NL	µg/kg	250 U	240 U	290 U	390 U	260 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	250 UJ	240 UJ	290 UJ	390 UJ	260 UJ
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
4-METHYLPHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
4-NITROPHENOL	NL	NL	µg/kg	250 U	240 U	290 U	390 U	260 U
ACETOPHENONE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
ATRAZINE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
BENZALDEHYDE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
CAPROLACTAM	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
CARBAZOLE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
CHLOROPHENOLS	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
DIBENZOFURAN	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
DIETHYL PHTHALATE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
HEXACHLOROBENZENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
HEXACHLOROETHANE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
NITROBENZENE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
P-CHLOROANILINE	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
PENTACHLOROPHENOL	NL	NL	µg/kg	250 UJ	240 UJ	290 UJ	390 UJ	260 UJ
PHENOL	NL	NL	µg/kg	130 U	130 U	150 U	200 U	140 U
P-NITROANILINE	NL	NL	µg/kg	250 U	240 U	290 U	390 U	260 U

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-03	USR11-04	USR11-05	USR11-05	USR11-05
			Field Sample ID	USR11-03-017	USR11-04-016	USR11-05-006	USR11-05-007-FS	USR11-05-024
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 17	0- 16	0- 6	0- 7	6- 24
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	160 U	150 U	170 U	150 U	130 U
2-METHYLNAPHTHALENE	20	200	µg/kg	160 U	150 U	170 U	150 U	130 U
ACENAPHTHENE	6.7	89	µg/kg	160 U	150 U	170 U	150 U	130 U
ACENAPHTHYLENE	5.9	130	µg/kg	160 U	150 U	170 U	150 U	130 U
ANTHRACENE	57	850	µg/kg	160 U	150 U	170 U	150 U	130 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	160 U	150 U	170 U	150 U	130 U
BENZO(A)PYRENE	150	1500	µg/kg	160 U	150 U	170 U	150 U	130 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	160 U	150 U	170 U	150 U	130 U
FLUORANTHENE	420	2200	µg/kg	160 U	150 U	170 U	150 U	130 U
FLUORENE	77	540	µg/kg	160 U	150 U	170 U	150 U	130 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
NAPHTHALENE	180	560	µg/kg	160 U	150 U	170 U	150 U	130 U
PHENANTHRENE	200	1200	µg/kg	160 U	150 U	170 U	150 U	130 U
PYRENE	200	1500	µg/kg	160 U	150 U	170 U	150 U	130 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2,4-DINITROPHENOL	NL	NL	µg/kg	310 U	290 U	320 U	300 U	250 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2-CHLOROPHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2-METHYLPHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
2-NITROANILINE	NL	NL	µg/kg	310 U	290 U	320 U	300 U	250 U
2-NITROPHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
3-NITROANILINE	NL	NL	µg/kg	310 U	290 U	320 U	300 U	250 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	310 UJ	290 UJ	320 UJ	300 UJ	250 UJ
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
4-METHYLPHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
4-NITROPHENOL	NL	NL	µg/kg	310 U	290 U	320 U	300 U	250 U
ACETOPHENONE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
ATRAZINE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
BENZALDEHYDE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	270	120 J	170 U	150 U	130 U
CAPROLACTAM	NL	NL	µg/kg	160 U	150 U	170 U	32 J	130 U
CARBAZOLE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
CHLOROPHENOLS	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
DIBENZOFURAN	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
DIETHYL PHTHALATE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
HEXACHLOROBENZENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
HEXACHLOROETHANE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
NITROBENZENE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
P-CHLOROANILINE	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
PENTACHLOROPHENOL	NL	NL	µg/kg	310 UJ	290 UJ	320 UJ	300 UJ	250 UJ
PHENOL	NL	NL	µg/kg	160 U	150 U	170 U	150 U	130 U
P-NITROANILINE	NL	NL	µg/kg	310 U	290 U	320 U	300 U	250 U

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-05	USR11-06	USR11-06	USR11-06	USR11-06
			Field Sample ID	USR11-05-051	USR11-06-006	USR11-06-006-DP	USR11-06-022	USR11-06-022-DP
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	24- 51	0- 6	0- 6	6- 22	6- 22
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	130 U	120 U	120 U	120 U	150 U
2-METHYLNAPHTHALENE	20	200	µg/kg	130 U	120 U	120 U	120 U	150 U
ACENAPHTHENE	6.7	89	µg/kg	130 U	120 U	120 U	120 U	150 U
ACENAPHTHYLENE	5.9	130	µg/kg	130 U	120 U	120 U	120 U	150 U
ANTHRACENE	57	850	µg/kg	130 U	120 U	120 U	120 U	150 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	130 U	120 U	120 U	120 U	150 U
BENZO(A)PYRENE	150	1500	µg/kg	130 U	120 U	120 U	120 U	150 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	130 U	120 U	120 U	120 U	150 U
FLUORANTHENE	420	2200	µg/kg	130 U	120 U	120 U	120 U	150 U
FLUORENE	77	540	µg/kg	130 U	120 U	120 U	120 U	150 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
NAPHTHALENE	180	560	µg/kg	130 U	120 U	120 U	120 U	150 U
PHENANTHRENE	200	1200	µg/kg	130 U	120 U	120 U	120 U	150 U
PYRENE	200	1500	µg/kg	130 U	120 U	120 U	120 U	150 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2,4-DINITROPHENOL	NL	NL	µg/kg	250 U	230 U	240 U	230 U	280 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2-CHLOROPHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2-METHYLPHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
2-NITROANILINE	NL	NL	µg/kg	250 U	230 U	240 U	230 U	280 U
2-NITROPHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
3-NITROANILINE	NL	NL	µg/kg	250 U	230 U	240 U	230 U	280 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	250 UJ	230 U	240 U	230 U	280 UJ
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
4-METHYLPHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
4-NITROPHENOL	NL	NL	µg/kg	250 U	230 U	240 U	230 U	280 U
ACETOPHENONE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
ATRAZINE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
BENZALDEHYDE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
CAPROLACTAM	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
CARBAZOLE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
CHLOROPHENOLS	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
DIBENZOFURAN	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
DIETHYL PHTHALATE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	130 U	120 U	120 U	25 J	150 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
HEXACHLOROBENZENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
HEXACHLOROETHANE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
NITROBENZENE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
P-CHLOROANILINE	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
PENTACHLOROPHENOL	NL	NL	µg/kg	250 UJ	230 U	240 U	230 U	280 UJ
PHENOL	NL	NL	µg/kg	130 U	120 U	120 U	120 U	150 U
P-NITROANILINE	NL	NL	µg/kg	250 U	230 U	240 U	230 U	280 U

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-07	USR11-08	USR11-08	USR11-08	USR11-09
			Field Sample ID	USR11-07-017	USR11-08-006	USR11-08-024	USR11-08-043	USR11-09-006
			Sample Date	7/24/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	0- 17	0- 6	6- 24	24- 43	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2-METHYLNAPHTHALENE	20	200	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
ACENAPHTHENE	6.7	89	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
ACENAPHTHYLENE	5.9	130	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
ANTHRACENE	57	850	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BENZO(A)ANTHRACENE	110	1100	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BENZO(A)PYRENE	150	1500	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
FLUORANTHENE	420	2200	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
FLUORENE	77	540	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
NAPHTHALENE	180	560	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
PHENANTHRENE	200	1200	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
PYRENE	200	1500	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2,4-DICHLOROPHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	240 U	300 UJ	270 UJ	250 UJ	280 UJ
2,4-DINITROTOLUENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2,6-DINITROTOLUENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2-CHLORONAPHTHALENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2-CHLOROPHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2-METHYLPHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
2-NITROANILINE	NL	NL	µg/kg	240 U	300 UJ	270 UJ	250 UJ	280 UJ
2-NITROPHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
3-NITROANILINE	NL	NL	µg/kg	240 U	300 UJ	270 UJ	250 UJ	280 UJ
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	240 U	300 UJ	270 UJ	250 UJ	280 UJ
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
4-METHYLPHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
4-NITROPHENOL	NL	NL	µg/kg	240 U	300 UJ	270 UJ	250 UJ	280 UJ
ACETOPHENONE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
ATRAZINE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BENZALDEHYDE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
CAPROLACTAM	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
CARBAZOLE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
CHLOROPHENOLS	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
DIBENZOFURAN	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
DIETHYL PHTHALATE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
DIMETHYL PHTHALATE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	600	160 UJ	140 UJ	130 UJ	140 UJ
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
HEXACHLOROBENZENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
HEXACHLOROETHANE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
NITROBENZENE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
P-CHLOROANILINE	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
PENTACHLOROPHENOL	NL	NL	µg/kg	240 U	300 UJ	270 UJ	250 UJ	280 UJ
PHENOL	NL	NL	µg/kg	120 U	160 UJ	140 UJ	130 UJ	140 UJ
P-NITROANILINE	NL	NL	µg/kg	240 U	300 UJ	270 UJ	250 UJ	280 UJ

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-09	USR11-09	USR11-10	USR11-10	USR11-11
			Field Sample ID	USR11-09-024	USR11-09-036	USR11-10-006	USR11-10-030	USR11-11-006
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	6- 24	24- 36	0- 6	6- 30	0- 6
Chemical	Level I[1]	Level II[2]	Unit					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2-METHYLNAPHTHALENE	20	200	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
ACENAPHTHENE	6.7	89	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
ACENAPHTHYLENE	5.9	130	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
ANTHRACENE	57	850	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BENZO(A)ANTHRACENE	110	1100	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BENZO(A)PYRENE	150	1500	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
FLUORANTHENE	420	2200	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
FLUORENE	77	540	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
NAPHTHALENE	180	560	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
PHENANTHRENE	200	1200	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
PYRENE	200	1500	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2,4-DICHLOROPHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	320 UJ	260 UJ	300 UJ	260 UJ	280 UJ
2,4-DINITROTOLUENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2,6-DINITROTOLUENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2-CHLORONAPHTHALENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2-CHLOROPHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2-METHYLPHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
2-NITROANILINE	NL	NL	µg/kg	320 UJ	260 UJ	300 UJ	260 UJ	280 UJ
2-NITROPHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
3-NITROANILINE	NL	NL	µg/kg	320 UJ	260 UJ	300 UJ	260 UJ	280 UJ
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	320 UJ	260 UJ	300 UJ	260 UJ	280 UJ
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
4-METHYLPHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
4-NITROPHENOL	NL	NL	µg/kg	320 UJ	260 UJ	300 UJ	260 UJ	280 UJ
ACETOPHENONE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
ATRAZINE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BENZALDEHYDE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	59 J	32 J	160 UJ	130 UJ	370 J
CAPROLACTAM	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
CARBAZOLE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
CHLOROPHENOLS	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
DIBENZOFURAN	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
DIETHYL PHTHALATE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
DIMETHYL PHTHALATE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	160 UJ	31 J	160 UJ	130 UJ	140 UJ
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
HEXACHLOROBENZENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
HEXACHLOROETHANE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
NITROBENZENE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
P-CHLOROANILINE	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
PENTACHLOROPHENOL	NL	NL	µg/kg	320 UJ	260 UJ	300 UJ	260 UJ	280 UJ
PHENOL	NL	NL	µg/kg	160 UJ	130 UJ	160 UJ	130 UJ	140 UJ
P-NITROANILINE	NL	NL	µg/kg	320 UJ	260 UJ	300 UJ	260 UJ	280 UJ

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-11	USR11-12	USR11-12	USR11-12	USR11-13
			Field Sample ID	USR11-11-026	USR11-12-006	USR11-12-024	USR11-12-040	USR11-13-006
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	6- 26	0- 6	6- 24	24- 40	0- 6
Chemical	Level I[1]	Level II[2]	Unit					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	140 UJ	120 UJ	38 J	140 UJ	190 UJ
2-METHYLNAPHTHALENE	20	200	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
ACENAPHTHENE	6.7	89	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
ACENAPHTHYLENE	5.9	130	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
ANTHRACENE	57	850	µg/kg	140 UJ	120 UJ	34 J	140 UJ	190 UJ
BENZO(A)ANTHRACENE	110	1100	µg/kg	140 UJ	120 UJ	35 J	140 UJ	190 UJ
BENZO(A)PYRENE	150	1500	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	140 UJ	120 UJ	37 J	140 UJ	190 UJ
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	140 UJ	120 UJ	38 J	140 UJ	190 UJ
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
FLUORANTHENE	420	2200	µg/kg	140 UJ	120 UJ	43 J	140 UJ	190 UJ
FLUORENE	77	540	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
NAPHTHALENE	180	560	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
PHENANTHRENE	200	1200	µg/kg	140 UJ	120 UJ	32 J	140 UJ	190 UJ
PYRENE	200	1500	µg/kg	140 UJ	120 UJ	48 J	140 UJ	190 UJ
TOTAL PAHs 17	1600	23000	µg/kg	0	0	305	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2,4-DICHLOROPHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	270 UJ	240 UJ	270 UJ	280 UJ	370 UJ
2,4-DINITROTOLUENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2,6-DINITROTOLUENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2-CHLORONAPHTHALENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2-CHLOROPHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2-METHYLPHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
2-NITROANILINE	NL	NL	µg/kg	270 UJ	240 UJ	270 UJ	280 UJ	370 UJ
2-NITROPHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
3-NITROANILINE	NL	NL	µg/kg	270 UJ	240 UJ	270 UJ	280 UJ	370 UJ
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	270 UJ	240 UJ	270 UJ	280 UJ	370 UJ
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
4-METHYLPHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
4-NITROPHENOL	NL	NL	µg/kg	270 UJ	240 UJ	270 UJ	280 UJ	370 UJ
ACETOPHENONE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
ATRAZINE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
BENZALDEHYDE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	140 UJ	120 UJ	47 J	140 UJ	190 UJ
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	140 UJ	260 J	90 J	140 UJ	190 UJ
CAPROLACTAM	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
CARBAZOLE	NL	NL	µg/kg	140 UJ	120 UJ	63 J	31 J	190 UJ
CHLOROPHENOLS	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
DIBENZOFURAN	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
DIETHYL PHTHALATE	NL	NL	µg/kg	140 UJ	120 UJ	40 J	140 UJ	190 UJ
DIMETHYL PHTHALATE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	47 J	120 UJ	51 J	140 UJ	190 UJ
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	140 UJ	120 UJ	49 J	140 UJ	190 UJ
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
HEXACHLOROBENZENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
HEXACHLOROETHANE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
NITROBENZENE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
P-CHLOROANILINE	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
PENTACHLOROPHENOL	NL	NL	µg/kg	270 UJ	240 UJ	270 UJ	280 UJ	370 UJ
PHENOL	NL	NL	µg/kg	140 UJ	120 UJ	140 UJ	140 UJ	190 UJ
P-NITROANILINE	NL	NL	µg/kg	270 UJ	240 UJ	270 UJ	280 UJ	370 UJ

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-13	USR11-14	USR11-14	USR11-45	USR11-45
			Field Sample ID	USR11-13-018	USR11-14-006	USR11-14-022	USR11-45-006	USR11-45-006-FS
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	6- 18	0- 6	6- 22	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2-METHYLNAPHTHALENE	20	200	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
ACENAPHTHENE	6.7	89	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
ACENAPHTHYLENE	5.9	130	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
ANTHRACENE	57	850	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
BENZO(A)PYRENE	150	1500	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 UJ	140 UJ
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
FLUORANTHENE	420	2200	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
FLUORENE	77	540	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
NAPHTHALENE	180	560	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
PHENANTHRENE	200	1200	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
PYRENE	200	1500	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 UJ	140 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	240 UJ	240 UJ	220 UJ	290 U	260 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2-CHLOROPHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2-METHYLPHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
2-NITROANILINE	NL	NL	µg/kg	240 UJ	240 UJ	220 UJ	290 U	260 U
2-NITROPHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
3-NITROANILINE	NL	NL	µg/kg	240 UJ	240 UJ	220 UJ	290 U	260 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	240 UJ	240 UJ	220 UJ	290 U	260 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
4-METHYLPHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
4-NITROPHENOL	NL	NL	µg/kg	240 UJ	240 UJ	220 UJ	290 U	260 U
ACETOPHENONE	NL	NL	µg/kg	130 UJ	120 UJ	37 J	150 U	140 U
ATRAZINE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
BENZALDEHYDE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	86 J
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	120 J	250 J	50 J	76 J	69 J
CAPROLACTAM	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
CARBAZOLE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
CHLOROPHENOLS	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
DIBENZOFURAN	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
DIETHYL PHTHALATE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	1200 J	35 J	120 UJ	150 U	140 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
HEXACHLOROBENZENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
HEXACHLOROETHANE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
NITROBENZENE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
P-CHLOROANILINE	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
PENTACHLOROPHENOL	NL	NL	µg/kg	240 UJ	240 UJ	220 UJ	290 U	260 U
PHENOL	NL	NL	µg/kg	130 UJ	120 UJ	120 UJ	150 U	140 U
P-NITROANILINE	NL	NL	µg/kg	240 UJ	240 UJ	220 UJ	290 U	260 U

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-45	USR11-45	USR11-46	USR11-46	USR11-46
			Field Sample ID	USR11-45-024	USR11-45-039	USR11-46-006	USR11-46-024	USR11-46-051
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	6- 24	24- 39	0- 6	6- 24	24- 51
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	53 J	77 J	63 J	140 U	120 U
2-METHYLNAPHTHALENE	20	200	µg/kg	140 U	**41 J**	150 U	140 U	120 U
ACENAPHTHENE	6.7	89	µg/kg	140 U	180 U	150 U	140 U	120 U
ACENAPHTHYLENE	5.9	130	µg/kg	140 U	180 U	150 U	140 U	120 U
ANTHRACENE	57	850	µg/kg	140 U	180 U	150 U	140 U	120 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	140 U	71 J	53 J	140 U	120 U
BENZO(A)PYRENE	150	1500	µg/kg	29 J	120 J	78 J	29 J	120 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	28 J	79 J	43 J	140 U	120 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	140 U	100 J	83 J	42 J	120 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	140 U	97 J	150 U	140 U	120 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	140 U	180 U	150 U	140 U	120 U
FLUORANTHENE	420	2200	µg/kg	140 U	79 J	70 J	140 U	120 U
FLUORENE	77	540	µg/kg	140 U	180 U	150 U	140 U	120 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	140 U	39 J	150 U	140 U	120 U
NAPHTHALENE	180	560	µg/kg	140 U	56 J	150 U	140 U	120 U
PHENANTHRENE	200	1200	µg/kg	140 U	110 J	60 J	140 U	120 U
PYRENE	200	1500	µg/kg	140 U	66 J	74 J	140 U	120 U
TOTAL PAHs 17	1600	23000	µg/kg	110	935	524	71	0
1,1'-BIPHENYL	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	140 UJ	180 UJ	150 U	140 U	120 U
2,4-DINITROPHENOL	NL	NL	µg/kg	270 U	340 U	290 U	280 U	240 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
2-CHLOROPHENOL	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
2-METHYLPHENOL	NL	NL	µg/kg	140 U	49 J	150 U	140 U	120 U
2-NITROANILINE	NL	NL	µg/kg	270 U	340 U	290 U	280 U	240 U
2-NITROPHENOL	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
3-NITROANILINE	NL	NL	µg/kg	270 U	340 U	290 U	280 U	240 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	270 U	340 U	290 U	280 U	240 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
4-METHYLPHENOL	NL	NL	µg/kg	220	1700	180	580	120 U
4-NITROPHENOL	NL	NL	µg/kg	270 U	340 U	290 U	280 U	240 U
ACETOPHENONE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
ATRAZINE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
BENZALDEHYDE	NL	NL	µg/kg	42 J	77 J	150 U	33 J	120 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	140 U	190	150 U	140 U	120 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	72 J	71 J	150 U	140 U	120 U
CAPROLACTAM	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
CARBAZOLE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
CHLOROPHENOLS	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
DIBENZOFURAN	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
DIETHYL PHTHALATE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
HEXACHLOROBENZENE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
HEXACHLOROETHANE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
NITROBENZENE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
P-CHLOROANILINE	NL	NL	µg/kg	140 U	180 U	150 U	140 U	120 U
PENTACHLOROPHENOL	NL	NL	µg/kg	270 U	340 U	290 U	280 U	240 U
PHENOL	NL	NL	µg/kg	140 U	130 J	140 J	88 J	120 U
P-NITROANILINE	NL	NL	µg/kg	270 U	340 U	290 U	280 U	240 U

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-47	USR11-47	USR11-48	USR11-48	USR11-49
			Field Sample ID	USR11-47-006	USR11-47-006-FS	USR11-48-006	USR11-48-019	USR11-49-006
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 6	0- 6	0- 6	6- 19	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	150 U	160 U	25 J	110 U	240 U
2-METHYLNAPHTHALENE	20	200	µg/kg	150 U	160 U	120 U	110 U	240 U
ACENAPHTHENE	6.7	89	µg/kg	150 U	160 U	120 U	110 U	240 U
ACENAPHTHYLENE	5.9	130	µg/kg	150 U	160 U	120 U	110 U	240 U
ANTHRACENE	57	850	µg/kg	150 U	160 U	120 U	110 U	240 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	150 U	160 U	27 J	110 U	240 U
BENZO(A)PYRENE	150	1500	µg/kg	150 U	160 U	120 U	110 U	240 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	150 U	160 U	27 J	110 U	240 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	150 U	160 U	120 U	110 U	240 U
FLUORANTHENE	420	2200	µg/kg	150 U	160 U	47 J	110 U	240 U
FLUORENE	77	540	µg/kg	150 U	160 U	120 U	110 U	240 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
NAPHTHALENE	180	560	µg/kg	150 U	160 U	120 U	110 U	240 U
PHENANTHRENE	200	1200	µg/kg	150 U	160 U	25 J	110 U	240 U
PYRENE	200	1500	µg/kg	150 U	160 U	41 J	110 U	240 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	192	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
2,4-DINITROPHENOL	NL	NL	µg/kg	290 U	300 U	230 U	220 U	460 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
2-CHLOROPHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
2-METHYLPHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
2-NITROANILINE	NL	NL	µg/kg	290 U	300 U	230 U	220 U	460 U
2-NITROPHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
3-NITROANILINE	NL	NL	µg/kg	290 U	300 U	230 U	220 U	460 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	290 U	300 U	230 U	220 U	460 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
4-METHYLPHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
4-NITROPHENOL	NL	NL	µg/kg	290 U	300 U	230 U	220 U	460 U
ACETOPHENONE	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
ATRAZINE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
BENZALDEHYDE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
CAPROLACTAM	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
CARBAZOLE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
CHLOROPHENOLS	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
DIBENZOFURAN	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
DIETHYL PHTHALATE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
HEXACHLOROBENZENE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
HEXACHLOROETHANE	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
NITROBENZENE	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	150 U	160 UJ	120 U	110 U	240 U
P-CHLOROANILINE	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
PENTACHLOROPHENOL	NL	NL	µg/kg	290 U	300 U	230 U	220 U	460 U
PHENOL	NL	NL	µg/kg	150 U	160 U	120 U	110 U	240 U
P-NITROANILINE	NL	NL	µg/kg	290 U	300 U	230 U	220 U	460 U

Table 3-2a
Focus Area 1 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-49	USR11-50	USR11-50
			Field Sample ID	USR11-49-034	USR11-50-006	USR11-50-026
			Sample Date	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	6- 34	0- 6	6- 26
Chemical	**Level I[1]**	**Level II[2]**	**Unit**			
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	130 U	170 U	120 U
2-METHYLNAPHTHALENE	20	200	µg/kg	130 U	170 U	120 U
ACENAPHTHENE	6.7	89	µg/kg	130 U	170 U	120 U
ACENAPHTHYLENE	5.9	130	µg/kg	130 U	170 U	120 U
ANTHRACENE	57	850	µg/kg	130 U	170 U	120 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	130 U	170 U	120 U
BENZO(A)PYRENE	150	1500	µg/kg	130 U	170 U	120 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	130 U	170 U	120 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	130 U	170 U	120 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	130 U	170 U	120 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	130 U	170 U	120 U
FLUORANTHENE	420	2200	µg/kg	130 U	170 U	120 U
FLUORENE	77	540	µg/kg	130 U	170 U	120 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	130 U	170 U	120 U
NAPHTHALENE	180	560	µg/kg	130 U	170 U	120 U
PHENANTHRENE	200	1200	µg/kg	130 U	170 U	120 U
PYRENE	200	1500	µg/kg	130 U	170 U	120 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	130 U	170 U	120 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	130 U	170 U	120 U
2,2'-OXYBIS (1-CHLOROPROPANE)	NL	NL	µg/kg	130 U	170 U	120 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	130 U	170 U	120 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	130 U	170 U	120 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	130 U	170 U	120 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	130 U	170 U	120 U
2,4-DINITROPHENOL	NL	NL	µg/kg	250 U	330 U	230 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	130 U	170 U	120 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	130 U	170 U	120 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	130 U	170 U	120 U
2-CHLOROPHENOL	NL	NL	µg/kg	130 U	170 U	120 U
2-METHYLPHENOL	NL	NL	µg/kg	130 U	170 U	120 U
2-NITROANILINE	NL	NL	µg/kg	250 U	330 U	230 U
2-NITROPHENOL	NL	NL	µg/kg	130 U	170 U	120 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	130 U	170 U	120 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	130 U	170 U	120 U
3-NITROANILINE	NL	NL	µg/kg	250 U	330 U	230 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	250 U	330 U	230 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	130 U	170 U	120 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	130 U	170 U	120 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	130 U	170 U	120 U
4-METHYLPHENOL	NL	NL	µg/kg	130 U	170 U	120 U
4-NITROPHENOL	NL	NL	µg/kg	250 U	330 U	230 U
ACETOPHENONE	NL	NL	µg/kg	130 U	170 U	120 U
ATRAZINE	NL	NL	µg/kg	130 U	170 U	120 U
BENZALDEHYDE	NL	NL	µg/kg	130 U	170 U	120 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	130 U	170 U	120 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	130 U	170 U	120 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	130 U	170 U	120 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	130 U	170 U	120 U
CAPROLACTAM	NL	NL	µg/kg	130 U	170 U	120 U
CARBAZOLE	NL	NL	µg/kg	130 U	170 U	120 U
CHLOROPHENOLS	NL	NL	µg/kg	130 U	170 U	120 U
DIBENZOFURAN	NL	NL	µg/kg	130 U	170 U	120 U
DIETHYL PHTHALATE	NL	NL	µg/kg	130 U	170 U	120 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	130 U	170 U	120 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	130 U	170 U	120 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	130 U	170 U	120 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	130 U	170 U	120 U
HEXACHLOROBENZENE	NL	NL	µg/kg	130 U	170 U	120 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	130 U	170 U	120 U
HEXACHLOROETHANE	NL	NL	µg/kg	130 U	170 U	120 U
NITROBENZENE	NL	NL	µg/kg	130 U	170 U	120 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	130 U	170 U	120 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	130 U	170 U	120 U
P-CHLOROANILINE	NL	NL	µg/kg	130 U	170 U	120 U
PENTACHLOROPHENOL	NL	NL	µg/kg	250 U	330 U	230 U
PHENOL	NL	NL	µg/kg	130 U	170 U	120 U
P-NITROANILINE	NL	NL	µg/kg	250 U	330 U	230 U

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

µg/kg - Microgram per kilogram
DL - Detection Limit
ID - Identification
in bss - inches below sediment surface
J - Estimated Value
ND - Not Detected
NL - Not Listed
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.
Total PAHs 17 - Sum of detections

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I
[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-15	USR11-15	USR11-16	USR11-17	USR11-17
			Field Sample ID	USR11-15-017	USR11-15-017-FS	USR11-16-019	USR11-17-006	USR11-17-006-FS
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/19/2011	7/19/2011
			Depth Interval (in bss)	0- 17	0- 17	0- 19	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2-METHYLNAPHTHALENE	20	200	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
ACENAPHTHENE	6.7	89	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
ACENAPHTHYLENE	5.9	130	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
ANTHRACENE	57	850	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BENZO(A)PYRENE	150	1500	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
FLUORANTHENE	420	2200	µg/kg	140 UJ	130 UJ	150 UJ	60 J	180 U
FLUORENE	77	540	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
NAPHTHALENE	180	560	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
PHENANTHRENE	200	1200	µg/kg	140 UJ	130 UJ	150 UJ	44 J	180 U
PYRENE	200	1500	µg/kg	140 UJ	130 UJ	150 UJ	46 J	180 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0	150	0
1,1'-BIPHENYL	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2,4-DINITROPHENOL	NL	NL	µg/kg	270 UJ	260 UJ	290 UJ	330 U	340 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2-CHLOROPHENOL	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2-METHYLPHENOL	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
2-NITROANILINE	NL	NL	µg/kg	270 UJ	260 UJ	290 UJ	330 U	340 U
2-NITROPHENOL	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
3-NITROANILINE	NL	NL	µg/kg	270 UJ	260 UJ	290 UJ	330 U	340 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	270 UJ	260 UJ	290 UJ	330 U	340 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
4-METHYLPHENOL	NL	NL	µg/kg	140 UJ	130 UJ	96 J	170 U	92 J
4-NITROPHENOL	NL	NL	µg/kg	270 UJ	260 UJ	290 UJ	330 U	340 U
ACETOPHENONE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
ATRAZINE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BENZALDEHYDE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	500 J	390 J	130 J	170 U	180 U
CAPROLACTAM	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
CARBAZOLE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
CHLOROPHENOLS	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
DIBENZOFURAN	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
DIETHYL PHTHALATE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	61 J
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	140 UJ	130 UJ	340 J	170 U	180 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
HEXACHLOROBENZENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
HEXACHLOROETHANE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
NITROBENZENE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 UJ	180 UJ
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
P-CHLOROANILINE	NL	NL	µg/kg	140 UJ	130 UJ	150 UJ	170 U	180 U
PENTACHLOROPHENOL	NL	NL	µg/kg	270 UJ	260 UJ	290 UJ	330 U	340 U
PHENOL	NL	NL	µg/kg	140 UJ	130 UJ	56 J	170 U	180 U
P-NITROANILINE	NL	NL	µg/kg	270 UJ	260 UJ	290 UJ	330 U	340 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-17	USR11-18	USR11-19	USR11-20	USR11-20
			Field Sample ID	USR11-17-016	USR11-18-006	USR11-19-006	USR11-20-006	USR11-20-027
			Sample Date	7/19/2011	7/19/2011	7/20/2011	7/20/2011	7/20/2011
			Depth Interval (in bss)	6- 16	0- 6	0- 6	0- 6	6- 27
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	170 U	120 U	83 J	78 J	130 U
2-METHYLNAPHTHALENE	20	200	µg/kg	170 U	120 U	140 U	150 U	130 U
ACENAPHTHENE	6.7	89	µg/kg	170 U	120 U	140 U	150 U	130 U
ACENAPHTHYLENE	5.9	130	µg/kg	170 U	120 U	140 U	150 U	130 U
ANTHRACENE	57	850	µg/kg	170 U	120 U	140 U	150 U	130 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	170 U	120 U	56 J	73 J	130 U
BENZO(A)PYRENE	150	1500	µg/kg	170 U	120 U	41 J	74 J	130 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	170 U	120 U	85 J	81 J	130 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	170 U	120 U	52 J	49 J	130 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	170 U	120 U	140 U	150 U	130 U
FLUORANTHENE	420	2200	µg/kg	170 U	120 U	62 J	87 J	130 U
FLUORENE	77	540	µg/kg	170 U	120 U	140 U	150 U	130 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	170 U	120 U	140 U	38 J	130 U
NAPHTHALENE	180	560	µg/kg	170 U	120 U	140 U	150 U	130 U
PHENANTHRENE	200	1200	µg/kg	170 U	120 U	140 U	42 J	130 U
PYRENE	200	1500	µg/kg	170 U	120 U	49 J	72 J	130 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	428	594	0
1,1'-BIPHENYL	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2,4-DINITROPHENOL	NL	NL	µg/kg	330 U	230 U	260 U	290 U	260 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2-CHLOROPHENOL	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2-METHYLPHENOL	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
2-NITROANILINE	NL	NL	µg/kg	330 U	230 U	260 U	290 U	260 U
2-NITROPHENOL	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
3-NITROANILINE	NL	NL	µg/kg	330 U	230 U	260 U	290 U	260 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	330 U	230 U	260 U	290 U	260 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
4-METHYLPHENOL	NL	NL	µg/kg	63 J	120 U	60 J	150 U	130 U
4-NITROPHENOL	NL	NL	µg/kg	330 U	230 U	260 U	290 U	260 U
ACETOPHENONE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
ATRAZINE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
BENZALDEHYDE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	170 U	120 U	37 J	150 U	130 U
CAPROLACTAM	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
CARBAZOLE	NL	NL	µg/kg	170 U	120 U	140 U	30 J	130 U
CHLOROPHENOLS	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
DIBENZOFURAN	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
DIETHYL PHTHALATE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	170 U	120 U	98 J	150 U	130 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	380	120 U	84 J	150 U	130 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
HEXACHLOROBENZENE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
HEXACHLOROETHANE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
NITROBENZENE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	170 UJ	120 UJ	140 UJ	150 UJ	130 UJ
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
P-CHLOROANILINE	NL	NL	µg/kg	170 U	120 U	140 U	150 U	130 U
PENTACHLOROPHENOL	NL	NL	µg/kg	330 U	230 U	260 U	290 U	260 U
PHENOL	NL	NL	µg/kg	51 J	120 U	62 J	150 U	130 U
P-NITROANILINE	NL	NL	µg/kg	330 U	230 U	260 U	290 U	260 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-21	USR11-22	USR11-22	USR11-22	USR11-23
			Field Sample ID	USR11-21-006	USR11-22-006	USR11-22-033	USR11-22-033-FS	USR11-23-016
			Sample Date	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/21/2011
			Depth Interval (in bss)	0- 6	0- 6	6- 33	6- 33	0- 16
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	29 J	150 U	170 U	150 U	**2100 J**
2-METHYLNAPHTHALENE	20	200	µg/kg	120 U	150 U	170 U	150 U	110 UJ
ACENAPHTHENE	6.7	89	µg/kg	120 U	150 U	170 U	150 U	**170 J**
ACENAPHTHYLENE	5.9	130	µg/kg	120 U	150 U	170 U	150 U	110 UJ
ANTHRACENE	57	850	µg/kg	120 U	150 U	170 U	150 U	**460 J**
BENZO(A)ANTHRACENE	110	1100	µg/kg	33 J	150 U	170 U	150 U	**1600 J**
BENZO(A)PYRENE	150	1500	µg/kg	26 J	150 U	170 U	150 U	**1500 J**
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	27 J	150 U	170 U	150 U	2200 J
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	670 J
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	980 J
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	120 U	150 U	170 U	150 U	**240 J**
FLUORANTHENE	420	2200	µg/kg	82 J	150 U	170 U	150 U	**4400 J**
FLUORENE	77	540	µg/kg	120 U	150 U	170 U	150 U	**150 J**
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	720 J
NAPHTHALENE	180	560	µg/kg	120 U	150 U	170 U	150 U	32 J
PHENANTHRENE	200	1200	µg/kg	52 J	150 U	170 U	150 U	**2300 J**
PYRENE	200	1500	µg/kg	53 J	150 U	170 U	150 U	**3400 J**
TOTAL PAHs 17	1600	23000	µg/kg	302	0	0	0	**20922**
1,1'-BIPHENYL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2,4-DICHLOROPHENOL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	230 U	300 U	320 U	300 U	220 UJ
2,4-DINITROTOLUENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2,6-DINITROTOLUENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2-CHLORONAPHTHALENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2-CHLOROPHENOL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2-METHYLPHENOL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
2-NITROANILINE	NL	NL	µg/kg	230 U	300 U	320 U	300 U	220 UJ
2-NITROPHENOL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
3-NITROANILINE	NL	NL	µg/kg	230 U	300 U	320 U	300 U	220 UJ
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	230 U	300 U	320 U	300 U	220 UJ
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
4-METHYLPHENOL	NL	NL	µg/kg	120 U	150 U	86 J	150 U	110 UJ
4-NITROPHENOL	NL	NL	µg/kg	230 U	300 U	320 U	300 U	220 UJ
ACETOPHENONE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
ATRAZINE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
BENZALDEHYDE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	40 J
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	120 U	150 U	170 U	47 J	1400 J
CAPROLACTAM	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
CARBAZOLE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	260 J
CHLOROPHENOLS	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
DIBENZOFURAN	NL	NL	µg/kg	120 U	150 U	170 U	150 U	70 J
DIETHYL PHTHALATE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
DIMETHYL PHTHALATE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	23 J
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
HEXACHLOROBENZENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
HEXACHLOROETHANE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
NITROBENZENE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	120 UJ	150 UJ	170 UJ	150 UJ	110 UJ
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
P-CHLOROANILINE	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
PENTACHLOROPHENOL	NL	NL	µg/kg	230 U	300 U	320 U	300 U	220 UJ
PHENOL	NL	NL	µg/kg	120 U	150 U	170 U	150 U	110 UJ
P-NITROANILINE	NL	NL	µg/kg	230 U	300 U	320 U	300 U	220 UJ

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-24	USR11-24	USR11-24	USR11-25	USR11-25
			Field Sample ID	USR11-24-006	USR11-24-024	USR11-24-048	USR11-25-006	USR11-25-006-DP
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/20/2011	7/20/2011
			Depth Interval (in bss)	0- 6	6- 24	24- 48	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	**230 J**	**180 J**	140 J	200 U	200 U
2-METHYLNAPHTHALENE	20	200	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
ACENAPHTHENE	6.7	89	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
ACENAPHTHYLENE	5.9	130	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
ANTHRACENE	57	850	µg/kg	**58 J**	52 J	**180 J**	200 U	200 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	**170 J**	**130 J**	**140 J**	200 U	200 U
BENZO(A)PYRENE	150	1500	µg/kg	**180 J**	140 J	110 J	200 U	200 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	210 J	140 J	130 J	200 U	200 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	86 J	64 J	53 J	200 U	200 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	140 J	140 J	82 J	200 U	200 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
FLUORANTHENE	420	2200	µg/kg	**480 J**	**430 J**	270 J	200 U	200 U
FLUORENE	77	540	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	88 J	76 J	55 J	200 U	200 U
NAPHTHALENE	180	560	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
PHENANTHRENE	200	1200	µg/kg	**240 J**	**220 J**	170 J	200 U	200 U
PYRENE	200	1500	µg/kg	**370 J**	**370 J**	**300 J**	200 U	200 U
TOTAL PAHs 17	1600	23000	µg/kg	**2252**	**1942**	**1630**	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2,4-DINITROPHENOL	NL	NL	µg/kg	240 UJ	220 UJ	220 UJ	390 U	390 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2-CHLOROPHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2-METHYLPHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
2-NITROANILINE	NL	NL	µg/kg	240 UJ	220 UJ	220 UJ	390 U	390 U
2-NITROPHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
3-NITROANILINE	NL	NL	µg/kg	240 UJ	220 UJ	220 UJ	390 U	390 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	240 UJ	220 UJ	220 UJ	390 U	390 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
4-METHYLPHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
4-NITROPHENOL	NL	NL	µg/kg	240 UJ	220 UJ	220 UJ	390 U	390 U
ACETOPHENONE	NL	NL	µg/kg	31 J	110 UJ	110 UJ	200 U	200 U
ATRAZINE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
BENZALDEHYDE	NL	NL	µg/kg	31 J	110 UJ	110 UJ	200 U	200 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	29 J	110 UJ	110 UJ	200 U	200 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	160 J	310 J	100 J	200 U	200 U
CAPROLACTAM	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
CARBAZOLE	NL	NL	µg/kg	31 J	32 J	47 J	200 U	200 U
CHLOROPHENOLS	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
DIBENZOFURAN	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
DIETHYL PHTHALATE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	77 J
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
HEXACHLOROBENZENE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
HEXACHLOROETHANE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
NITROBENZENE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 UJ	200 UJ
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
P-CHLOROANILINE	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
PENTACHLOROPHENOL	NL	NL	µg/kg	240 UJ	220 UJ	220 UJ	390 U	390 U
PHENOL	NL	NL	µg/kg	120 UJ	110 UJ	110 UJ	200 U	200 U
P-NITROANILINE	NL	NL	µg/kg	240 UJ	220 UJ	220 UJ	390 U	390 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-25	USR11-25	USR11-25	USR11-25	USR11-26
			Field Sample ID	USR11-25-024	USR11-25-024-DP	USR11-25-048	USR11-25-048-DP	USR11-26-006
			Sample Date	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011
			Depth Interval (in bss)	6- 24	6- 24	24- 48	24- 48	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	180 U	170 U	190 U	160 U	170 U
2-METHYLNAPHTHALENE	20	200	µg/kg	180 U	170 U	190 U	160 U	170 U
ACENAPHTHENE	6.7	89	µg/kg	180 U	170 U	190 U	160 U	170 U
ACENAPHTHYLENE	5.9	130	µg/kg	180 U	170 U	190 U	160 U	170 U
ANTHRACENE	57	850	µg/kg	180 U	170 U	190 U	160 U	170 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	180 U	170 U	190 U	160 U	170 U
BENZO(A)PYRENE	150	1500	µg/kg	180 U	170 U	190 U	160 U	170 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	180 U	170 U	190 U	160 U	170 U
FLUORANTHENE	420	2200	µg/kg	180 U	170 U	190 U	160 U	170 U
FLUORENE	77	540	µg/kg	180 U	170 U	190 U	160 U	170 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
NAPHTHALENE	180	560	µg/kg	180 U	170 U	190 U	160 U	170 U
PHENANTHRENE	200	1200	µg/kg	180 U	170 U	190 U	160 U	170 U
PYRENE	200	1500	µg/kg	180 U	170 U	190 U	160 U	170 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2,4-DINITROPHENOL	NL	NL	µg/kg	350 U	320 U	370 U	310 U	320 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2-CHLOROPHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2-METHYLPHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
2-NITROANILINE	NL	NL	µg/kg	350 U	320 U	370 U	310 U	320 U
2-NITROPHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
3-NITROANILINE	NL	NL	µg/kg	350 U	320 U	370 U	310 U	320 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	350 U	320 U	370 U	310 U	320 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
4-METHYLPHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	50 J
4-NITROPHENOL	NL	NL	µg/kg	350 U	320 U	370 U	310 U	320 U
ACETOPHENONE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
ATRAZINE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
BENZALDEHYDE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
CAPROLACTAM	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
CARBAZOLE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
CHLOROPHENOLS	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
DIBENZOFURAN	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
DIETHYL PHTHALATE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	180 U	170 U	220	46 J	170 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
HEXACHLOROBENZENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
HEXACHLOROETHANE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
NITROBENZENE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	180 UJ	170 UJ	190 UJ	160 UJ	170 UJ
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
P-CHLOROANILINE	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
PENTACHLOROPHENOL	NL	NL	µg/kg	350 U	320 U	370 U	310 U	320 U
PHENOL	NL	NL	µg/kg	180 U	170 U	190 U	160 U	170 U
P-NITROANILINE	NL	NL	µg/kg	350 U	320 U	370 U	310 U	320 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-26	USR11-27	USR11-27	USR11-28	USR11-29
			Field Sample ID	USR11-26-030	USR11-27-006	USR11-27-020	USR11-28-006	USR11-29-006
			Sample Date	7/20/2011	7/21/2011	7/21/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	6- 30	0- 6	6- 20	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	54 J	190 UJ	91 J	130 U	140 U
2-METHYLNAPHTHALENE	20	200	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
ACENAPHTHENE	6.7	89	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
ACENAPHTHYLENE	5.9	130	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
ANTHRACENE	57	850	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	38 J	190 UJ	55 J	130 U	140 U
BENZO(A)PYRENE	150	1500	µg/kg	84 J	190 UJ	100 J	130 U	140 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 UJ	140 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	98 J	190 UJ	62 J	130 U	140 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
FLUORANTHENE	420	2200	µg/kg	160 U	190 UJ	44 J	130 U	140 U
FLUORENE	77	540	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
NAPHTHALENE	180	560	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
PHENANTHRENE	200	1200	µg/kg	160 U	190 UJ	51 J	130 U	140 U
PYRENE	200	1500	µg/kg	31 J	190 UJ	77 J	130 U	140 U
TOTAL PAHs 17	1600	23000	µg/kg	305	0	480	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 UJ	140 U
2,4-DINITROPHENOL	NL	NL	µg/kg	300 U	370 UJ	360 UJ	250 U	270 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2-CHLOROPHENOL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2-METHYLPHENOL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
2-NITROANILINE	NL	NL	µg/kg	300 U	370 UJ	360 UJ	250 U	270 U
2-NITROPHENOL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
3-NITROANILINE	NL	NL	µg/kg	300 U	370 UJ	360 UJ	250 U	270 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	300 U	370 UJ	360 UJ	250 U	270 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
4-METHYLPHENOL	NL	NL	µg/kg	160 U	190 UJ	130 J	130 U	55 J
4-NITROPHENOL	NL	NL	µg/kg	300 U	370 UJ	360 UJ	250 U	270 U
ACETOPHENONE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
ATRAZINE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
BENZALDEHYDE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	160 U	190 UJ	84 J	62 J	140 U
CAPROLACTAM	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
CARBAZOLE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
CHLOROPHENOLS	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
DIBENZOFURAN	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
DIETHYL PHTHALATE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	160 U	64 J	180 UJ	130 U	140 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	42 J	190 UJ	180 UJ	130 U	140 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
HEXACHLOROBENZENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
HEXACHLOROETHANE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
NITROBENZENE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	160 UJ	190 UJ	180 UJ	130 U	140 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
P-CHLOROANILINE	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
PENTACHLOROPHENOL	NL	NL	µg/kg	300 U	370 UJ	360 UJ	250 U	270 U
PHENOL	NL	NL	µg/kg	160 U	190 UJ	180 UJ	130 U	140 U
P-NITROANILINE	NL	NL	µg/kg	300 U	370 UJ	360 UJ	250 U	270 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-29	USR11-30	USR11-30	USR11-31	USR11-31
			Field Sample ID	USR11-29-021	USR11-30-006	USR11-30-021	USR11-31-006	USR11-31-026
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	6- 21	0- 6	6- 21	0- 6	6- 26
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	120 U	200 U	150 U	190 U	140 U
2-METHYLNAPHTHALENE	20	200	µg/kg	120 U	200 U	150 U	190 U	140 U
ACENAPHTHENE	6.7	89	µg/kg	120 U	200 U	150 U	190 U	140 U
ACENAPHTHYLENE	5.9	130	µg/kg	120 U	200 U	150 U	190 U	140 U
ANTHRACENE	57	850	µg/kg	120 U	200 U	150 U	190 U	140 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	120 U	200 U	150 U	190 U	140 U
BENZO(A)PYRENE	150	1500	µg/kg	120 U	200 U	41 J	190 U	140 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 UJ
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	120 U	200 U	46 J	190 U	140 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	120 U	200 U	150 U	190 U	140 U
FLUORANTHENE	420	2200	µg/kg	25 J	200 U	150 U	190 U	140 U
FLUORENE	77	540	µg/kg	120 U	200 U	150 U	190 U	140 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
NAPHTHALENE	180	560	µg/kg	120 U	200 U	150 U	190 U	140 U
PHENANTHRENE	200	1200	µg/kg	25 J	200 U	150 U	190 U	140 U
PYRENE	200	1500	µg/kg	34 J	200 U	150 U	190 U	140 U
TOTAL PAHs 17	1600	23000	µg/kg	84	0	87	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	240 U	390 U	290 U	360 U	280 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2-CHLOROPHENOL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2-METHYLPHENOL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
2-NITROANILINE	NL	NL	µg/kg	240 U	390 U	290 U	360 U	280 U
2-NITROPHENOL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
3-NITROANILINE	NL	NL	µg/kg	240 U	390 U	290 U	360 U	280 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	240 U	390 U	290 U	360 U	280 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
4-METHYLPHENOL	NL	NL	µg/kg	62 J	200 U	110 J	190 U	31 J
4-NITROPHENOL	NL	NL	µg/kg	240 U	390 U	290 U	360 U	280 U
ACETOPHENONE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
ATRAZINE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
BENZALDEHYDE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	80 J
CAPROLACTAM	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
CARBAZOLE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
CHLOROPHENOLS	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
DIBENZOFURAN	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
DIETHYL PHTHALATE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
HEXACHLOROBENZENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
HEXACHLOROETHANE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
NITROBENZENE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
P-CHLOROANILINE	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
PENTACHLOROPHENOL	NL	NL	µg/kg	240 U	390 U	290 U	360 U	280 U
PHENOL	NL	NL	µg/kg	120 U	200 U	150 U	190 U	140 U
P-NITROANILINE	NL	NL	µg/kg	240 U	390 U	290 U	360 U	280 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-32	USR11-32	USR11-32	USR11-32	USR11-33
			Field Sample ID	USR11-32-006	USR11-32-006-DP	USR11-32-025	USR11-32-025-DP	USR11-33-006
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/22/2011
			Depth Interval (in bss)	0- 6	0- 6	6- 25	6- 25	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	170 U	180 U	150 U	150 U	130 U
2-METHYLNAPHTHALENE	20	200	µg/kg	170 U	180 U	150 U	150 U	130 U
ACENAPHTHENE	6.7	89	µg/kg	170 U	180 U	150 U	150 U	130 U
ACENAPHTHYLENE	5.9	130	µg/kg	170 U	180 U	150 U	150 U	130 U
ANTHRACENE	57	850	µg/kg	170 U	180 U	150 U	150 U	130 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	170 U	180 U	150 U	150 U	130 U
BENZO(A)PYRENE	150	1500	µg/kg	170 U	180 U	150 U	150 U	130 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	170 UJ	180 UJ	150 UJ	150 UJ	130 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	170 U	180 U	150 U	150 U	130 U
FLUORANTHENE	420	2200	µg/kg	170 U	180 U	150 U	150 U	130 U
FLUORENE	77	540	µg/kg	170 U	180 U	150 U	150 U	130 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
NAPHTHALENE	180	560	µg/kg	170 U	180 U	150 U	150 U	130 U
PHENANTHRENE	200	1200	µg/kg	170 U	180 U	150 U	150 U	130 U
PYRENE	200	1500	µg/kg	170 U	180 U	150 U	150 U	130 U
TOTAL PAHs 17	1600	23000	µg/kg	0	0	0	0	0
1,1'-BIPHENYL	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	170 UJ	180 UJ	150 UJ	150 UJ	130 U
2,4-DINITROPHENOL	NL	NL	µg/kg	340 U	350 U	300 U	280 U	250 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2-CHLOROPHENOL	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2-METHYLPHENOL	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
2-NITROANILINE	NL	NL	µg/kg	340 U	350 U	300 U	280 U	250 U
2-NITROPHENOL	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
3-NITROANILINE	NL	NL	µg/kg	340 U	350 U	300 U	280 U	250 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	340 U	350 U	300 U	280 U	250 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
4-METHYLPHENOL	NL	NL	µg/kg	170 U	180 U	60 J	140 J	130 U
4-NITROPHENOL	NL	NL	µg/kg	340 U	350 U	300 U	280 U	250 U
ACETOPHENONE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
ATRAZINE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
BENZALDEHYDE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	97 J	120 J	95 J	84 J	130 U
CAPROLACTAM	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
CARBAZOLE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
CHLOROPHENOLS	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
DIBENZOFURAN	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
DIETHYL PHTHALATE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
HEXACHLOROBENZENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
HEXACHLOROETHANE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
NITROBENZENE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
P-CHLOROANILINE	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
PENTACHLOROPHENOL	NL	NL	µg/kg	340 U	350 U	300 U	280 U	250 U
PHENOL	NL	NL	µg/kg	170 U	180 U	150 U	150 U	130 U
P-NITROANILINE	NL	NL	µg/kg	340 U	350 U	300 U	280 U	250 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-33	USR11-34	USR11-34	USR11-34	USR11-35
			Field Sample ID	USR11-33-022	USR11-34-006	USR11-34-024	USR11-34-040	USR11-35-006
			Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
			Depth Interval (in bss)	6- 22	0- 6	6- 24	24- 40	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	57 J	150 U	46 J	120 J	24 J
2-METHYLNAPHTHALENE	20	200	µg/kg	140 U	150 U	140 U	**240 J**	110 U
ACENAPHTHENE	6.7	89	µg/kg	140 U	150 U	140 U	280 U	110 U
ACENAPHTHYLENE	5.9	130	µg/kg	140 U	150 U	140 U	280 U	110 U
ANTHRACENE	57	850	µg/kg	140 U	150 U	140 U	280 U	110 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	42 J	150 U	49 J	280 U	110 U
BENZO(A)PYRENE	150	1500	µg/kg	140 U	150 U	39 J	280 U	110 UJ
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	45 J	150 U	50 J	280 U	110 UJ
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 UJ
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 UJ
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	140 U	150 U	140 U	280 U	110 UJ
FLUORANTHENE	420	2200	µg/kg	140 U	150 U	72 J	70 J	43 J
FLUORENE	77	540	µg/kg	140 U	150 U	140 U	58 J	110 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 UJ
NAPHTHALENE	180	560	µg/kg	140 U	150 U	140 U	86 J	110 U
PHENANTHRENE	200	1200	µg/kg	140 U	150 U	140 U	**600**	24 J
PYRENE	200	1500	µg/kg	140 U	150 U	80 J	**240 J**	26 J
TOTAL PAHs 17	1600	23000	µg/kg	144	0	336	1414	117
1,1'-BIPHENYL	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	140 U	150 U	140 U	89 J	110 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	260 U	300 U	260 U	540 U	210 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
2-CHLOROPHENOL	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
2-METHYLPHENOL	NL	NL	µg/kg	140 U	150 U	140 U	170 J	110 U
2-NITROANILINE	NL	NL	µg/kg	260 U	300 U	260 U	540 U	210 U
2-NITROPHENOL	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
3-NITROANILINE	NL	NL	µg/kg	260 U	300 U	260 U	540 U	210 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	260 U	300 U	260 U	540 U	210 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
4-METHYLPHENOL	NL	NL	µg/kg	140 U	150 U	140 U	1500	110 U
4-NITROPHENOL	NL	NL	µg/kg	260 U	300 U	260 U	540 U	210 U
ACETOPHENONE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
ATRAZINE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
BENZALDEHYDE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	65 J
CAPROLACTAM	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
CARBAZOLE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
CHLOROPHENOLS	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
DIBENZOFURAN	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
DIETHYL PHTHALATE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	140 U	34 J	140 U	280 U	110 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
HEXACHLOROBENZENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
HEXACHLOROETHANE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
NITROBENZENE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
P-CHLOROANILINE	NL	NL	µg/kg	140 U	150 U	140 U	280 U	110 U
PENTACHLOROPHENOL	NL	NL	µg/kg	260 U	300 U	260 U	540 U	210 U
PHENOL	NL	NL	µg/kg	140 U	150 U	140 U	350	110 U
P-NITROANILINE	NL	NL	µg/kg	260 U	300 U	260 U	540 U	210 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-35	USR11-36	USR11-36	USR11-37	USR11-38
			Field Sample ID	USR11-35-026	USR11-36-006	USR11-36-032	USR11-37-017	USR11-38-006
			Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
			Depth Interval (in bss)	6- 26	0- 6	6- 32	0- 17	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	42 J	150 U	120 U	140 UJ	**420 J**
2-METHYLNAPHTHALENE	20	200	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
ACENAPHTHENE	6.7	89	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
ACENAPHTHYLENE	5.9	130	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
ANTHRACENE	57	850	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
BENZO(A)ANTHRACENE	110	1100	µg/kg	37 J	150 U	120 U	140 UJ	**200 J**
BENZO(A)PYRENE	150	1500	µg/kg	32 J	150 U	120 U	140 UJ	**340 J**
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	33 J	150 U	120 U	140 UJ	130 J
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	280 J
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	30 J	150 U	120 U	140 UJ	50 J
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	130 U	150 U	120 U	140 UJ	**43 J**
FLUORANTHENE	420	2200	µg/kg	62 J	150 U	120 U	140 UJ	93 J
FLUORENE	77	540	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	65 J
NAPHTHALENE	180	560	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
PHENANTHRENE	200	1200	µg/kg	130 U	150 U	120 U	140 UJ	99 J
PYRENE	200	1500	µg/kg	57 J	150 U	120 U	140 UJ	170 J
TOTAL PAHs 17	1600	23000	µg/kg	293	0	0	0	**1890**
1,1'-BIPHENYL	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2,4-DICHLOROPHENOL	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	130 UJ	150 U	120 U	140 UJ	140 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	250 U	280 U	240 U	280 UJ	280 UJ
2,4-DINITROTOLUENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2,6-DINITROTOLUENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2-CHLORONAPHTHALENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2-CHLOROPHENOL	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2-METHYLPHENOL	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
2-NITROANILINE	NL	NL	µg/kg	250 U	280 U	240 U	280 UJ	280 UJ
2-NITROPHENOL	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
3-NITROANILINE	NL	NL	µg/kg	250 U	280 U	240 U	280 UJ	280 UJ
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	250 U	280 U	240 U	280 UJ	280 UJ
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
4-METHYLPHENOL	NL	NL	µg/kg	130 U	150 U	56 J	140 UJ	62 J
4-NITROPHENOL	NL	NL	µg/kg	250 U	280 U	240 U	280 UJ	280 UJ
ACETOPHENONE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
ATRAZINE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
BENZALDEHYDE	NL	NL	µg/kg	78 J	150 U	120 U	140 UJ	140 UJ
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	74 J	150 U	120 U	140 UJ	140 UJ
CAPROLACTAM	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
CARBAZOLE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
CHLOROPHENOLS	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
DIBENZOFURAN	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
DIETHYL PHTHALATE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
DIMETHYL PHTHALATE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	130 U	150 U	120 U	29 J	140 UJ
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
HEXACHLOROBENZENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
HEXACHLOROETHANE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
NITROBENZENE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
P-CHLOROANILINE	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
PENTACHLOROPHENOL	NL	NL	µg/kg	250 U	280 U	240 U	280 UJ	280 UJ
PHENOL	NL	NL	µg/kg	130 U	150 U	120 U	140 UJ	140 UJ
P-NITROANILINE	NL	NL	µg/kg	250 U	280 U	240 U	280 UJ	280 UJ

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-38	USR11-39	USR11-39	USR11-40	USR11-40
			Field Sample ID	USR11-38-019	USR11-39-006	USR11-39-024	USR11-40-006	USR11-40-034
			Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
			Depth Interval (in bss)	6- 19	0- 6	6- 24	0- 6	6- 34
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	65 J	200 UJ	52 J	170 U	170 U
2-METHYLNAPHTHALENE	20	200	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
ACENAPHTHENE	6.7	89	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
ACENAPHTHYLENE	5.9	130	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
ANTHRACENE	57	850	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	45 J	200 UJ	200 UJ	170 U	170 U
BENZO(A)PYRENE	150	1500	µg/kg	69 J	200 UJ	67 J	170 U	170 U
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	41 J	200 UJ	200 UJ	170 U	170 U
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	190 UJ	200 UJ	69 J	170 U	170 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
FLUORANTHENE	420	2200	µg/kg	56 J	200 UJ	200 UJ	170 U	170 U
FLUORENE	77	540	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
NAPHTHALENE	180	560	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
PHENANTHRENE	200	1200	µg/kg	44 J	200 UJ	200 UJ	170 U	170 U
PYRENE	200	1500	µg/kg	82 J	200 UJ	200 UJ	170 U	34 J
TOTAL PAHs 17	1600	23000	µg/kg	402	0	188	0	34
1,1'-BIPHENYL	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2,4-DINITROPHENOL	NL	NL	µg/kg	370 UJ	390 UJ	380 UJ	330 U	320 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2-CHLOROPHENOL	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2-METHYLPHENOL	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
2-NITROANILINE	NL	NL	µg/kg	370 UJ	390 UJ	380 UJ	330 U	320 U
2-NITROPHENOL	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
3-NITROANILINE	NL	NL	µg/kg	370 UJ	390 UJ	380 UJ	330 U	320 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	370 UJ	390 UJ	380 UJ	330 U	320 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
4-METHYLPHENOL	NL	NL	µg/kg	650 J	140 J	510 J	170 U	93 J
4-NITROPHENOL	NL	NL	µg/kg	370 UJ	390 UJ	380 UJ	330 U	320 U
ACETOPHENONE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
ATRAZINE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
BENZALDEHYDE	NL	NL	µg/kg	190 UJ	300 J	45 J	170 U	170 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
CAPROLACTAM	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
CARBAZOLE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
CHLOROPHENOLS	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
DIBENZOFURAN	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
DIETHYL PHTHALATE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
HEXACHLOROBENZENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
HEXACHLOROETHANE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
NITROBENZENE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
P-CHLOROANILINE	NL	NL	µg/kg	190 UJ	200 UJ	200 UJ	170 U	170 U
PENTACHLOROPHENOL	NL	NL	µg/kg	370 UJ	390 UJ	380 UJ	330 U	320 U
PHENOL	NL	NL	µg/kg	60 J	200 UJ	73 J	170 U	170 U
P-NITROANILINE	NL	NL	µg/kg	370 UJ	390 UJ	380 UJ	330 U	320 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-41	USR11-42	USR11-42	USR11-43	USR11-43
			Field Sample ID	USR11-41-016	USR11-42-006	USR11-42-033	USR11-43-006	USR11-43-024
			Sample Date	7/22/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	0- 16	0- 6	6- 33	0- 6	6- 24
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	340 UJ	170 U	170 U	140 U	43 J
2-METHYLNAPHTHALENE	20	200	µg/kg	340 UJ	170 U	170 U	140 U	200 U
ACENAPHTHENE	6.7	89	µg/kg	340 UJ	170 U	170 U	140 U	200 U
ACENAPHTHYLENE	5.9	130	µg/kg	340 UJ	170 U	170 U	140 U	200 U
ANTHRACENE	57	850	µg/kg	340 UJ	170 U	170 U	140 U	200 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	340 UJ	170 U	170 U	140 U	43 J
BENZO(A)PYRENE	150	1500	µg/kg	340 UJ	170 U	170 U	140 U	88 J
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	340 UJ	170 UJ	170 UJ	140 UJ	200 UJ
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	97 J
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	340 UJ	170 U	170 U	140 U	200 U
FLUORANTHENE	420	2200	µg/kg	340 UJ	170 U	170 U	140 U	200 U
FLUORENE	77	540	µg/kg	340 UJ	170 U	170 U	140 U	200 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
NAPHTHALENE	180	560	µg/kg	340 UJ	170 U	170 U	140 U	200 U
PHENANTHRENE	200	1200	µg/kg	340 UJ	170 U	170 U	140 U	200 U
PYRENE	200	1500	µg/kg	120 J	170 U	170 U	140 U	200 U
TOTAL PAHs 17	1600	23000	µg/kg	120	0	0	0	271
1,1'-BIPHENYL	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	340 UJ	170 UJ	170 UJ	140 UJ	200 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	670 UJ	340 U	340 U	270 U	390 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
2-CHLOROPHENOL	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
2-METHYLPHENOL	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	88 J
2-NITROANILINE	NL	NL	µg/kg	670 UJ	340 U	340 U	270 U	390 U
2-NITROPHENOL	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
3-NITROANILINE	NL	NL	µg/kg	670 UJ	340 U	340 U	270 U	390 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	670 UJ	340 U	340 U	270 U	390 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
4-METHYLPHENOL	NL	NL	µg/kg	910 J	310	120 J	270	3000
4-NITROPHENOL	NL	NL	µg/kg	670 UJ	340 U	340 U	270 U	390 U
ACETOPHENONE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
ATRAZINE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
BENZALDEHYDE	NL	NL	µg/kg	84 J	35 J	170 U	140 U	200 U
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	340 UJ	110 J	72 J	82 J	82 J
CAPROLACTAM	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
CARBAZOLE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
CHLOROPHENOLS	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
DIBENZOFURAN	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
DIETHYL PHTHALATE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
HEXACHLOROBENZENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
HEXACHLOROETHANE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
NITROBENZENE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
P-CHLOROANILINE	NL	NL	µg/kg	340 UJ	170 U	170 U	140 U	200 U
PENTACHLOROPHENOL	NL	NL	µg/kg	670 UJ	340 U	340 U	270 U	55 J
PHENOL	NL	NL	µg/kg	120 J	170 U	170 U	140 U	180 J
P-NITROANILINE	NL	NL	µg/kg	670 UJ	340 U	340 U	270 U	390 U

Table 3-2b
Focus Area 2 Sediment Sample Analytical Results - TCL SVOCs
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-43	USR11-44	USR11-44	USR11-44
			Field Sample ID	USR11-43-053	USR11-44-006	USR11-44-024	USR11-44-037
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	24- 53	0- 6	6- 24	24- 37
Chemical	**Level I[1]**	**Level II[2]**	**Unit**				
1,2-BENZPHENANTHRACENE	170	1300	µg/kg	190 U	120 U	50 J	120 J
2-METHYLNAPHTHALENE	20	200	µg/kg	190 U	120 U	150 U	250 U
ACENAPHTHENE	6.7	89	µg/kg	190 U	120 U	150 U	250 U
ACENAPHTHYLENE	5.9	130	µg/kg	190 U	120 U	150 U	250 U
ANTHRACENE	57	850	µg/kg	190 U	120 U	150 U	250 U
BENZO(A)ANTHRACENE	110	1100	µg/kg	190 U	120 U	31 J	73 J
BENZO(A)PYRENE	150	1500	µg/kg	190 U	120 U	45 J	61 J
BENZO(B)FLUORANTHENE	NL	NL	µg/kg	190 UJ	120 UJ	81 J	98 J
BENZO(G,H,I)PERYLENE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
BENZO(K)FLUORANTHENE	NL	NL	µg/kg	190 U	120 U	47 J	64 J
DIBENZO(A,H)ANTHRACENE	33	140	µg/kg	190 U	120 U	150 U	250 U
FLUORANTHENE	420	2200	µg/kg	190 U	120 U	30 J	130 J
FLUORENE	77	540	µg/kg	190 U	120 U	150 U	250 U
INDENO(1,2,3-CD)PYRENE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
NAPHTHALENE	180	560	µg/kg	190 U	120 U	150 U	71 J
PHENANTHRENE	200	1200	µg/kg	190 U	120 U	150 U	170 J
PYRENE	200	1500	µg/kg	190 U	120 U	150 UJ	250 UJ
TOTAL PAHs 17	1600	23000	µg/kg	0	0	284	787
1,1'-BIPHENYL	NL	NL	µg/kg	190 U	120 U	150 U	250 U
1,2,4,5-TETRACHLOROBENZENE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2,2'-OXYBIS(1-CHLOROPROPANE)	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2,4,5-TRICHLOROPHENOL	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2,4,6-TRICHLOROPHENOL	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2,4-DICHLOROPHENOL	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2,4-DIMETHYLPHENOL	NL	NL	µg/kg	190 UJ	120 UJ	150 UJ	250 UJ
2,4-DINITROPHENOL	NL	NL	µg/kg	360 U	240 U	290 U	490 U
2,4-DINITROTOLUENE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2,6-DINITROTOLUENE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2-CHLORONAPHTHALENE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2-CHLOROPHENOL	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2-METHYLPHENOL	NL	NL	µg/kg	190 U	120 U	150 U	250 U
2-NITROANILINE	NL	NL	µg/kg	360 U	240 U	290 U	490 U
2-NITROPHENOL	NL	NL	µg/kg	190 U	120 U	150 U	250 U
3,3'-DICHLOROBENZIDINE	NL	NL	µg/kg	190 U	120 U	150 U	250 UJ
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
3-NITROANILINE	NL	NL	µg/kg	360 U	240 U	290 U	490 U
4,6-DINITRO-2-METHYLPHENOL	NL	NL	µg/kg	360 U	240 U	290 U	490 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	µg/kg	190 U	120 U	150 U	250 U
4-CHLORO-3-METHYLPHENOL	NL	NL	µg/kg	190 U	120 U	150 U	250 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	µg/kg	190 U	120 U	150 U	250 U
4-METHYLPHENOL	NL	NL	µg/kg	1100	120 U	800	450
4-NITROPHENOL	NL	NL	µg/kg	360 U	240 U	290 U	490 U
ACETOPHENONE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
ATRAZINE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
BENZALDEHYDE	NL	NL	µg/kg	190 U	120 U	150 U	130 J
BENZYL BUTYL PHTHALATE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
BIS(2-CHLOROETHYL)ETHER	NL	NL	µg/kg	190 U	120 U	150 U	250 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	NL	µg/kg	110 J	57 J	54 J	250 U
CAPROLACTAM	NL	NL	µg/kg	190 U	120 U	150 U	250 U
CARBAZOLE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
CHLOROPHENOLS	NL	NL	µg/kg	190 U	120 U	150 U	250 U
DIBENZOFURAN	NL	NL	µg/kg	190 U	120 U	150 U	250 U
DIETHYL PHTHALATE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
DIMETHYL PHTHALATE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
DI-N-BUTYLPHTHALATE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
DI-N-OCTYLPHTHALATE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
HEXACHLORO-1,3-BUTADIENE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
HEXACHLOROBENZENE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
HEXACHLOROCYCLOPENTADIENE	NL	NL	µg/kg	190 U	120 U	150 U	250 UJ
HEXACHLOROETHANE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
NITROBENZENE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
N-NITROSO-DI-N-PROPYLAMINE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
N-NITROSODIPHENYLAMINE	NL	NL	µg/kg	190 U	120 U	150 U	250 U
P-CHLOROANILINE	NL	NL	µg/kg	190 U	120 U	150 U	250 UJ
PENTACHLOROPHENOL	NL	NL	µg/kg	360 U	240 U	290 U	490 U
PHENOL	NL	NL	µg/kg	50 J	120 U	62 J	140 J
P-NITROANILINE	NL	NL	µg/kg	360 U	240 U	290 U	490 U

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

µg/kg - Microgram per kilogram
DL - Detection Limit
ID - Identification
in bss - inches below sediment surface
J - Estimated Value
ND - Not Detected
NL - Not Listed
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.
Total PAHs 17 - Sum of detections

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I

[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-3a
Focus Area 1 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-01	USR11-01	USR11-01	USR11-02	USR11-02	USR11-03	USR11-04	USR11-05
			Field Sample ID	USR11-01-006	USR11-01-024	USR11-01-047	USR11-02-006	USR11-02-022	USR11-03-017	USR11-04-016	USR11-05-006
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 6	6- 24	24- 47	0- 6	6- 22	0- 17	0- 16	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	6810 J-	4950 J-	3960 J-	8580 J-	12600 J-	8540 J-	6970 J-	8580 J-
ANTIMONY	NL	NL	mg/kg	7.8 UJ	7.9 UJ	7.4 UJ	9.7 UJ	8.9 UJ	9.3 UJ	8.3 UJ	9.2 UJ
ARSENIC	9.8	33	mg/kg	2.2 J-	1.9 J-	1.5 J-	2.4 J-	2.9 J-	2.1 J-	1.8 J-	2.2 J-
BARIUM	NL	NL	mg/kg	28.3 J-	26.2 UJ	24.6 UJ	52 J-	69.5 J-	51.2 J-	40.1 J-	52.3 J-
BERYLLIUM	NL	NL	mg/kg	0.65 UJ	0.66 UJ	0.61 UJ	0.81 UJ	0.75 UJ	0.78 UJ	0.69 UJ	0.76 UJ
CADMIUM	0.99	5	mg/kg	0.65 UJ	0.66 UJ	0.61 UJ	0.81 UJ	0.75 UJ	0.78 UJ	0.69 UJ	0.76 UJ
CALCIUM	NL	NL	mg/kg	3330 J-	2970 J-	2470 J-	4760 J-	5180 J-	3790 J-	3590 J-	4060 J-
CHROMIUM	43	110	mg/kg	12.5 J-	10.3 J-	8.6 J-	21.4 J-	31.6 J-	21.4 J-	17.6 J-	21.8 J-
COBALT	NL	NL	mg/kg	6.9 J-	7.2 J-	6.1 UJ	10 J-	12.3 J-	8.5 J-	8.1 J-	9.9 J-
COPPER	32	150	mg/kg	5.1 J-	4.3 J-	3.3 J-	8.2 J-	13.6 J-	9.1 J-	5.5 J-	7.9 J-
IRON	NL	NL	mg/kg	14800 J-	12700 J-	9740 J-	15400 J-	21000 J-	14200 J-	12100 J-	15500 J-
LEAD	36	130	mg/kg	4.2 J+	2.6 J+	2.2 J+	5.3 J+	6.3 J+	4.7 J+	4 J+	5.3 J+
MAGNESIUM	NL	NL	mg/kg	2160 J-	2230 J-	1730 J-	3420 J-	4550 J-	2950 J-	2500 J-	3260 J-
MANGANESE	NL	NL	mg/kg	251 J-	209 J-	141 J-	336 J-	348 J-	307 J-	267 J-	365 J-
MERCURY	0.18	1.1	mg/kg	0.13 UJ	0.13 UJ	0.12 UJ	0.16 UJ	0.15 UJ	0.16 UJ	0.14 UJ	0.15 UJ
NICKEL	23	49	mg/kg	11.2 J-	10.5 J-	8.6 J-	16.4 J-	**24.8 J-**	16.3 J-	13 J-	16.6 J-
POTASSIUM	NL	NL	mg/kg	647 UJ	656 UJ	614 UJ	806 UJ	1210 J-	778 UJ	693 UJ	825 J-
SELENIUM	NL	NL	mg/kg	0.96 J-	0.88 J-	0.67 J-	0.71 J-	0.88 J-	1.2 J-	0.88 J-	1.3 J-
SILVER	NL	NL	mg/kg	0.38 J-	1.3 UJ	1.2 UJ	1.6 UJ	0.37 J-	1.6 UJ	1.4 UJ	0.37 J-
SODIUM	NL	NL	mg/kg	647 UJ	656 UJ	614 UJ	806 UJ	745 UJ	778 UJ	693 UJ	763 UJ
THALLIUM	NL	NL	mg/kg	3.2 UJ	3.3 UJ	3.1 UJ	4 UJ	3.7 UJ	3.9 UJ	3.5 UJ	3.8 UJ
VANADIUM	NL	NL	mg/kg	18.5 J-	16.6 J-	14 J-	24.5 J-	36.7 J-	25.8 J-	20.5 J-	24.2 J-
ZINC	120	460	mg/kg	48.3 J-	45.8 J-	36.8 J-	60.3 J-	75.1 J-	50.9 J-	50.2 J-	62.8 J-

Table 3-3a
Focus Area 1 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-05	USR11-05	USR11-05	USR11-06	USR11-06	USR11-06	USR11-06	USR11-07
			Field Sample ID	USR11-05-007-FS	USR11-05-024	USR11-05-051	USR11-06-006	USR11-06-006-DP	USR11-06-022	USR11-06-022-DP	USR11-07-017
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 7	6- 24	24- 51	0- 6	0- 6	6- 22	6- 22	0- 16
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	8540 J-	6700 J-	4590 J-	4650 J-	4570 J-	4710 J-	6980 J-	9390 J-
ANTIMONY	NL	NL	mg/kg	9.2 UJ	8.1 UJ	7.3 UJ	0.46 J-	0.37 J-	8 UJ	9.7 UJ	7.6 UJ
ARSENIC	9.8	33	mg/kg	2.3 J-	1.9 J-	2 J-	3.2 J-	2.6 J-	2.7 J-	3 J-	1.6 J-
BARIUM	NL	NL	mg/kg	50.8 J-	37.2 J-	24.2 UJ	26.5 J-	26.6 J-	30 J-	46 J-	63.1 J-
BERYLLIUM	NL	NL	mg/kg	0.77 UJ	0.67 UJ	0.61 UJ	0.61 UJ	0.62 UJ	0.66 UJ	0.81 UJ	0.63 UJ
CADMIUM	0.99	5	mg/kg	0.77 UJ	0.67 UJ	0.61 UJ	0.61 UJ	0.62 UJ	0.66 UJ	0.81 UJ	0.63 UJ
CALCIUM	NL	NL	mg/kg	4160 J-	3220 J-	2010 J-	2390 J-	2550 J-	3050 J-	5200 J-	3530 J-
CHROMIUM	43	110	mg/kg	21.3 J-	16.6 J-	10.5 J-	11.6 J-	9.5 J-	9.2 J-	16.4 J-	27.6 J-
COBALT	NL	NL	mg/kg	9.6 J-	7.6 J-	6.1 UJ	7.5 J-	6.3 J-	6.6 UJ	8.7 J-	7.6 J-
COPPER	32	150	mg/kg	7.8 J-	6.4 J-	3.3 J-	3.7 J-	4 J-	5.2 J-	7.9 J-	12.7 J-
IRON	NL	NL	mg/kg	15000 J-	11800 J-	11300 J-	14100 J-	12500 J-	12100 J-	17300 J-	11000 J-
LEAD	36	130	mg/kg	5.3 J+	3.8 J+	2.2 J+	2.5 J-	2.6 J-	2.6 J+	4.3 J+	4.7 J-
MAGNESIUM	NL	NL	mg/kg	3160 J-	2300 J-	1670 J-	2350 J-	1940 J-	1780 J-	2860 J-	3070 J-
MANGANESE	NL	NL	mg/kg	322 J-	181 J-	146 J-	335 J-	308 J-	293 J-	382 J-	155 J-
MERCURY	0.18	1.1	mg/kg	0.027 J-	0.13 UJ	0.12 UJ	0.12 UJ	0.12 UJ	0.13 UJ	0.16 UJ	0.13 UJ
NICKEL	23	49	mg/kg	16.4 J-	13 J-	9.2 J-	10.4 J-	9.1 J-	8.7 J-	14.5 J-	16.8 J-
POTASSIUM	NL	NL	mg/kg	816 J-	673 UJ	606 UJ	354 J-	355 J-	664 UJ	805 UJ	713 J-
SELENIUM	NL	NL	mg/kg	1.1 J-	0.61 J-	0.76 J-	1 J-	0.82 J-	0.68 J-	1.2 J-	1 J-
SILVER	NL	NL	mg/kg	1.5 UJ	1.3 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.3 UJ	1.6 UJ	1.3 UJ
SODIUM	NL	NL	mg/kg	768 UJ	673 UJ	606 UJ	607 UJ	617 UJ	664 UJ	805 UJ	634 UJ
THALLIUM	NL	NL	mg/kg	3.8 UJ	3.4 UJ	3 UJ	3 UJ	3.1 UJ	3.3 UJ	4 UJ	3.2 UJ
VANADIUM	NL	NL	mg/kg	24.1 J-	20.5 J-	14.7 J-	17.4 J-	16.1 J-	13.8 J-	24.7 J-	27.7 J-
ZINC	120	460	mg/kg	63.9 J-	46.8 J-	45.4 J-	48.8 J-	41.1 J-	41.9 J-	61.5 J-	54.5 J-

Table 3-3a
Focus Area 1 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-08	USR11-08	USR11-08	USR11-09	USR11-09	USR11-09	USR11-10	USR11-10
			Field Sample ID	USR11-08-006	USR11-08-024	USR11-08-043	USR11-09-006	USR11-09-024	USR11-09-036	USR11-10-006	USR11-10-030
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	0- 6	6- 24	24- 43	0- 6	6- 24	24- 36	0- 6	6- 30
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	8170	5950	4470	6740	8300	7670	8210	6610
ANTIMONY	NL	NL	mg/kg	9.6 UJ	8.4 UJ	8.8 UJ	9.2 UJ	9.3 UJ	0.36 J	9.5 UJ	8.1 UJ
ARSENIC	9.8	33	mg/kg	2.5	1.9	1.6	2	2.7	2.5	2.5	1.8
BARIUM	NL	NL	mg/kg	54.5	29.1	29.2 U	41.7	56	48.4	50.7	37.9
BERYLLIUM	NL	NL	mg/kg	0.8 U	0.7 U	0.73 U	0.77 U	0.77 U	0.73 U	0.79 U	0.67 U
CADMIUM	0.99	5	mg/kg	0.8 U	0.7 U	0.73 U	0.77 U	0.77 U	0.73 U	0.79 U	0.67 U
CALCIUM	NL	NL	mg/kg	3680	2840	2290	3630	4230	3860	4390	3830
CHROMIUM	43	110	mg/kg	21.4	14.8	11.5	18	21.6	21.6	21.8	17.7
COBALT	NL	NL	mg/kg	9.7	7.6	7.3 U	8.4	10.3	9.4	9.3	7.9
COPPER	32	150	mg/kg	8	7	3.7 U	6	8.3	6.9	7.7	5.8
IRON	NL	NL	mg/kg	15400	11500	10100	12400	16100	15800	14600	11300
LEAD	36	130	mg/kg	4.9	3	2.2	4.6	6.1	5.6	5.8	4.8
MAGNESIUM	NL	NL	mg/kg	3090	2130	1580	2650	3220	2960	3190	2320
MANGANESE	NL	NL	mg/kg	462	205	148	258	483	359	277	168
MERCURY	0.18	1.1	mg/kg	0.16 U	0.14 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U	0.13 U
NICKEL	23	49	mg/kg	17.5	12.9	9.5	14.8	18.2	17	17.4	14.4
POTASSIUM	NL	NL	mg/kg	813	487 J	296 J	608 J	819	708 J	745 J	546 J
SELENIUM	NL	NL	mg/kg	5.6 U	4.9 U	5.1 U	5.4 U	5.4 U	5.1 U	5.5 U	4.7 U
SILVER	NL	NL	mg/kg	1.6 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.6 U	1.3 U
SODIUM	NL	NL	mg/kg	246 J	238 J	168 J	254 J	276 J	269 J	312 J	263 J
THALLIUM	NL	NL	mg/kg	4 U	3.5 U	3.7 U	3.9 U	3.9 U	3.6 U	3.9 U	3.4 U
VANADIUM	NL	NL	mg/kg	25.8	19.6	17.3	21.9	26.8	25.3	25.6	21
ZINC	120	460	mg/kg	59.3	44.1	39	50.2	62.7	59.2	54.6	46.4

Table 3-3a
Focus Area 1 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-11	USR11-11	USR11-12	USR11-12	USR11-12	USR11-13	USR11-13	USR11-14
			Field Sample ID	USR11-11-006	USR11-11-026	USR11-12-006	USR11-12-024	USR11-12-040	USR11-13-006	USR11-13-018	USR11-14-006
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	0- 6	6- 26	0- 6	6- 24	24- 40	0- 6	6- 18	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	7400	9780	4120	3630	11800	11900 J-	6320 J-	4510
ANTIMONY	NL	NL	mg/kg	9.2 UJ	8.6 UJ	7.5 UJ	8.2 UJ	0.34 J	11.6 UJ	7.9 UJ	7.4 UJ
ARSENIC	9.8	33	mg/kg	2.3	2.7	2.8	1.8	3.8	3.6 J-	2.3 J-	3.1
BARIUM	NL	NL	mg/kg	49.5	61.4	24.8 U	27.3 U	82.5	81.5 J-	35.3 J-	27.8
BERYLLIUM	NL	NL	mg/kg	0.77 U	0.72 U	0.62 U	0.68 U	0.75 U	0.97 UJ	0.66 UJ	0.62 U
CADMIUM	0.99	5	mg/kg	0.77 U	0.72 U	0.62 U	0.68 U	0.75 U	0.97 UJ	0.66 UJ	0.62 U
CALCIUM	NL	NL	mg/kg	3980	4800	2140	2240	5190	5400 J-	2970 J-	2500
CHROMIUM	43	110	mg/kg	19.3	25.7	9.4	8.3	29.8	29.5 J-	15.4 J-	10.6
COBALT	NL	NL	mg/kg	8.7	10.3	6.2 U	6.8 U	12.7	17.7 J-	9.6 J-	6.8
COPPER	32	150	mg/kg	6.5	10.5	3.1 U	3.4 U	13.4	11 J-	5.1 J-	3.6
IRON	NL	NL	mg/kg	13400	16900	12800	10400	21500	21900 J-	13300 J-	12000
LEAD	36	130	mg/kg	5	5.9	2.7	2.5	9.1	7.5 J-	4.2 J-	3.1
MAGNESIUM	NL	NL	mg/kg	2820	3620	1540	1480	4480	4610 J-	2350 J-	1710
MANGANESE	NL	NL	mg/kg	360	313	186	235	539	600 J+	177 J+	275
MERCURY	0.18	1.1	mg/kg	0.15 U	0.14 U	0.12 U	0.14 U	0.15 U	0.11 J-	0.084 J-	0.12 U
NICKEL	23	49	mg/kg	15.4	20.8	8.8	8.7	**25.9**	**23.3 J-**	13 J-	9.9
POTASSIUM	NL	NL	mg/kg	664 J	903	288 J	255 J	1180	1200 J-	661 UJ	375 J
SELENIUM	NL	NL	mg/kg	5.4 U	5 U	4.3 U	4.8 U	5.3 U	6.8 UJ	4.6 UJ	4.3 U
SILVER	NL	NL	mg/kg	1.5 U	1.4 U	1.2 U	1.4 U	1.5 U	1.9 UJ	1.3 UJ	1.2 U
SODIUM	NL	NL	mg/kg	283 J	307 J	150 J	103 J	345 J	969 UJ	661 UJ	139 J
THALLIUM	NL	NL	mg/kg	3.9 U	3.6 U	3.1 U	3.4 U	3.8 U	4.8 UJ	3.3 UJ	3.1 U
VANADIUM	NL	NL	mg/kg	23.2	30.4	14.5	12.7	36.3	34.8 J-	21 J-	16
ZINC	120	460	mg/kg	50.9	60.4	44	43.1	82.3	82.6 J-	50.4 J-	46.3

Table 3-3a
Focus Area 1 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-14	USR11-45	USR11-45	USR11-45	USR11-45	USR11-46	USR11-46	USR11-46
			Field Sample ID	USR11-14-022	USR11-45-006	USR11-45-006-FS	USR11-45-024	USR11-45-039	USR11-46-006	USR11-46-024	USR11-46-051
			Sample Date	7/21/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	6- 22	0- 6	0- 6	6- 24	24- 39	0- 6	6- 24	24- 51
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	5220 J-	7020 J-	8450 J-	5620 J-	7860 J-	6290 J-	5480 J-	6870 J-
ANTIMONY	NL	NL	mg/kg	7.3 UJ	0.39 J-	0.41 J-	0.37 J-	0.43 J-	8.9 UJ	8.2 UJ	8.5 UJ
ARSENIC	9.8	33	mg/kg	2.5 J-	2.1 J-	2 J-	2.4 J-	2.8 J-	2 J-	1.6 J-	1.6 J-
BARIUM	NL	NL	mg/kg	24.4 UJ	44.7 J-	51.8 J-	32.3 J-	78.4 J-	66.8 J-	36.8 J-	32.5 J-
BERYLLIUM	NL	NL	mg/kg	0.61 UJ	0.67 UJ	0.7 UJ	0.052 J-	0.12 J-	0.74 UJ	0.68 UJ	0.71 UJ
CADMIUM	0.99	5	mg/kg	0.61 UJ	0.67 UJ	0.7 UJ	0.69 UJ	0.87 UJ	0.74 UJ	0.68 UJ	0.71 UJ
CALCIUM	NL	NL	mg/kg	2870 J-	3830 J-	4320 J-	3680 J-	14000 J-	21200 J-	13100 J-	2860 J-
CHROMIUM	43	110	mg/kg	9.6 J-	15.1 J-	18.1 J-	15.5 J-	18.5 J-	16.9 J-	13.9 J-	16.2 J-
COBALT	NL	NL	mg/kg	10.9 J-	8.4 J-	9.6 J-	7.4 J-	8.8 J-	7.4 UJ	6.8 UJ	7.9 J-
COPPER	32	150	mg/kg	9.9 J-	6.4 J-	7.3 J-	8.8 J-	12.7 J-	7.8 J-	11.4 J-	3.6 J-
IRON	NL	NL	mg/kg	16700 J-	13200 J-	15100 J-	11900 J-	12600 J-	10500 J-	9110 J-	11800 J-
LEAD	36	130	mg/kg	3.6 J-	7.3 J-	7 J-	13.5 J-	30.8 J-	8.7 J-	6.8 J-	2.9 J-
MAGNESIUM	NL	NL	mg/kg	2260 J-	2860 J-	3420 J-	2970 J-	2870 J-	2490 J-	2090 J-	2480 J-
MANGANESE	NL	NL	mg/kg	198 J+	332 J-	336 J-	172 J-	211 J-	489 J-	221 J-	160 J-
MERCURY	0.18	1.1	mg/kg	0.038 J-	0.13 UJ	0.14 UJ	0.14 UJ	0.17 UJ	0.18 J-	0.14 UJ	0.14 UJ
NICKEL	23	49	mg/kg	11.3 J-	14.5 J-	16.9 J-	18.1 J-	17.6 J-	13.1 J-	11.2 J-	14 J-
POTASSIUM	NL	NL	mg/kg	609 UJ	558 J-	697 J-	375 J-	663 J-	458 J-	402 J-	519 J-
SELENIUM	NL	NL	mg/kg	4.3 UJ	1.1 J-	1.3 J-	0.78 J-	1.2 J-	1 J-	0.66 J-	0.78 J-
SILVER	NL	NL	mg/kg	1.2 UJ	1.3 UJ	1.4 UJ	1.4 UJ	1.7 UJ	1.5 UJ	1.4 UJ	1.4 UJ
SODIUM	NL	NL	mg/kg	609 UJ	666 UJ	702 UJ	687 UJ	871 UJ	742 UJ	683 UJ	707 UJ
THALLIUM	NL	NL	mg/kg	3 UJ	3.3 UJ	3.5 UJ	3.4 UJ	4.4 UJ	3.7 UJ	3.4 UJ	3.5 UJ
VANADIUM	NL	NL	mg/kg	18.1 J-	21.2 J-	24 J-	19.4 J-	22.5 J-	19.4 J-	16.9 J-	20.2 J-
ZINC	120	460	mg/kg	55.5 J-	55.1 J-	62.6 J-	46.7 J-	92.2 J-	54.7 J-	47.1 J-	53.5 J-

Table 3-3a
Focus Area 1 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-47	USR11-47	USR11-48	USR11-48	USR11-49	USR11-49	USR11-50	USR11-50
			Field Sample ID	USR11-47-006	USR11-47-006-FS	USR11-48-006	USR11-48-019	USR11-49-006	USR11-49-034	USR11-50-006	USR11-50-026
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 6	0- 6	0- 6	6- 19	0- 6	6- 34	0- 6	6- 26
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	8790 J-	8320 J-	5930 J-	4890 J-	12300 J-	7370 J-	9060 J-	5550 J-
ANTIMONY	NL	NL	mg/kg	0.48 J-	0.41 J-	0.43 J-	0.36 J-	0.54 J-	7.6 UJ	0.46 J-	7.3 UJ
ARSENIC	9.8	33	mg/kg	3 J-	2.8 J-	2.3 J-	2.6 J-	3.9 J-	1.8 J-	2.5 J-	3 J-
BARIUM	NL	NL	mg/kg	63.7 J-	61.3 J-	37.5 J-	27.6 J-	74.3 J-	37.3 J-	61.7 J-	26.3 J-
BERYLLIUM	NL	NL	mg/kg	0.014 J-	0.011 J-	0.59 UJ	0.59 UJ	1.1 UJ	0.63 UJ	0.86 UJ	0.61 UJ
CADMIUM	0.99	5	mg/kg	0.78 UJ	0.74 UJ	0.59 UJ	0.59 UJ	1.1 UJ	0.63 UJ	0.86 UJ	0.61 UJ
CALCIUM	NL	NL	mg/kg	4040 J-	3870 J-	4130 J-	3400 J-	5330 J-	3140 J-	3960 J-	2660 J-
CHROMIUM	43	110	mg/kg	16.4 J-	16 J-	10 J-	9.1 J-	25.4 J-	19.6 J-	21.3 J-	15.9 J-
COBALT	NL	NL	mg/kg	10.3 J-	9.6 J-	6.8 J-	7 J-	11.2 UJ	8.9 J-	9.9 J-	7.1 J-
COPPER	32	150	mg/kg	13.2 J-	12.4 J-	12.6 J-	10.8 J-	18.6 J-	7.5 J-	10.3 J-	13.3 J-
IRON	NL	NL	mg/kg	18200 J-	16400 J-	14400 J-	12800 J-	20300 J-	14700 J-	17800 J-	14900 J-
LEAD	36	130	mg/kg	8.4 J-	8.2 J-	3.9 J-	3.3 J-	22.2 J-	4 J-	7.7 J-	4 J-
MAGNESIUM	NL	NL	mg/kg	3750 J-	3510 J-	3410 J-	2720 J-	4620 J-	2780 J-	3510 J-	2120 J-
MANGANESE	NL	NL	mg/kg	395 J-	364 J-	244 J-	241 J-	342 J-	129 J-	355 J-	182 J-
MERCURY	0.18	1.1	mg/kg	0.16 UJ	0.15 UJ	0.12 UJ	0.12 UJ	0.22 UJ	0.13 UJ	0.17 UJ	0.12 UJ
NICKEL	23	49	mg/kg	18.2 J-	17 J-	14.4 J-	12.9 J-	22 J-	14.8 J-	17.6 J-	12.2 J-
POTASSIUM	NL	NL	mg/kg	936 J-	882 J-	410 J-	417 J-	1120 J-	617 J-	948 J-	448 J-
SELENIUM	NL	NL	mg/kg	1.2 J-	1.2 J-	0.86 J-	0.87 J-	1.9 J-	0.99 J-	1.3 J-	0.94 J-
SILVER	NL	NL	mg/kg	1.6 UJ	1.5 UJ	1.2 UJ	1.2 UJ	2.2 UJ	1.3 UJ	1.7 UJ	1.2 UJ
SODIUM	NL	NL	mg/kg	782 UJ	735 UJ	594 UJ	585 UJ	1120 UJ	630 UJ	861 UJ	611 UJ
THALLIUM	NL	NL	mg/kg	3.9 UJ	3.7 UJ	3 UJ	2.9 UJ	5.6 UJ	3.1 UJ	4.3 UJ	3.1 UJ
VANADIUM	NL	NL	mg/kg	38.8 J-	35.4 J-	29.9 J-	26 J-	41.9 J-	42.6 J-	39.8 J-	46.5 J-
ZINC	120	460	mg/kg	50.6 J-	50 J-	24.9 J-	23.3 J-	112 J-	38.3 J-	58 J-	23.1 J-

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

ID - Identification
in bss - inches below sediment surface
J - Estimated Value
J+ - Estimated value, biased high
J- - Estimated value, biased low
mg/kg - Milligram per kilogram
NL - Not Listed
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I
[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-3b
Focus Area 2 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-15	USR11-15	USR11-16	USR11-17	USR11-17	USR11-17	USR11-18	USR11-19
			Field Sample ID	USR11-15-017	USR11-15-017-FS	USR11-16-019	USR11-17-006	USR11-17-006-FS	USR11-17-016	USR11-18-006	USR11-19-006
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/19/2011	7/19/2011	7/19/2011	7/19/2011	7/20/2011
			Depth Interval (in bss)	0- 17	0- 17	0- 19	0- 6	0- 6	6- 16	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	6190 J-	7320 J-	6410	9560	9400	13300	3940	5960
ANTIMONY	NL	NL	mg/kg	8.2 UJ	8.9 UJ	8.5 UJ	9.8 UJ	10 UJ	12.7 UJ	0.27 J	8 UJ
ARSENIC	9.8	33	mg/kg	2.3 J-	2.7 J-	2.2	3	3.1	3.7	4.1	2.6
BARIUM	NL	NL	mg/kg	36.3 J-	42.5 J-	36.2	80.7	88.1	96.4	24.6 U	37.9
BERYLLIUM	NL	NL	mg/kg	0.69 UJ	0.75 UJ	0.71 U	0.82 U	0.84 U	1.1 U	0.62 U	0.66 U
CADMIUM	0.99	5	mg/kg	0.69 UJ	0.75 UJ	0.71 U	0.82 U	0.84 U	1.1 U	0.62 U	0.66 U
CALCIUM	NL	NL	mg/kg	3020 J-	3840 J-	3400	5460	5400	6190	2690	3160
CHROMIUM	43	110	mg/kg	14.8 J-	15.7 J-	15.3	25.6 J	25.6 J	35.8 J	9.9 J	18.7 J
COBALT	NL	NL	mg/kg	9.7 J-	10.8 J-	7.4	8.7	8.7	10.6 U	6.2 U	6.9
COPPER	32	150	mg/kg	4.9 J-	5.6 J-	5.2	10.6 J	14.1 J	19.3 J	7.3 J	8.2 J
IRON	NL	NL	mg/kg	13000 J-	15200 J-	14000	18800	19300	20500	15600	12400
LEAD	36	130	mg/kg	3.5 J-	4.2 J-	4.1	6.3	7.6	9.6	2.8	5
MAGNESIUM	NL	NL	mg/kg	2440 J-	2980 J-	2460	3740	3750	5240	1640	2520
MANGANESE	NL	NL	mg/kg	225 J+	277 J+	279	538 J	601 J	342 J	360 J	290 J
MERCURY	0.18	1.1	mg/kg	0.052 J-	0.068 J-	0.14 U	0.16 U	0.17 U	0.21 U	0.12 U	0.13 U
NICKEL	23	49	mg/kg	12.4 J-	15 J-	13.4	16.1	16.7	**23.5**	8	12.6
POTASSIUM	NL	NL	mg/kg	686 UJ	745 UJ	527 J	922	908	1430	228 J	597 J
SELENIUM	NL	NL	mg/kg	4.8 UJ	5.2 UJ	5 U	1.4 J	1.7 J	1.7 J	1 J	0.98 J
SILVER	NL	NL	mg/kg	1.4 UJ	1.5 UJ	1.4 U	1.6 U	1.7 U	2.1 U	1.2 U	1.3 U
SODIUM	NL	NL	mg/kg	686 UJ	745 UJ	209 J	817 U	836 U	1060 U	615 U	663 U
THALLIUM	NL	NL	mg/kg	3.4 UJ	3.7 UJ	3.6 U	4.1 U	4.2 U	5.3 U	3.1 U	3.3 U
VANADIUM	NL	NL	mg/kg	18.6 J-	20.4 J-	20.9	30 J	33.1 J	42.6 J	15 J	20.8 J
ZINC	120	460	mg/kg	48.1 J-	57 J-	52.6	69.6 J	72.9 J	90.6 J	40.7 J	78.4 J

Table 3-3b
Focus Area 2 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-20	USR11-20	USR11-21	USR11-22	USR11-22	USR11-22	USR11-23	USR11-24
			Field Sample ID	USR11-20-006	USR11-20-027	USR11-21-006	USR11-22-006	USR11-22-033	USR11-22-033-FS	USR11-23-016	USR11-24-006
			Sample Date	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	0- 6	6- 27	0- 6	0- 6	6- 33	6- 33	0- 16	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	8090	7020	4870	7510	8640	8430	8640	6500
ANTIMONY	NL	NL	mg/kg	9.5 UJ	0.49 J	7 UJ	9.5 UJ	9.9 UJ	9.1 UJ	2.4 J	0.47 J
ARSENIC	9.8	33	mg/kg	2.7	2.8	2	2.2	2.4	2.4	7.7	3.4
BARIUM	NL	NL	mg/kg	53.8	42.1	23.3 U	48.8	52.7	50.4	81.1	37.6
BERYLLIUM	NL	NL	mg/kg	0.79 U	0.65 U	0.58 U	0.79 U	0.82 U	0.76 U	0.63 U	0.63 U
CADMIUM	0.99	5	mg/kg	0.79 U	0.65 U	0.58 U	0.79 U	0.82 U	0.76 U	0.63 U	0.63 U
CALCIUM	NL	NL	mg/kg	4100	3250	2430	3760	4780	4420	11100	4320
CHROMIUM	43	110	mg/kg	23.7 J	20.3 J	14.6 J	21.4 J	25 J	24.1 J	28	23.6 J
COBALT	NL	NL	mg/kg	8.7	6.8	5.8 U	7.9 U	8.5	8.2	10.8	7.7
COPPER	32	150	mg/kg	9.1 J	8.5 J	7.1 J	8 J	9.7 J	9.6 J	**91.9**	**44.8 J**
IRON	NL	NL	mg/kg	16400	22700	15200	14000	15000	14700	57300	28500
LEAD	36	130	mg/kg	5.6	4	20.8	5.5	5.6	5.9	25.8	21
MAGNESIUM	NL	NL	mg/kg	3150	2950	2060	2740	3560	3430	4690	4170
MANGANESE	NL	NL	mg/kg	387 J	239 J	161 J	264 J	250 J	236 J	528	395 J
MERCURY	0.18	1.1	mg/kg	0.16 U	0.13 U	0.12 U	0.16 U	0.16 U	0.15 U	0.13 U	0.13 U
NICKEL	23	49	mg/kg	15.1	12.8	9.9	13.1	15.9	15.6	**29.9**	18.4
POTASSIUM	NL	NL	mg/kg	765 J	588 J	331 J	685 J	823	799	677	526 J
SELENIUM	NL	NL	mg/kg	1.3 J	1.5 J	1 J	1.1 J	1.3 J	1.2 J	4.4 U	1.9 J
SILVER	NL	NL	mg/kg	1.6 U	1.3 U	1.2 U	1.6 U	1.6 U	1.5 U	1.3 U	1.3 U
SODIUM	NL	NL	mg/kg	794 U	652 U	583 U	790 U	822 U	758 U	363 J	632 U
THALLIUM	NL	NL	mg/kg	4 U	3.3 U	2.9 U	3.9 U	4.1 U	3.8 U	3.2 U	3.2 U
VANADIUM	NL	NL	mg/kg	29.4 J	26.6 J	22.9 J	26.9 J	31.5 J	30.3 J	29.2	51.5 J
ZINC	120	460	mg/kg	60.1 J	48.3 J	49.1 J	52.8 J	60.2 J	59 J	**295**	79.2 J

Table 3-3b
Focus Area 2 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-24	USR11-24	USR11-25	USR11-25	USR11-25	USR11-25	USR11-25	USR11-25
			Field Sample ID	USR11-24-024	USR11-24-048	USR11-25-006	USR11-25-006-DP	USR11-25-024	USR11-25-024-DP	USR11-25-048	USR11-25-048-DP
			Sample Date	7/21/2011	7/21/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011
			Depth Interval (in bss)	6- 24	24- 48	0- 6	0- 6	6- 24	6- 24	24- 48	24- 48
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	5840	6280	12000	10900	12600	10700	11900	9910
ANTIMONY	NL	NL	mg/kg	0.45 J	0.32 J	13 UJ	12.2 UJ	11.1 UJ	10.2 UJ	0.37 J	9.4 UJ
ARSENIC	9.8	33	mg/kg	3.5	2.9	3.7	3.3	4	3.2	3.4	3.1
BARIUM	NL	NL	mg/kg	30.6	34.3	97.8	86.7	97.3	79.2	91.9	75.3
BERYLLIUM	NL	NL	mg/kg	0.56 U	0.57 U	1.1 U	1 U	0.92 U	0.85 U	0.84 U	0.78 U
CADMIUM	0.99	5	mg/kg	0.56 U	0.57 U	1.1 U	1 U	0.92 U	0.85 U	0.84 U	0.78 U
CALCIUM	NL	NL	mg/kg	4590	3460	5840	5420	5500	4790	5200	4910
CHROMIUM	43	110	mg/kg	17	19.2	33.3 J	30.2 J	34.8 J	29.7 J	33.9 J	29.3 J
COBALT	NL	NL	mg/kg	9.9	8.8	11.4	10.4	12.2	10.6	11.5	10
COPPER	32	150	mg/kg	22.5	23.1	13.3 J	12.2 J	13.9 J	12.2 J	13.9 J	11.3 J
IRON	NL	NL	mg/kg	27900	23700	23600	21600	23700	19900	21600	18000
LEAD	36	130	mg/kg	19.6	9.5	7.6	6.9	8.7	7.3	9.1	8.5
MAGNESIUM	NL	NL	mg/kg	3730	3690	4610	4330	4890	4160	4620	3980
MANGANESE	NL	NL	mg/kg	342	261	1190 J	978 J	875 J	608 J	743 J	468 J
MERCURY	0.18	1.1	mg/kg	0.11 U	0.11 U	0.22 U	0.2 U	0.18 U	0.17 U	0.17 U	0.16 U
NICKEL	23	49	mg/kg	22.3	19.8	20.6	19	21.6	18.7	21.1	18
POTASSIUM	NL	NL	mg/kg	368 J	458 J	1220	1110	1290	1080	1230	968
SELENIUM	NL	NL	mg/kg	3.9 U	4 U	2.5 J	2.1 J	2.1 J	1.7 J	1.7 J	1.5 J
SILVER	NL	NL	mg/kg	1.1 U	1.1 U	2.2 U	2 U	1.8 U	1.7 U	1.7 U	1.6 U
SODIUM	NL	NL	mg/kg	366 J	259 J	1080 U	1020 U	924 U	852 U	842 U	780 U
THALLIUM	NL	NL	mg/kg	2.8 U	2.9 U	5.4 U	5.1 U	4.6 U	4.3 U	4.2 U	3.9 U
VANADIUM	NL	NL	mg/kg	36.4	37.7	37.5 J	31.8 J	37.9 J	33.6 J	37.6 J	33.4 J
ZINC	120	460	mg/kg	64.6	69.1	87 J	79.8 J	91.1 J	76.4 J	85.3 J	75.4 J

Table 3-3b
Focus Area 2 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-26	USR11-26	USR11-27	USR11-27	USR11-28	USR11-29	USR11-29	USR11-30
			Field Sample ID	USR11-26-006	USR11-26-030	USR11-27-006	USR11-27-020	USR11-28-006	USR11-29-006	USR11-29-021	USR11-30-006
			Sample Date	7/20/2011	7/20/2011	7/21/2011	7/21/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	0- 6	6- 30	0- 6	6- 20	0- 6	0- 6	6- 21	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	9670	9190	11900	12900	8820 J-	7220 J-	4240 J-	10600 J-
ANTIMONY	NL	NL	mg/kg	10.3 UJ	9.2 UJ	11.2 UJ	1.4 J	0.37 J-	0.98 J-	0.3 J-	11.9 UJ
ARSENIC	9.8	33	mg/kg	2.9	2.7	3.9	5.5	2.2 J-	2.9 J-	1.8 J-	3.2 J-
BARIUM	NL	NL	mg/kg	69.2	115	102	600	50.8 J-	81.3 J-	30.1 J-	78 J-
BERYLLIUM	NL	NL	mg/kg	0.86 U	0.76 U	0.93 U	1.1 U	0.65 UJ	0.75 UJ	0.62 UJ	0.99 UJ
CADMIUM	0.99	5	mg/kg	0.86 U	0.76 U	0.93 U	1.1 U	0.65 UJ	0.75 UJ	0.62 UJ	0.99 UJ
CALCIUM	NL	NL	mg/kg	5150	5610	9910	7480	7350 J-	4610 J-	2480 J-	5810 J-
CHROMIUM	43	110	mg/kg	29 J	26.2 J	31.3	39.5	17.4 J-	18.3 J-	9.4 J-	26.8 J-
COBALT	NL	NL	mg/kg	9.5	9	13.1	13.7	8.4 J-	8.6 J-	6.2 UJ	12.3 J-
COPPER	32	150	mg/kg	11 J	12.4 J	19.5	**53.8**	5.6 J-	10.6 J-	3.5 J-	10.7 J-
IRON	NL	NL	mg/kg	19000	16500	24800	22000	14100 J-	21200 J-	10100 J-	19300 J-
LEAD	36	130	mg/kg	6.8	8.3	14.1	**43.4**	11 J-	10.6 J-	4.1 J-	7.8 J-
MAGNESIUM	NL	NL	mg/kg	4020	3570	4830	4940	2900 J-	2870 J-	1910 J-	4430 J-
MANGANESE	NL	NL	mg/kg	529 J	445 J	682	574	330 J-	302 J-	111 J-	661 J-
MERCURY	0.18	1.1	mg/kg	0.17 U	0.15 U	0.19 U	**1**	0.13 UJ	0.15 UJ	0.12 UJ	0.2 UJ
NICKEL	23	49	mg/kg	17.6	15.8	**26.1**	**28**	13.2 J-	15.3 J-	10.2 J-	21.6 J-
POTASSIUM	NL	NL	mg/kg	951	869	1130	1340	578 J-	645 J-	306 J-	1020 J-
SELENIUM	NL	NL	mg/kg	1.7 J	1.4 J	6.5 U	7.5 U	1.1 J-	1.4 J-	0.73 J-	1.7 J-
SILVER	NL	NL	mg/kg	1.7 U	1.5 U	1.9 U	2.1	1.3 UJ	1.5 UJ	1.2 UJ	2 UJ
SODIUM	NL	NL	mg/kg	859 U	763 U	418 J	371 J	649 UJ	745 UJ	618 UJ	988 UJ
THALLIUM	NL	NL	mg/kg	4.3 U	3.8 U	4.7 U	5.4 U	3.2 UJ	3.7 UJ	3.1 UJ	4.9 UJ
VANADIUM	NL	NL	mg/kg	33.5 J	32.7 J	38	39.9	19.6 J-	24.3 J-	11.9 J-	32.2 J-
ZINC	120	460	mg/kg	72.1 J	79.8 J	111	**585**	52.3 J-	93.9 J-	50.5 J-	83.6 J-

Table 3-3b
Focus Area 2 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-30	USR11-31	USR11-31	USR11-32	USR11-32	USR11-32	USR11-32	USR11-33
			Field Sample ID	USR11-30-021	USR11-31-006	USR11-31-026	USR11-32-006	USR11-32-006-DP	USR11-32-025	USR11-32-025-DP	USR11-33-006
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/22/2011
			Depth Interval (in bss)	6- 21	0- 6	6- 26	0- 6	0- 6	6- 25	6- 25	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	8440 J-	9590 J-	9430 J-	10100 J-	10700 J-	8820 J-	9220 J-	6180 J-
ANTIMONY	NL	NL	mg/kg	0.39 J-	10.7 UJ	9.1 UJ	0.4 J-	0.5 J-	8.8 UJ	9.2 UJ	7.7 UJ
ARSENIC	9.8	33	mg/kg	3.8 J-	2.9 J-	2.6 J-	2.9 J-	3.1 J-	2.4 J-	3.1 J-	3 J-
BARIUM	NL	NL	mg/kg	66.5 J-	69 J-	121 J-	68 J-	75.1 J-	88.7 J-	138 J-	37.8 J-
BERYLLIUM	NL	NL	mg/kg	0.76 UJ	0.89 UJ	0.76 UJ	0.89 UJ	0.97 UJ	0.73 UJ	0.76 UJ	0.64 UJ
CADMIUM	0.99	5	mg/kg	0.76 UJ	0.89 UJ	0.76 UJ	0.89 UJ	0.97 UJ	0.73 UJ	0.76 UJ	0.64 UJ
CALCIUM	NL	NL	mg/kg	4920 J-	5170 J-	5400 J-	5110 J-	19000 J-	4650 J-	4710 J-	3440 J-
CHROMIUM	43	110	mg/kg	20.1 J-	24.4 J-	24.7 J-	23 J-	23.6 J-	20.1 J-	20.4 J-	14.4 J-
COBALT	NL	NL	mg/kg	10.1 J-	11.2 J-	10.6 J-	10.6 J-	11.2 J-	9.8 J-	9.9 J-	10.7 J-
COPPER	32	150	mg/kg	14 J-	8.6 J-	9.3 J-	7.9 J-	8.4 J-	7.3 J-	9.5 J-	7 J-
IRON	NL	NL	mg/kg	15600 J-	16800 J-	14100 J-	15500 J-	16300 J-	12800 J-	13100 J-	14100 J-
LEAD	36	130	mg/kg	8.3 J-	7.2 J-	7.6 J-	5.9 J-	6.9 J-	7.5 J-	10.5 J-	6.7 J-
MAGNESIUM	NL	NL	mg/kg	3680 J-	4000 J-	3980 J-	3860 J-	3980 J-	3360 J-	3450 J-	2880 J-
MANGANESE	NL	NL	mg/kg	308 J-	570 J-	285 J-	474 J-	553 J-	246 J-	239 J-	268 J+
MERCURY	0.18	1.1	mg/kg	0.15 UJ	0.18 UJ	0.15 UJ	0.18 UJ	0.19 UJ	0.15 UJ	**0.31 J-**	0.076 J-
NICKEL	23	49	mg/kg	18.5 J-	18.6 J-	20.3 J-	18.2 J-	18.8 J-	16.4 J-	17 J-	15.2 J-
POTASSIUM	NL	NL	mg/kg	746 J-	924 J-	878 J-	942 J-	1010 J-	773 J-	829 J-	640 UJ
SELENIUM	NL	NL	mg/kg	1.1 J-	1.7 J-	1.1 J-	1.3 J-	1.4 J-	0.64 J-	1 J-	4.5 UJ
SILVER	NL	NL	mg/kg	1.5 UJ	1.8 UJ	1.5 UJ	1.8 UJ	1.9 UJ	1.5 UJ	1.5 UJ	1.3 UJ
SODIUM	NL	NL	mg/kg	763 UJ	891 UJ	760 UJ	891 UJ	969 UJ	731 UJ	763 UJ	640 UJ
THALLIUM	NL	NL	mg/kg	3.8 UJ	4.5 UJ	3.8 UJ	4.5 UJ	4.8 UJ	3.7 UJ	3.8 UJ	3.2 UJ
VANADIUM	NL	NL	mg/kg	26.4 J-	28.7 J-	28.7 J-	27.8 J-	29.3 J-	24.3 J-	25.8 J-	19.6 J-
ZINC	120	460	mg/kg	75.6 J-	70.9 J-	95.7 J-	67.4 J-	71 J-	69.7 J-	94.7 J-	48.7 J-

Table 3-3b
Focus Area 2 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-33	USR11-34	USR11-34	USR11-34	USR11-35	USR11-35	USR11-36	USR11-36
			Field Sample ID	USR11-33-022	USR11-34-006	USR11-34-024	USR11-34-040	USR11-35-006	USR11-35-026	USR11-36-006	USR11-36-032
			Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
			Depth Interval (in bss)	6- 22	0- 6	6- 24	24- 40	0- 6	6- 26	0- 6	6- 32
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	4860 J-	8760 J-	6960 J-	8000 J-	5970 J-	6440 J-	7630 J-	6640 J-
ANTIMONY	NL	NL	mg/kg	8.1 UJ	9.5 UJ	8.5 UJ	17.1 UJ	0.53 J-	0.38 J-	9.1 UJ	7.8 UJ
ARSENIC	9.8	33	mg/kg	1.8 J-	2.5 J-	2.1 J-	2.8 J-	2.4 J-	2.5 J-	2.8 J-	1.9 J-
BARIUM	NL	NL	mg/kg	33.7 J-	58.4 J-	43.3 J-	65.9 J-	22.8 UJ	31.7 J-	61.7 J-	34.3 J-
BERYLLIUM	NL	NL	mg/kg	0.67 UJ	0.79 UJ	0.7 UJ	1.4 UJ	0.0082 J-	0.64 UJ	0.76 UJ	0.65 UJ
CADMIUM	0.99	5	mg/kg	0.67 UJ	0.79 UJ	0.7 UJ	**2.1 J-**	0.57 UJ	0.64 UJ	0.76 UJ	0.65 UJ
CALCIUM	NL	NL	mg/kg	3480 J-	4570 J-	3860 J-	16500 J-	2350 J-	3110 J-	28000 J-	8660 J-
CHROMIUM	43	110	mg/kg	11.9 J-	22.2 J-	16.8 J-	21.3 J-	15.1 J-	16 J-	20.6 J-	18.1 J-
COBALT	NL	NL	mg/kg	7.5 J-	13.4 J-	10.5 J-	14.2 UJ	7.5 J-	8.6 J-	12.4 J-	9.5 J-
COPPER	32	150	mg/kg	7.1 J-	9.7 J-	7.2 J-	**36.8 J-**	6.1 J-	6.6 J-	8 J-	5.2 J-
IRON	NL	NL	mg/kg	9730 J-	16700 J-	12400 J-	8220 J-	14500 J-	14100 J-	14900 J-	11500 J-
LEAD	36	130	mg/kg	8.1 J-	8.5 J-	6.1 J-	**51.8 J-**	6.2 J-	5.1 J-	7.3 J-	5 J-
MAGNESIUM	NL	NL	mg/kg	2080 J-	3500 J-	2670 J-	1930 J-	2950 J-	2990 J-	2850 J-	1980 J-
MANGANESE	NL	NL	mg/kg	123 J+	378 J+	228 J+	151 J+	245 J-	291 J-	475 J+	198 J+
MERCURY	0.18	1.1	mg/kg	0.036 J-	0.12 J-	0.091 J-	**0.39 J-**	0.11 UJ	0.13 UJ	0.15 J-	**0.2 J-**
NICKEL	23	49	mg/kg	10.9 J-	18.4 J-	14.6 J-	16.2 J-	14.7 J-	15.3 J-	15.8 J-	13.1 J-
POTASSIUM	NL	NL	mg/kg	674 UJ	831 J-	704 UJ	1420 UJ	405 J-	479 J-	758 UJ	647 UJ
SELENIUM	NL	NL	mg/kg	4.7 UJ	5.5 UJ	4.9 UJ	10 UJ	0.85 J-	1.1 J-	5.3 UJ	4.5 UJ
SILVER	NL	NL	mg/kg	1.3 UJ	1.6 UJ	1.4 UJ	2.8 UJ	1.1 UJ	1.3 UJ	1.5 UJ	1.3 UJ
SODIUM	NL	NL	mg/kg	674 UJ	789 UJ	704 UJ	1420 UJ	569 UJ	643 UJ	758 UJ	647 UJ
THALLIUM	NL	NL	mg/kg	3.4 UJ	3.9 UJ	3.5 UJ	7.1 UJ	2.8 UJ	3.2 UJ	3.8 UJ	3.2 UJ
VANADIUM	NL	NL	mg/kg	17.3 J-	25.5 J-	21.4 J-	17.1 J-	15.7 J-	19.4 J-	23.6 J-	23.6 J-
ZINC	120	460	mg/kg	37.2 J-	69.2 J-	54.9 J-	**207 J-**	48.3 J-	50.8 J-	59.2 J-	32 J-

Table 3-3b
Focus Area 2 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-37	USR11-38	USR11-38	USR11-39	USR11-39	USR11-40	USR11-40	USR11-41
			Field Sample ID	USR11-37-017	USR11-38-006	USR11-38-019	USR11-39-006	USR11-39-024	USR11-40-006	USR11-40-034	USR11-41-016
			Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
			Depth Interval (in bss)	0- 17	0- 6	6- 19	0- 6	6- 24	0- 6	6- 34	0- 16
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	8680 J-	8420 J-	9250 J-	9980 J-	13700 J-	9520 J-	9140 J-	12000 J-
ANTIMONY	NL	NL	mg/kg	8.8 UJ	9.3 UJ	10.3 UJ	11.8 UJ	12.2 UJ	10.6 UJ	10 UJ	20.9 UJ
ARSENIC	9.8	33	mg/kg	2.1 J-	2.9 J-	3.4 J-	3.4 J-	4.1 J-	4.3 J-	4.3 J-	6.7 J-
BARIUM	NL	NL	mg/kg	49.5 J-	52.3 J-	72.6 J-	73.4 J-	145 J-	77.5 J-	118 J-	108 J-
BERYLLIUM	NL	NL	mg/kg	0.73 UJ	0.78 UJ	0.86 UJ	0.99 UJ	1 UJ	0.89 UJ	0.83 UJ	1.7 UJ
CADMIUM	0.99	5	mg/kg	0.73 UJ	0.78 UJ	0.86 UJ	0.99 UJ	1 UJ	0.89 UJ	0.83 UJ	1.7 UJ
CALCIUM	NL	NL	mg/kg	3180 J-	5030 J-	7820 J-	5130 J-	8800 J-	5280 J-	5090 J-	5330 J-
CHROMIUM	43	110	mg/kg	21.4 J-	22.2 J-	21.7 J-	25.9 J-	35.5 J-	23.5 J-	21.6 J-	32.7 J-
COBALT	NL	NL	mg/kg	11.9 J-	14.1 J-	13.5 J-	14.5 J-	19.2 J-	15.5 J-	15 J-	17.4 UJ
COPPER	32	150	mg/kg	6.3 J-	**63 J-**	16.6 J-	15.3 J-	25.9 J-	10.1 J-	18.8 J-	**43.7 J-**
IRON	NL	NL	mg/kg	13700 J-	14600 J-	14800 J-	16300 J-	19900 J-	18600 J-	15600 J-	19300 J-
LEAD	36	130	mg/kg	5.8 J-	7.8 J-	23 J-	10.8 J-	18.8 J-	6.9 J-	16.8 J-	33.2 J-
MAGNESIUM	NL	NL	mg/kg	2780 J-	3360 J-	3300 J-	4010 J-	4780 J-	3820 J-	3070 J-	3300 J-
MANGANESE	NL	NL	mg/kg	197 J+	269 J+	332 J+	319 J+	280 J+	574 J+	404 J+	568 J+
MERCURY	0.18	1.1	mg/kg	0.091 J-	0.072 J-	**0.2 J-**	**0.19 J-**	**1.1 J-**	0.12 J-	**0.45 J-**	**1.4 J-**
NICKEL	23	49	mg/kg	15.7 J-	18 J-	18.5 J-	20.5 J-	**25.8 J-**	20.1 J-	19.4 J-	20.6 J-
POTASSIUM	NL	NL	mg/kg	732 UJ	775 UJ	858 UJ	1020 J-	1380 J-	957 J-	831 UJ	1740 UJ
SELENIUM	NL	NL	mg/kg	5.1 UJ	5.4 UJ	6 UJ	6.9 UJ	7.1 UJ	6.2 UJ	5.8 UJ	12.2 UJ
SILVER	NL	NL	mg/kg	1.5 UJ	1.6 UJ	1.7 UJ	2 UJ	2 UJ	1.8 UJ	1.7 UJ	3.5 UJ
SODIUM	NL	NL	mg/kg	732 UJ	775 UJ	858 UJ	986 UJ	1020 UJ	887 UJ	831 UJ	1740 UJ
THALLIUM	NL	NL	mg/kg	3.7 UJ	3.9 UJ	4.3 UJ	4.9 UJ	5.1 UJ	4.4 UJ	4.2 UJ	8.7 UJ
VANADIUM	NL	NL	mg/kg	26.3 J-	25.3 J-	25.6 J-	27.8 J-	36.3 J-	27.9 J-	25.3 J-	34.2 J-
ZINC	120	460	mg/kg	42.4 J-	71.5 J-	91.6 J-	80.8 J-	**162 J-**	73.8 J-	**122 J-**	**134 J-**

Table 3-3b
Focus Area 2 Sediment Sample Analytical Results - TAL Metals
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-42	USR11-42	USR11-43	USR11-43	USR11-43	USR11-44	USR11-44	USR11-44
			Field Sample ID	USR11-42-006	USR11-42-033	USR11-43-006	USR11-43-024	USR11-43-053	USR11-44-006	USR11-44-024	USR11-44-037
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	0- 6	6- 33	0- 6	6- 24	24- 53	0- 6	6- 24	24- 37
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
ALUMINUM	NL	NL	mg/kg	9520 J-	10500 J-	6890 J-	7880 J-	10900 J-	6270 J-	8880 J-	4960 J-
ANTIMONY	NL	NL	mg/kg	10 UJ	0.48 J-	8.4 UJ	11 UJ	0.45 J-	0.29 J-	0.42 J-	15.6 UJ
ARSENIC	9.8	33	mg/kg	2.8 J-	3.4 J-	2.3 J-	3 J-	2.6 J-	1.8 J-	3.3 J-	1.9 J-
BARIUM	NL	NL	mg/kg	64.7 J-	62 J-	46.6 J-	109 J-	72.7 J-	30.7 J-	87.1 J-	51.9 UJ
BERYLLIUM	NL	NL	mg/kg	0.84 UJ	0.085 J-	0.7 UJ	0.14 J-	0.89 UJ	0.64 UJ	0.095 J-	1.3 UJ
CADMIUM	0.99	5	mg/kg	0.84 UJ	0.98 UJ	0.7 UJ	0.92 UJ	0.89 UJ	0.64 UJ	0.96 UJ	1.3 UJ
CALCIUM	NL	NL	mg/kg	4460 J-	5520 J-	4040 J-	41900 J-	16700 J-	3190 J-	26200 J-	5930 J-
CHROMIUM	43	110	mg/kg	20.8 J-	19.7 J-	15.4 J-	18.7 J-	26.2 J-	12.8 J-	28.6 J-	9.1 J-
COBALT	NL	NL	mg/kg	10.5 J-	10 J-	7.8 J-	7.9 J-	9.9 J-	7.5 J-	7.4 J-	5.4 J-
COPPER	32	150	mg/kg	7.8 J-	**54.6 J-**	6.4 J-	13.5 J-	12.3 J-	8 J-	21.2 J-	10.2 J-
IRON	NL	NL	mg/kg	15400 J-	15400 J-	10400 J-	11200 J-	14600 J-	11400 J-	13400 J-	9350 J-
LEAD	36	130	mg/kg	6.2 J-	16.9 J-	5.8 J-	11.4 J-	7.9 J-	4.8 J-	19.3 J-	7.9 J-
MAGNESIUM	NL	NL	mg/kg	3510 J-	3630 J-	2620 J-	2720 J-	3890 J-	2520 J-	3090 J-	1660 J-
MANGANESE	NL	NL	mg/kg	429 J-	264 J-	197 J-	241 J-	247 J-	233 J-	221 J-	130 J-
MERCURY	0.18	1.1	mg/kg	0.17 UJ	0.2 UJ	0.14 UJ	**0.41 J-**	0.18 UJ	0.13 UJ	0.19 UJ	0.26 UJ
NICKEL	23	49	mg/kg	17.5 J-	18.9 J-	13.5 J-	15.2 J-	20.6 J-	12.9 J-	14.4 J-	10.1 J-
POTASSIUM	NL	NL	mg/kg	847 J-	828 J-	546 J-	679 J-	975 J-	467 J-	690 J-	421 J-
SELENIUM	NL	NL	mg/kg	1.4 J-	1.2 J-	0.91 J-	1.1 J-	0.84 J-	0.96 J-	0.85 J-	1 J-
SILVER	NL	NL	mg/kg	1.7 UJ	2 UJ	1.4 UJ	1.8 UJ	1.8 UJ	1.3 UJ	1.9 UJ	2.6 UJ
SODIUM	NL	NL	mg/kg	836 UJ	984 UJ	696 UJ	916 UJ	891 UJ	641 UJ	958 UJ	1300 UJ
THALLIUM	NL	NL	mg/kg	4.2 UJ	4.9 UJ	3.5 UJ	4.6 UJ	4.5 UJ	3.2 UJ	4.8 UJ	6.5 UJ
VANADIUM	NL	NL	mg/kg	25.3 J-	26.4 J-	18.2 J-	20.4 J-	28.9 J-	16 J-	21.5 J-	21.5 J-
ZINC	120	460	mg/kg	64.9 J-	90.2 J-	58.7 J-	84 J-	74.8 J-	47.7 J-	102 J-	44.4 J-

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

ID - Identification
in bss - inches below sediment surface
J - Estimated Value
J+ - Estimated value, biased high
J- - Estimated value, biased low
mg/kg - Milligram per kilogram
NL - Not Listed
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I
[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-4a
Focus Area 1 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-01	USR11-01	USR11-01	USR11-02	USR11-02	USR11-03	USR11-04	USR11-05
			Field Sample ID	USR11-01-006	USR11-01-024	USR11-01-047	USR11-02-006	USR11-02-022	USR11-03-017	USR11-04-016	USR11-05-006
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 6	6- 24	24- 47	0- 6	6- 22	0- 17	0- 16	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	44 U	42 U	50 U	66 U	46 U	53 U	50 U	56 U
AROCLOR-1221	NL	NL	µg/kg	44 U	42 U	50 U	66 U	46 U	53 U	50 U	56 U
AROCLOR-1232	NL	NL	µg/kg	44 U	42 U	50 U	66 U	46 U	53 U	50 U	56 U
AROCLOR-1242	NL	NL	µg/kg	44 U	42 U	50 U	66 U	46 U	53 U	50 U	56 U
AROCLOR-1248	NL	NL	µg/kg	44 U	42 U	50 U	66 U	46 U	53 U	50 U	56 U
AROCLOR-1254	NL	NL	µg/kg	44 U	42 U	50 U	66 U	46 U	53 U	50 U	56 U
AROCLOR-1260	NL	NL	µg/kg	44 U	42 U	50 U	66 U	46 U	53 U	50 U	56 U
AROCLOR-1262	NL	NL	µg/kg	44 U	42 U	50 U	66 U	46 U	53 U	50 U	56 U
AROCLOR-1268	NL	NL	µg/kg	44 U	42 U	50 U	66 U	46 U	53 U	50 U	56 U
TOTAL PCBs	60	680	µg/kg	0	0	0	0	0	0	0	0

Table 3-4a
Focus Area 1 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-05	USR11-05	USR11-05	USR11-06	USR11-06	USR11-06	USR11-06	USR11-07
			Field Sample ID	USR11-05-007-FS	USR11-05-024	USR11-05-051	USR11-06-006	USR11-06-006-DP	USR11-06-022	USR11-06-022-DP	USR11-07-017
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 7	6- 24	24- 51	0- 6	0- 6	6- 22	6- 22	0- 17
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	51 U	43 U	43 U	40 U	41 U	40 U	49 U	42 U
AROCLOR-1221	NL	NL	µg/kg	51 U	43 U	43 U	40 U	41 U	40 U	49 U	42 U
AROCLOR-1232	NL	NL	µg/kg	51 U	43 U	43 U	40 U	41 U	40 U	49 U	42 U
AROCLOR-1242	NL	NL	µg/kg	51 U	43 U	43 U	40 U	41 U	40 U	49 U	42 U
AROCLOR-1248	NL	NL	µg/kg	51 U	43 U	43 U	40 U	41 U	40 U	49 U	42 U
AROCLOR-1254	NL	NL	µg/kg	51 U	43 U	43 U	40 U	41 U	40 U	49 U	42 U
AROCLOR-1260	NL	NL	µg/kg	51 U	43 U	43 U	40 U	41 U	40 U	49 U	42 U
AROCLOR-1262	NL	NL	µg/kg	51 U	43 U	43 U	40 U	41 U	40 U	49 U	42 U
AROCLOR-1268	NL	NL	µg/kg	51 U	43 U	43 U	40 U	41 U	40 U	49 U	42 U
TOTAL PCBs	60	680	µg/kg	0	0	0	0	0	0	0	0

Table 3-4a
Focus Area 1 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-08	USR11-08	USR11-08	USR11-09	USR11-09	USR11-09	USR11-10	USR11-10
			Field Sample ID	USR11-08-006	USR11-08-024	USR11-08-043	USR11-09-006	USR11-09-024	USR11-09-036	USR11-10-006	USR11-10-030
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	0- 6	6- 24	24- 43	0- 6	6- 24	24- 36	0- 6	6- 30
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	53 UJ	47 UJ	43 UJ	49 UJ	55 UJ	45 UJ	52 UJ	45 UJ
AROCLOR-1221	NL	NL	µg/kg	53 UJ	47 UJ	43 UJ	49 UJ	55 UJ	45 UJ	52 UJ	45 UJ
AROCLOR-1232	NL	NL	µg/kg	53 UJ	47 UJ	43 UJ	49 UJ	55 UJ	45 UJ	52 UJ	45 UJ
AROCLOR-1242	NL	NL	µg/kg	53 UJ	47 UJ	43 UJ	49 UJ	55 UJ	45 UJ	52 UJ	45 UJ
AROCLOR-1248	NL	NL	µg/kg	53 UJ	47 UJ	43 UJ	49 UJ	55 UJ	45 UJ	52 UJ	45 UJ
AROCLOR-1254	NL	NL	µg/kg	53 UJ	47 UJ	43 UJ	49 UJ	55 UJ	45 UJ	52 UJ	45 UJ
AROCLOR-1260	NL	NL	µg/kg	53 UJ	47 UJ	43 UJ	49 UJ	55 UJ	45 UJ	52 UJ	45 UJ
AROCLOR-1262	NL	NL	µg/kg	53 UJ	47 UJ	43 UJ	49 UJ	55 UJ	45 UJ	52 UJ	45 UJ
AROCLOR-1268	NL	NL	µg/kg	53 UJ	47 UJ	43 UJ	49 UJ	55 UJ	45 UJ	52 UJ	45 UJ
TOTAL PCBs	60	680	µg/kg	0	0	0	0	0	0	0	0

Table 3-4a
Focus Area 1 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-11	USR11-11	USR11-12	USR11-12	USR11-12	USR11-13	USR11-13	USR11-14
			Field Sample ID	USR11-11-006	USR11-11-026	USR11-12-006	USR11-12-024	USR11-12-040	USR11-13-006	USR11-13-018	USR11-14-006
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	0- 6	6- 26	0- 6	6- 24	24- 40	0- 6	6- 18	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	48 UJ	47 UJ	41 UJ	47 UJ	48 UJ	65 UJ	42 UJ	42 UJ
AROCLOR-1221	NL	NL	µg/kg	48 UJ	47 UJ	41 UJ	47 UJ	48 UJ	65 UJ	42 UJ	42 UJ
AROCLOR-1232	NL	NL	µg/kg	48 UJ	47 UJ	41 UJ	47 UJ	48 UJ	65 UJ	42 UJ	42 UJ
AROCLOR-1242	NL	NL	µg/kg	48 UJ	47 UJ	41 UJ	47 UJ	48 UJ	65 UJ	42 UJ	42 UJ
AROCLOR-1248	NL	NL	µg/kg	48 UJ	47 UJ	41 UJ	47 UJ	48 UJ	65 UJ	42 UJ	42 UJ
AROCLOR-1254	NL	NL	µg/kg	48 UJ	47 UJ	41 UJ	47 UJ	48 UJ	65 UJ	42 UJ	42 UJ
AROCLOR-1260	NL	NL	µg/kg	48 UJ	47 UJ	41 UJ	47 UJ	48 UJ	65 UJ	42 UJ	42 UJ
AROCLOR-1262	NL	NL	µg/kg	48 UJ	47 UJ	41 UJ	47 UJ	48 UJ	65 UJ	42 UJ	42 UJ
AROCLOR-1268	NL	NL	µg/kg	48 UJ	47 UJ	41 UJ	47 UJ	48 UJ	65 UJ	42 UJ	42 UJ
TOTAL PCBs	60	680	µg/kg	0	0	0	0	0	0	0	0

Table 3-4a
Focus Area 1 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-14	USR11-45	USR11-45	USR11-45	USR11-45	USR11-46	USR11-46	USR11-46
			Field Sample ID	USR11-14-022	USR11-45-006	USR11-45-006-FS	USR11-45-024	USR11-45-039	USR11-46-006	USR11-46-024	USR11-46-051
			Sample Date	7/21/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	6- 22	0- 6	0- 6	6- 24	24- 39	0- 6	6- 24	24- 51
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	39 UJ	50 U	46 U	48 U	60 U	50 U	48 U	41 U
AROCLOR-1221	NL	NL	µg/kg	39 UJ	50 U	46 U	48 U	60 U	50 U	48 U	41 U
AROCLOR-1232	NL	NL	µg/kg	39 UJ	50 U	46 U	48 U	60 U	50 U	48 U	41 U
AROCLOR-1242	NL	NL	µg/kg	39 UJ	50 U	46 U	48 U	60 U	50 U	48 U	41 U
AROCLOR-1248	NL	NL	µg/kg	39 UJ	50 U	46 U	48 U	60 U	50 U	48 U	41 U
AROCLOR-1254	NL	NL	µg/kg	39 UJ	50 U	46 U	48 U	280	70 J	54 J	41 U
AROCLOR-1260	NL	NL	µg/kg	39 UJ	50 U	46 U	48 U	60 U	50 U	48 U	41 U
AROCLOR-1262	NL	NL	µg/kg	39 UJ	50 U	46 U	48 U	60 U	50 U	48 U	41 U
AROCLOR-1268	NL	NL	µg/kg	39 UJ	50 U	46 U	48 U	60 U	50 U	48 U	41 U
TOTAL PCBs	60	680	µg/kg	0	0	0	0	**280**	**70**	54	0

Table 3-4a
Focus Area 1 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-47	USR11-47	USR11-48	USR11-48	USR11-49	USR11-49	USR11-50	USR11-50
			Field Sample ID	USR11-47-006	USR11-47-006-FS	USR11-48-006	USR11-48-019	USR11-49-006	USR11-49-034	USR11-50-006	USR11-50-026
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 6	0- 6	0- 6	6- 19	0- 6	6- 34	0- 6	6- 26
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	50 U	53 U	39 U	38 U	81 U	43 U	57 U	40 U
AROCLOR-1221	NL	NL	µg/kg	50 U	53 U	39 U	38 U	81 U	43 U	57 U	40 U
AROCLOR-1232	NL	NL	µg/kg	50 U	53 U	39 U	38 U	81 U	43 U	57 U	40 U
AROCLOR-1242	NL	NL	µg/kg	50 U	53 U	39 U	38 U	81 U	43 U	57 U	40 U
AROCLOR-1248	NL	NL	µg/kg	50 U	53 U	39 U	38 U	81 U	43 U	57 U	40 U
AROCLOR-1254	NL	NL	µg/kg	50 U	53 U	39 U	38 U	81 U	43 U	57 U	40 U
AROCLOR-1260	NL	NL	µg/kg	50 U	53 U	39 U	38 U	81 U	43 U	57 U	40 U
AROCLOR-1262	NL	NL	µg/kg	50 U	53 U	39 U	38 U	81 U	43 U	57 U	40 U
AROCLOR-1268	NL	NL	µg/kg	50 U	53 U	39 U	38 U	81 U	43 U	57 U	40 U
TOTAL PCBs	60	680	µg/kg	0	0	0	0	0	0	0	0

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

µg/kg - Microgram per kilogram
ID - Identification
in bss - inches below sediment surface
J - Estimated Value
NL - Not Listed
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.

Total PCBs - Sum of Detections

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I
[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-4b
Focus Area 2 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-15	USR11-15	USR11-16	USR11-17	USR11-17	USR11-17	USR11-18	USR11-19
			Field Sample ID	USR11-15-017	USR11-15-017-FS	USR11-16-019	USR11-17-006	USR11-17-006-FS	USR11-17-016	USR11-18-006	USR11-19-006
			Sample Date	7/21/2011	7/21/2011	7/21/2011	7/19/2011	7/19/2011	7/19/2011	7/19/2011	7/20/2011
			Depth Interval (in bss)	0- 17	0- 17	0- 19	0- 6	0- 6	6- 16	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	46 UJ	45 UJ	50 UJ	56 U	60 U	57 U	40 U	46 U
AROCLOR-1221	NL	NL	µg/kg	46 UJ	45 UJ	50 UJ	56 U	60 U	57 U	40 U	46 U
AROCLOR-1232	NL	NL	µg/kg	46 UJ	45 UJ	50 UJ	56 U	60 U	57 U	40 U	46 U
AROCLOR-1242	NL	NL	µg/kg	46 UJ	45 UJ	50 UJ	56 U	60 U	57 U	40 U	46 U
AROCLOR-1248	NL	NL	µg/kg	46 UJ	45 UJ	50 UJ	56 U	60 U	57 U	40 U	46 U
AROCLOR-1254	NL	NL	µg/kg	46 UJ	45 UJ	50 UJ	56 U	60 U	57 U	40 U	46 U
AROCLOR-1260	NL	NL	µg/kg	46 UJ	45 UJ	50 UJ	56 U	60 U	57 U	40 U	46 U
AROCLOR-1262	NL	NL	µg/kg	46 UJ	45 UJ	50 UJ	56 U	60 U	57 U	40 U	46 U
AROCLOR-1268	NL	NL	µg/kg	46 UJ	45 UJ	50 UJ	56 U	60 U	57 U	40 U	46 U
TOTAL PCBs	60	680	µg/kg	0	0	0	0	0	0	0	0

Table 3-4b
Focus Area 2 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-20	USR11-20	USR11-21	USR11-22	USR11-22	USR11-22	USR11-23	USR11-24
			Field Sample ID	USR11-20-006	USR11-20-027	USR11-21-006	USR11-22-006	USR11-22-033	USR11-22-033-FS	USR11-23-016	USR11-24-006
			Sample Date	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	0- 6	6- 27	0- 6	0- 6	6- 33	6- 33	0- 16	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	51 U	44 U	39 U	51 U	56 U	51 U	39 UJ	41 UJ
AROCLOR-1221	NL	NL	µg/kg	51 U	44 U	39 U	51 U	56 U	51 U	39 UJ	41 UJ
AROCLOR-1232	NL	NL	µg/kg	51 U	44 U	39 U	51 U	56 U	51 U	39 UJ	41 UJ
AROCLOR-1242	NL	NL	µg/kg	51 U	44 U	39 U	51 U	56 U	51 U	39 UJ	41 UJ
AROCLOR-1248	NL	NL	µg/kg	51 U	44 U	39 U	51 U	56 U	51 U	390 J	41 UJ
AROCLOR-1254	NL	NL	µg/kg	51 U	44 U	39 U	51 U	56 U	51 U	190 NJ	41 UJ
AROCLOR-1260	NL	NL	µg/kg	51 U	44 U	39 U	51 U	56 U	51 U	39 UJ	41 UJ
AROCLOR-1262	NL	NL	µg/kg	51 U	44 U	39 U	51 U	56 U	51 U	39 UJ	41 UJ
AROCLOR-1268	NL	NL	µg/kg	51 U	44 U	39 U	51 U	56 U	51 U	39 UJ	41 UJ
TOTAL PCBs	60	680	µg/kg	0	0	0	0	0	0	**580**	0

Table 3-4b
Focus Area 2 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-24	USR11-24	USR11-25	USR11-25	USR11-25	USR11-25	USR11-25	USR11-25
			Field Sample ID	USR11-24-024	USR11-24-048	USR11-25-006	USR11-25-006-DP	USR11-25-024	USR11-25-024-DP	USR11-25-048	USR11-25-048-DP
			Sample Date	7/21/2011	7/21/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011
			Depth Interval (in bss)	6- 24	24- 48	0- 6	0- 6	6- 24	6- 24	24- 48	24- 48
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	38 UJ	38 UJ	67 U	67 U	59 U	56 U	64 U	53 U
AROCLOR-1221	NL	NL	µg/kg	38 UJ	38 UJ	67 U	67 U	59 U	56 U	64 U	53 U
AROCLOR-1232	NL	NL	µg/kg	38 UJ	38 UJ	67 U	67 U	59 U	56 U	64 U	53 U
AROCLOR-1242	NL	NL	µg/kg	38 UJ	38 UJ	67 U	67 U	59 U	56 U	64 U	53 U
AROCLOR-1248	NL	NL	µg/kg	38 UJ	38 UJ	67 U	67 U	59 U	56 U	64 U	53 U
AROCLOR-1254	NL	NL	µg/kg	38 UJ	38 UJ	67 U	67 U	59 U	56 U	64 U	53 U
AROCLOR-1260	NL	NL	µg/kg	38 UJ	38 UJ	67 U	67 U	59 U	56 U	64 U	53 U
AROCLOR-1262	NL	NL	µg/kg	38 UJ	38 UJ	67 U	67 U	59 U	56 U	64 U	53 U
AROCLOR-1268	NL	NL	µg/kg	38 UJ	38 UJ	67 U	67 U	59 U	56 U	64 U	53 U
TOTAL PCBs	60	680	µg/kg	0	0	0	0	0	0	0	0

Table 3-4b
Focus Area 2 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-26	USR11-26	USR11-27	USR11-27	USR11-28	USR11-29	USR11-29	USR11-30
			Field Sample ID	USR11-26-006	USR11-26-030	USR11-27-006	USR11-27-020	USR11-28-006	USR11-29-006	USR11-29-021	USR11-30-006
			Sample Date	7/20/2011	7/20/2011	7/21/2011	7/21/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	0- 6	6- 30	0- 6	6- 20	0- 6	0- 6	6- 21	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	56 U	52 U	63 UJ	61 UJ	43 U	47 U	41 U	68 U
AROCLOR-1221	NL	NL	µg/kg	56 U	52 U	63 UJ	61 UJ	43 U	47 U	41 U	68 U
AROCLOR-1232	NL	NL	µg/kg	56 U	52 U	63 UJ	61 UJ	43 U	47 U	41 U	68 U
AROCLOR-1242	NL	NL	µg/kg	56 U	52 U	63 UJ	61 UJ	43 U	47 U	41 U	68 U
AROCLOR-1248	NL	NL	µg/kg	56 U	52 U	63 UJ	61 UJ	43 U	47 U	41 U	68 U
AROCLOR-1254	NL	NL	µg/kg	56 U	52 U	63 UJ	120 J	43 U	47 U	41 U	68 U
AROCLOR-1260	NL	NL	µg/kg	56 U	52 U	63 UJ	61 UJ	43 U	47 U	41 U	68 U
AROCLOR-1262	NL	NL	µg/kg	56 U	52 U	63 UJ	61 UJ	43 U	47 U	41 U	68 U
AROCLOR-1268	NL	NL	µg/kg	56 U	52 U	63 UJ	61 UJ	43 U	47 U	41 U	68 U
TOTAL PCBs	60	680	µg/kg	0	0	0	**120**	0	0	0	0

Table 3-4b
Focus Area 2 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-30	USR11-31	USR11-31	USR11-32	USR11-32	USR11-32	USR11-32	USR11-33
			Field Sample ID	USR11-30-021	USR11-31-006	USR11-31-026	USR11-32-006	USR11-32-006-DP	USR11-32-025	USR11-32-025-DP	USR11-33-006
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/22/2011
			Depth Interval (in bss)	6- 21	0- 6	6- 26	0- 6	0- 6	6- 25	6- 25	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	50 U	63 U	48 U	58 U	61 U	52 U	49 U	44 U
AROCLOR-1221	NL	NL	µg/kg	50 U	63 U	48 U	58 U	61 U	52 U	49 U	44 U
AROCLOR-1232	NL	NL	µg/kg	50 U	63 U	48 U	58 U	61 U	52 U	49 U	44 U
AROCLOR-1242	NL	NL	µg/kg	50 U	63 U	48 U	58 U	61 U	52 U	49 U	44 U
AROCLOR-1248	NL	NL	µg/kg	50 U	63 U	48 U	58 U	61 U	52 U	49 U	44 U
AROCLOR-1254	NL	NL	µg/kg	50 U	63 U	48 U	58 U	61 U	52 U	49 U	44 U
AROCLOR-1260	NL	NL	µg/kg	50 U	63 U	48 U	58 U	61 U	52 U	49 U	44 U
AROCLOR-1262	NL	NL	µg/kg	50 U	63 U	48 U	58 U	61 U	52 U	49 U	44 U
AROCLOR-1268	NL	NL	µg/kg	50 U	63 U	48 U	58 U	61 U	52 U	49 U	44 U
TOTAL PCBs	60	680	µg/kg	0	0	0	0	0	0	0	0

Table 3-4b
Focus Area 2 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-33	USR11-34	USR11-34	USR11-34	USR11-35	USR11-35	USR11-36	USR11-36
			Field Sample ID	USR11-33-022	USR11-34-006	USR11-34-024	USR11-34-040	USR11-35-006	USR11-35-026	USR11-36-006	USR11-36-032
			Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
			Depth Interval (in bss)	6- 22	0- 6	6- 24	24- 40	0- 6	6- 26	0- 6	6- 32
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	45 U	52 U	46 U	94 U	36 U	42 U	49 U	41 U
AROCLOR-1221	NL	NL	µg/kg	45 U	52 U	46 U	94 U	36 U	42 U	49 U	41 U
AROCLOR-1232	NL	NL	µg/kg	45 U	52 U	46 U	94 U	36 U	42 U	49 U	41 U
AROCLOR-1242	NL	NL	µg/kg	45 U	52 U	46 U	94 U	36 U	42 U	49 U	41 U
AROCLOR-1248	NL	NL	µg/kg	45 U	52 U	46 U	94 U	36 U	42 U	49 U	41 U
AROCLOR-1254	NL	NL	µg/kg	45 U	52 U	46 U	200	25 J	42 U	49 U	130 J
AROCLOR-1260	NL	NL	µg/kg	45 U	52 U	46 U	140 NJ	36 U	42 U	49 U	41 U
AROCLOR-1262	NL	NL	µg/kg	45 U	52 U	46 U	94 U	36 U	42 U	49 U	41 U
AROCLOR-1268	NL	NL	µg/kg	45 U	52 U	46 U	94 U	36 U	42 U	49 U	41 U
TOTAL PCBs	60	680	µg/kg	0	0	0	**340**	25	0	0	**130**

Table 3-4b
Focus Area 2 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-37	USR11-38	USR11-38	USR11-39	USR11-39	USR11-40	USR11-40	USR11-41
			Field Sample ID	USR11-37-017	USR11-38-006	USR11-38-019	USR11-39-006	USR11-39-024	USR11-40-006	USR11-40-034	USR11-41-016
			Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
			Depth Interval (in bss)	0- 17	0- 6	6- 19	0- 6	6- 24	0- 6	6- 34	0- 16
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	47 UJ	48 UJ	64 UJ	67 UJ	67 UJ	57 U	55 U	110 UJ
AROCLOR-1221	NL	NL	µg/kg	47 UJ	48 UJ	64 UJ	67 UJ	67 UJ	57 U	55 U	110 UJ
AROCLOR-1232	NL	NL	µg/kg	47 UJ	48 UJ	64 UJ	67 UJ	67 UJ	57 U	55 U	110 UJ
AROCLOR-1242	NL	NL	µg/kg	47 UJ	48 UJ	64 UJ	67 UJ	67 UJ	57 U	55 U	110 UJ
AROCLOR-1248	NL	NL	µg/kg	47 UJ	48 UJ	64 UJ	67 UJ	67 UJ	57 U	55 U	110 UJ
AROCLOR-1254	NL	NL	µg/kg	47 UJ	48 UJ	64 UJ	67 UJ	56 J	57 U	340	110 UJ
AROCLOR-1260	NL	NL	µg/kg	47 UJ	48 UJ	64 UJ	67 UJ	67 UJ	57 U	55 U	110 UJ
AROCLOR-1262	NL	NL	µg/kg	47 UJ	48 UJ	64 UJ	67 UJ	67 UJ	57 U	55 U	110 UJ
AROCLOR-1268	NL	NL	µg/kg	47 UJ	48 UJ	64 UJ	67 UJ	67 UJ	57 U	55 U	110 UJ
TOTAL PCBs	60	680	µg/kg	0	0	0	0	56	0	**340**	0

Table 3-4b
Focus Area 2 Sediment Sample Analytical Results - PCB Aroclors
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-42	USR11-42	USR11-43	USR11-43	USR11-43	USR11-44	USR11-44	USR11-44
			Field Sample ID	USR11-42-006	USR11-42-033	USR11-43-006	USR11-43-024	USR11-43-053	USR11-44-006	USR11-44-024	USR11-44-037
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	0- 6	6- 33	0- 6	6- 24	24- 53	0- 6	6- 24	24- 37
Chemical	**Level I[1]**	**Level II[2]**	**Unit**								
AROCLOR-1016	NL	NL	µg/kg	57 U	59 U	46 U	68 U	62 U	41 U	50 U	84 U
AROCLOR-1221	NL	NL	µg/kg	57 U	59 U	46 U	68 U	62 U	41 U	50 U	84 U
AROCLOR-1232	NL	NL	µg/kg	57 U	59 U	46 U	68 U	62 U	41 U	50 U	84 U
AROCLOR-1242	NL	NL	µg/kg	57 U	59 U	46 U	68 U	62 U	41 U	50 U	84 U
AROCLOR-1248	NL	NL	µg/kg	57 U	59 U	46 U	68 U	62 U	41 U	50 U	84 U
AROCLOR-1254	NL	NL	µg/kg	57 U	59 U	46 U	200	62 U	41 U	50 U	84 U
AROCLOR-1260	NL	NL	µg/kg	57 U	59 U	46 U	68 U	62 U	41 U	50 U	84 U
AROCLOR-1262	NL	NL	µg/kg	57 U	59 U	46 U	68 U	62 U	41 U	50 U	84 U
AROCLOR-1268	NL	NL	µg/kg	57 U	59 U	46 U	68 U	62 U	41 U	50 U	84 U
TOTAL PCBs	60	680	µg/kg	0	0	0	**200**	0	0	0	0

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

µg/kg - Microgram per kilogram
ID - Identification
in bss - inches below sediment surface
J - Estimated Value
NL - Not Listed
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.

Total PCBs - Sum of Detections

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I
[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-5a
Focus Area 1 Sediment Sample Analytical Results - TCL Pesticides
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-01	USR11-03	USR11-05	USR11-05	USR11-07	USR11-09	USR11-11
			Field Sample ID	USR11-01-006	USR11-03-017	USR11-05-006	USR11-05-007-FS	USR11-07-017	USR11-09-006	USR11-11-006
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/21/2011	7/21/2011
			Depth Interval (in bss)	0- 6	0- 17	0- 6	0- 7	0- 17	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**							
1,1,1-TRICHLORO-2,2-BIS (P-METHOXPHENYL)-ETHANE	NL	NL	µg/kg	21 U	26 U	26 U	25 U	24 U	25 UJ	26 UJ
4,4'-DDD	4.9	28	µg/kg	4.2 U	5.1 U	5 U	4.9 U	4.6 U	4.8 UJ	5 UJ
4,4'-DDE	3.2	31	µg/kg	4.2 U	5.1 U	5 U	4.9 U	4.6 U	4.8 UJ	5 UJ
4,4'-DDT	4.2	63	µg/kg	4.2 U	5.1 U	5 U	4.9 U	4.6 U	4.8 UJ	5 UJ
ALDRIN	NL	NL	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ
ALPHA-BHC	NL	NL	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ
ALPHA-CHLORDANE	NL	NL	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ
BETA-BHC	NL	NL	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ
CAMPHECHLOR	0.1	32	µg/kg	210 U	260 U	260 U	250 U	240 U	250 UJ	260 UJ
DELTA-BHC	NL	NL	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ
DIELDRIN	1.9	62	µg/kg	4.2 U	5.1 U	5 U	4.9 U	4.6 U	4.8 UJ	5 UJ
ENDOSULFAN I	NL	NL	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ
ENDOSULFAN II	NL	NL	µg/kg	4.2 U	5.1 U	5 U	4.9 U	4.6 U	4.8 UJ	5 UJ
ENDOSULFAN SULFATE	NL	NL	µg/kg	4.2 U	5.1 U	5 U	4.9 U	4.6 U	12 NJ	5 UJ
ENDRIN	2.2	210	µg/kg	4.2 U	5.1 U	5 U	4.9 U	4.6 U	4.8 UJ	5 UJ
ENDRIN ALDEHYDE	NL	NL	µg/kg	4.2 U	5.1 U	5 U	4.9 U	4.6 U	4.8 UJ	5 UJ
ENDRIN KETONE	NL	NL	µg/kg	4.2 U	5.1 U	5 U	4.9 U	4.6 U	4.8 UJ	5 UJ
GAMMA-BHC (LINDANE)	2.4	5	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ
GAMMA-CHLORDANE	NL	NL	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ
HEPTACHLOR	NL	NL	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ
HEPTACHLOR EPOXIDE	2.5	16	µg/kg	2.1 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 UJ	2.6 UJ

Table 3-5a
Focus Area 1 Sediment Sample Analytical Results - TCL Pesticides
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-13	USR11-45	USR11-45	USR11-47	USR11-47	USR11-49
			Field Sample ID	USR11-13-006	USR11-45-006	USR11-45-006-FS	USR11-47-006	USR11-47-006-FS	USR11-49-006
			Sample Date	7/21/2011	7/23/2011	7/23/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 6	0- 6	0- 6	0- 6	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**						
1,1,1-TRICHLORO-2,2-BIS (P-METHOXPHENYL)-ETHANE	NL	NL	µg/kg	36 UJ	23 U	26 U	25 U	26 U	43 U
4,4'-DDD	4.9	28	µg/kg	7 UJ	4.4 U	5.1 U	4.9 U	5 U	8.4 U
4,4'-DDE	3.2	31	µg/kg	7 UJ	4.4 U	5.1 U	4.9 U	5 U	8.4 U
4,4'-DDT	4.2	63	µg/kg	7 UJ	4.4 U	5.1 U	4.9 U	5 U	8.4 U
ALDRIN	NL	NL	µg/kg	3.6 UJ	2.3 U	2.6 U	2.5 U	2.6 U	4.3 U
ALPHA-BHC	NL	NL	µg/kg	3.6 UJ	2.3 U	2.6 U	2.5 U	2.6 U	4.3 U
ALPHA-CHLORDANE	NL	NL	µg/kg	3.6 UJ	2.3 U	2.6 U	2.5 U	2.6 U	4.3 U
BETA-BHC	NL	NL	µg/kg	3.6 UJ	2.3 U	2.6 U	2.5 U	2.6 U	4.3 U
CAMPHECHLOR	0.1	32	µg/kg	360 UJ	230 U	260 U	250 U	260 U	430 U
DELTA-BHC	NL	NL	µg/kg	3.6 UJ	2.3 U	2.6 U	2.5 U	2.6 U	4.3 U
DIELDRIN	1.9	62	µg/kg	7 UJ	4.4 U	5.1 U	4.9 U	5 U	8.4 U
ENDOSULFAN I	NL	NL	µg/kg	3.6 UJ	2.3 U	2.6 U	2.5 U	2.6 U	4.3 U
ENDOSULFAN II	NL	NL	µg/kg	7 UJ	4.4 U	5.1 U	4.9 U	5 U	8.4 U
ENDOSULFAN SULFATE	NL	NL	µg/kg	7 UJ	4.4 U	5.1 U	4.9 U	5 U	8.4 U
ENDRIN	2.2	210	µg/kg	7 UJ	4.4 U	5.1 U	4.9 U	5 U	8.4 U
ENDRIN ALDEHYDE	NL	NL	µg/kg	7 UJ	4.4 U	5.1 U	4.9 U	5 U	8.4 U
ENDRIN KETONE	NL	NL	µg/kg	7 UJ	4.4 U	5.1 U	4.9 U	5 U	8.4 U
GAMMA-BHC (LINDANE)	2.4	5	µg/kg	3.6 UJ	2.3 U	2.6 U	2.5 U	2.6 U	4.3 U
GAMMA-CHLORDANE	NL	NL	µg/kg	3.6 UJ	2.3 U	2.6 R	2.5 U	2.6 U	4.3 U
HEPTACHLOR	NL	NL	µg/kg	3.6 UJ	2.3 U	2.6 U	2.5 U	2.6 U	4.3 U
HEPTACHLOR EPOXIDE	2.5	16	µg/kg	3.6 UJ	2.3 U	2.6 U	2.5 U	2.6 U	4.3 U

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

µg/kg - Microgram per kilogram
ID - Identification
in bss - inches below sediment surface
J - Estimated Value
NJ - Tentatively Identified Compound for which presumptive evidence was used for identification
NL - Not Listed
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I
[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-5b
Focus Area 2 Sediment Sample Analytical Results - TCL Pesticides
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-15	USR11-15	USR11-21	USR11-23	USR11-27	USR11-29	USR11-32
			Field Sample ID	USR11-15-017	USR11-15-017-FS	USR11-21-006	USR11-23-016	USR11-27-006	USR11-29-006	USR11-32-006
			Sample Date	7/21/2011	7/21/2011	7/20/2011	7/21/2011	7/21/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	0- 17	0- 17	0- 6	0- 16	0- 6	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**							
1,1,1-TRICHLORO-2,2-BIS (P-METHOXPHENYL)-ETHANE	NL	NL	µg/kg	22 UJ	22 UJ	21 U	20 UJ	33 UJ	24 U	29 U
4,4'-DDD	4.9	28	µg/kg	4.3 UJ	4.3 UJ	4.1 U	3.9 UJ	6.4 UJ	4.7 U	5.6 U
4,4'-DDE	3.2	31	µg/kg	4.3 UJ	4.3 UJ	4.1 U	3.9 UJ	6.4 UJ	4.7 U	5.6 U
4,4'-DDT	4.2	63	µg/kg	4.3 UJ	4.3 UJ	4.1 U	**4.8 J**	6.4 UJ	4.7 U	5.6 U
ALDRIN	NL	NL	µg/kg	2.2 UJ	2.2 UJ	2.1 U	2 UJ	3.3 UJ	2.4 U	2.9 U
ALPHA-BHC	NL	NL	µg/kg	2.2 UJ	2.2 UJ	2.1 U	2 UJ	3.3 UJ	2.4 U	2.9 U
ALPHA-CHLORDANE	NL	NL	µg/kg	2.2 UJ	2.2 UJ	2.1 U	2 UJ	3.3 UJ	2.4 U	2.9 U
BETA-BHC	NL	NL	µg/kg	2.2 UJ	2.2 UJ	2.1 U	2 UJ	3.3 UJ	2.4 U	2.9 U
CAMPHECHLOR	0.1	32	µg/kg	220 UJ	220 UJ	210 U	200 UJ	330 UJ	240 U	290 U
DELTA-BHC	NL	NL	µg/kg	2.2 UJ	2.2 UJ	2.1 U	10 J	3.3 UJ	2.4 U	2.9 U
DIELDRIN	1.9	62	µg/kg	4.3 UJ	4.3 UJ	4.1 U	3.9 UJ	6.4 UJ	4.7 U	5.6 U
ENDOSULFAN I	NL	NL	µg/kg	2.2 UJ	2.2 UJ	2.1 U	2 UJ	3.3 UJ	2.4 U	2.9 U
ENDOSULFAN II	NL	NL	µg/kg	4.3 UJ	4.3 UJ	4.1 U	3.9 UJ	6.4 UJ	4.7 U	5.6 U
ENDOSULFAN SULFATE	NL	NL	µg/kg	4.3 UJ	4.3 UJ	4.1 U	2.6 J	6.4 UJ	4.7 U	5.6 U
ENDRIN	2.2	210	µg/kg	4.3 UJ	4.3 UJ	4.1 U	3.9 UJ	6.4 UJ	4.7 U	5.6 U
ENDRIN ALDEHYDE	NL	NL	µg/kg	4.3 UJ	4.3 UJ	4.1 U	7.3 J	6.4 UJ	4.7 U	5.6 U
ENDRIN KETONE	NL	NL	µg/kg	4.3 UJ	4.3 UJ	4.1 U	2.2 J	6.4 UJ	4.7 U	5.6 U
GAMMA-BHC (LINDANE)	2.4	5	µg/kg	2.2 UJ	2.2 UJ	2.1 U	2 UJ	3.3 UJ	2.4 U	2.9 U
GAMMA-CHLORDANE	NL	NL	µg/kg	2.2 UJ	2.2 UJ	2.1 U	2 R	3.3 UJ	2.4 U	2.9 U
HEPTACHLOR	NL	NL	µg/kg	2.2 UJ	2.2 UJ	2.1 U	2 R	3.3 UJ	2.4 U	2.9 U
HEPTACHLOR EPOXIDE	2.5	16	µg/kg	2.2 UJ	2.2 UJ	2.1 U	2 UJ	3.3 UJ	2.4 U	2.9 U

Table 3-5b
Focus Area 2 Sediment Sample Analytical Results - TCL Pesticides
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-32	USR11-34	USR11-42	USR11-44
			Field Sample ID	USR11-32-006-DP	USR11-34-006	USR11-42-006	USR11-44-006
			Sample Date	7/23/2011	7/22/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	0- 6	0- 6	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**				
1,1,1-TRICHLORO-2,2-BIS (P-METHOXPHENYL)-ETHANE	NL	NL	µg/kg	30 U	26 U	31 U	21 U
4,4'-DDD	4.9	28	µg/kg	5.8 U	5 U	6.1 U	**72 J**
4,4'-DDE	3.2	31	µg/kg	5.8 U	5 U	6.1 U	**64**
4,4'-DDT	4.2	63	µg/kg	5.8 U	5 U	6.1 U	**150**
ALDRIN	NL	NL	µg/kg	3 U	2.6 U	3.1 U	2.1 U
ALPHA-BHC	NL	NL	µg/kg	3 U	2.6 U	3.1 U	2.1 U
ALPHA-CHLORDANE	NL	NL	µg/kg	3 U	2.6 U	3.1 U	2.1 U
BETA-BHC	NL	NL	µg/kg	3 U	2.6 U	3.1 U	2.1 U
CAMPHECHLOR	0.1	32	µg/kg	300 U	260 U	310 U	210 U
DELTA-BHC	NL	NL	µg/kg	3 U	2.6 U	3.1 U	2.1 U
DIELDRIN	1.9	62	µg/kg	5.8 U	5 U	6.1 U	4.2 R
ENDOSULFAN I	NL	NL	µg/kg	3 U	2.6 U	3.1 U	2.1 R
ENDOSULFAN II	NL	NL	µg/kg	5.8 U	5 U	6.1 U	4.2 R
ENDOSULFAN SULFATE	NL	NL	µg/kg	5.8 U	5 U	6.1 U	4.2 U
ENDRIN	2.2	210	µg/kg	5.8 U	5 U	6.1 U	**10 NJ**
ENDRIN ALDEHYDE	NL	NL	µg/kg	5.8 U	5 U	6.1 U	4.2 R
ENDRIN KETONE	NL	NL	µg/kg	5.8 U	5 U	6.1 U	4.2 U
GAMMA-BHC (LINDANE)	2.4	5	µg/kg	3 U	2.6 U	3.1 U	2.1 U
GAMMA-CHLORDANE	NL	NL	µg/kg	3 U	2.6 U	3.1 U	2.1 R
HEPTACHLOR	NL	NL	µg/kg	3 U	2.6 U	3.1 U	2.1 U
HEPTACHLOR EPOXIDE	2.5	16	µg/kg	3 U	2.6 U	3.1 U	**61 NJ**

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

µg/kg - Microgram per kilogram
ID - Identification
in bss - inches below sediment surface
J - Estimated Value
NJ - Tentatively Identified Compound for which presumptive evidence was used for identification
NL - Not Listed
R - Rejected
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I
[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-6a
Focus Area 1 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-01	USR11-01	USR11-01	USR11-02	USR11-02	USR11-03	USR11-04	USR11-05
	Field Sample ID	USR11-01-006	USR11-01-024	USR11-01-047	USR11-02-006	USR11-02-022	USR11-03-017	USR11-04-016	USR11-05-006
	Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
	Depth Interval (in bss)	0- 6	6- 24	24- 47	0- 6	6- 22	0- 17	0- 16	0- 6
Chemical	Unit								
DRO	mg/kg	2.3 U	72	2 U	41	80	97	43	44
ORO	mg/kg	120	170	50	220	180	270	120	230

Table 3-6a
Focus Area 1 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-05	USR11-05	USR11-05	USR11-06	USR11-06	USR11-06	USR11-06	USR11-07
	Field Sample ID	USR11-05-007-FS	USR11-05-024	USR11-05-051	USR11-06-006	USR11-06-006-DP	USR11-06-022	USR11-06-022-DP	USR11-07-017
	Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
	Depth Interval (in bss)	0- 7	6- 24	24- 51	0- 6	0- 6	6- 22	6- 22	0- 17
Chemical	Unit								
DRO	mg/kg	58	120	32	2.1 U	2 U	2.2 U	40	2.3 U
ORO	mg/kg	240	210	56	57	3.6 U	100 J	260 J	92

Table 3-6a
Focus Area 1 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-08	USR11-08	USR11-08	USR11-09	USR11-09	USR11-09	USR11-10	USR11-10
	Field Sample ID	USR11-08-006	USR11-08-024	USR11-08-043	USR11-09-006	USR11-09-024	USR11-09-036	USR11-10-006	USR11-10-030
	Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
	Depth Interval (in bss)	0- 6	6- 24	24- 43	0- 6	6- 24	24- 36	0- 6	6- 30
Chemical	Unit								
DRO	mg/kg	130	150	110	39 U	50	33 U	39 U	41
ORO	mg/kg	260	320	250	190	260	120	190	130

Table 3-6a
Focus Area 1 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-11	USR11-11	USR11-12	USR11-12	USR11-12	USR11-13	USR11-13	USR11-14
	Field Sample ID	USR11-11-006	USR11-11-026	USR11-12-006	USR11-12-024	USR11-12-040	USR11-13-006	USR11-13-018	USR11-14-006
	Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
	Depth Interval (in bss)	0- 6	6- 26	0- 6	6- 24	24- 40	0- 6	6- 18	0- 6
Chemical	Unit								
DRO	mg/kg	42	83	32 U	38 U	35 U	53	2.2 U	2.1 U
ORO	mg/kg	130	200	42	170	130	270	73	59

Table 3-6a
Focus Area 1 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-14	USR11-45	USR11-45	USR11-45	USR11-45	USR11-46	USR11-46	USR11-46
	Field Sample ID	USR11-14-022	USR11-45-006	USR11-45-006-FS	USR11-45-024	USR11-45-039	USR11-46-006	USR11-46-024	USR11-46-051
	Sample Date	7/21/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
	Depth Interval (in bss)	6- 22	0- 6	0- 6	6- 24	24- 39	0- 6	6- 24	24- 51
Chemical	**Unit**								
DRO	mg/kg	2 U	41 J	200 J	2.6 U	280	2.6 U	83	2.1 U
ORO	mg/kg	3.6 U	99 J	580 J	140	700	180	280	49

Table 3-6a
Focus Area 1 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-47	USR11-47	USR11-48	USR11-48	USR11-49	USR11-49	USR11-50	USR11-50
	Field Sample ID	USR11-47-006	USR11-47-006-FS	USR11-48-006	USR11-48-019	USR11-49-006	USR11-49-034	USR11-50-006	USR11-50-026
	Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
	Depth Interval (in bss)	0- 6	0- 6	0- 6	6- 19	0- 6	6- 34	0- 6	6- 26
Chemical	**Unit**								
DRO	mg/kg	51	2.5 U	2 U	1.9 U	180	2 U	47	2 U
ORO	mg/kg	220	140	3.5 U	3.5 U	750	3.6 U	210	3.6 U

Notes:
DRO - Diesel Range Organic
ID - Identification
in bss - inches below sediment surface
J - Estimated Value
mg/kg - Milligram per kilogram
ORO - Oil Range Organic
U - Not Detected. The reported numerical value is the laboratory reporting limit.

Table 3-6b
Focus Area 2 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-15	USR11-15	USR11-16	USR11-17	USR11-17	USR11-17	USR11-18	USR11-19
	Field Sample ID	USR11-15-017	USR11-15-017-FS	USR11-16-019	USR11-17-006	USR11-17-006-FS	USR11-17-016	USR11-18-006	USR11-19-006
	Sample Date	7/21/2011	7/21/2011	7/21/2011	7/19/2011	7/19/2011	7/19/2011	7/19/2011	7/20/2011
	Depth Interval (in bss)	0- 17	0- 17	0- 19	0- 6	0- 6	6- 16	0- 6	0- 6
Chemical	**Unit**								
DRO	mg/kg	43	2.2 U	130	55	55	260	2.1 U	100
ORO	mg/kg	120 J	66 J	330	280	270	630	38	240

Table 3-6b
Focus Area 2 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-20	USR11-20	USR11-21	USR11-22	USR11-22	USR11-22	USR11-23	USR11-24
	Field Sample ID	USR11-20-006	USR11-20-027	USR11-21-006	USR11-22-006	USR11-22-033	USR11-22-033-FS	USR11-23-016	USR11-24-006
	Sample Date	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/21/2011	7/21/2011
	Depth Interval (in bss)	0- 6	6- 27	0- 6	0- 6	6- 33	6- 33	0- 16	0- 6
Chemical	**Unit**								
DRO	mg/kg	43	2.2 U	2.1 U	49	120	98	310 U	340 U
ORO	mg/kg	260	130	41	300	250	250	1200 J	800 D

Table 3-6b
Focus Area 2 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-24	USR11-24	USR11-25	USR11-25	USR11-25	USR11-25	USR11-25	USR11-25
	Field Sample ID	USR11-24-024	USR11-24-048	USR11-25-006	USR11-25-006-DP	USR11-25-024	USR11-25-024-DP	USR11-25-048	USR11-25-048-DP
	Sample Date	7/21/2011	7/21/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011
	Depth Interval (in bss)	6- 24	24- 48	0- 6	0- 6	6- 24	6- 24	24- 48	24- 48
Chemical	**Unit**								
DRO	mg/kg	290 U	290 U	75	65	61	63	74	49
ORO	mg/kg	420 D	460 D	350	380	290	270	290	270

Table 3-6b
Focus Area 2 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-26	USR11-26	USR11-27	USR11-27	USR11-28	USR11-29	USR11-29	USR11-30
	Field Sample ID	USR11-26-006	USR11-26-030	USR11-27-006	USR11-27-020	USR11-28-006	USR11-29-006	USR11-29-021	USR11-30-006
	Sample Date	7/20/2011	7/20/2011	7/21/2011	7/21/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
	Depth Interval (in bss)	0- 6	6- 30	0- 6	6- 20	0- 6	0- 6	6- 21	0- 6
Chemical	**Unit**								
DRO	mg/kg	2.8 U	69	130	1400	59	54	58	55
ORO	mg/kg	240	520	760	3800 D	180	330	290	480

Table 3-6b
Focus Area 2 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-30	USR11-31	USR11-31	USR11-32	USR11-32	USR11-32	USR11-32	USR11-33
	Field Sample ID	USR11-30-021	USR11-31-006	USR11-31-026	USR11-32-006	USR11-32-006-DP	USR11-32-025	USR11-32-025-DP	USR11-33-006
	Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/22/2011
	Depth Interval (in bss)	6- 21	0- 6	6- 26	0- 6	0- 6	6- 25	6- 25	0- 6
Chemical	**Unit**								
DRO	mg/kg	92	62	63	94	75	60	77	2.2 U
ORO	mg/kg	500	310	340	350	340	410	520	130

Table 3-6b
Focus Area 2 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-33	USR11-34	USR11-34	USR11-34	USR11-35	USR11-35	USR11-36	USR11-36
	Field Sample ID	USR11-33-022	USR11-34-006	USR11-34-024	USR11-34-040	USR11-35-006	USR11-35-026	USR11-36-006	USR11-36-032
	Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
	Depth Interval (in bss)	6- 22	0- 6	6- 24	24- 40	0- 6	6- 26	0- 6	6- 32
Chemical	**Unit**								
DRO	mg/kg	45	86	47	5100	1.9 U	46	71	2.2 U
ORO	mg/kg	200	300	170	9100 D	51	120	240	84

Table 3-6b
Focus Area 2 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-37	USR11-38	USR11-38	USR11-39	USR11-39	USR11-40	USR11-40	USR11-41
	Field Sample ID	USR11-37-017	USR11-38-006	USR11-38-019	USR11-39-006	USR11-39-024	USR11-40-006	USR11-40-034	USR11-41-016
	Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
	Depth Interval (in bss)	0- 17	0- 6	6- 19	0- 6	6- 24	0- 6	6- 34	0- 16
Chemical	**Unit**								
DRO	mg/kg	120	84	200	180	430	84	68	1900
ORO	mg/kg	340	330	800	620	1700	340	470	6100 D

Table 3-6b
Focus Area 2 Sediment Sample Analytical Results - TPH
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-42	USR11-42	USR11-43	USR11-43	USR11-43	USR11-44	USR11-44	USR11-44
	Field Sample ID	USR11-42-006	USR11-42-033	USR11-43-006	USR11-43-024	USR11-43-053	USR11-44-006	USR11-44-024	USR11-44-037
	Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
	Depth Interval (in bss)	0- 6	6- 33	0- 6	6- 24	24- 53	0- 6	6- 24	24- 37
Chemical	**Unit**								
DRO	mg/kg	280	250	51	300	79	2 U	320	2300
ORO	mg/kg	530	580	230	900	150	3.7 U	4.5 U	2000

Notes:
D - The reported result is from a dilution
DRO - Diesel Range Organic
ID - Identification
in bss - inches below sediment surface
J - Estimated Value
mg/kg - Milligram per kilogram
ORO - Oil Range Organic
U - Not Detected. The reported numerical value is the laboratory reporting limit.

Table 3-7a
Focus Area 1 Sediment Sample Analytical Results - Dioxin/Furan
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-01	USR11-03	USR11-05	USR11-05	USR11-07	USR11-09
			Field Sample ID	USR11-01-006	USR11-03-017	USR11-05-006	USR11-05-007-FS	USR11-07-017	USR11-09-006
			Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/21/2011
			Depth Interval (in bss)	0- 6	0- 17	0- 6	0- 7	0- 17	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**						
OCDF	NL	NL	ng/kg	0.379 U	0.241 U	1.49 U	1.35 U	0.807 J	0.531 J
OCDD	NL	NL	ng/kg	2.83 U	3.61 U	11.4	14.8	8.64 U	4.87 J
1,2,3,4,6,7,8-HpCDF	NL	NL	ng/kg	0.211 JK	0.26 J	0.942 J	0.912 J	0.489 U	0.348 J
1,2,3,4,6,7,8-HpCDD	NL	NL	ng/kg	0.562 U	0.438 U	2.02 U	2.48 U	1.34 J	0.893 J
1,2,3,4,7,8,9-HpCDF	NL	NL	ng/kg	0.151 U	0.191 U	0.294 U	0.195 U	0.102 U	0.0928 U
1,2,3,4,7,8-HxCDF	NL	NL	ng/kg	0.0656 U	0.071 JK	0.226 U	0.091 U	0.0363 JK	0.0672 J
1,2,3,4,7,8-HxCDD	NL	NL	ng/kg	0.113 U	0.129 U	0.221 U	0.14 U	0.0998 U	0.181 U
1,2,3,6,7,8-HxCDF	NL	NL	ng/kg	0.0508 JK	0.0775 U	0.203 U	0.131 U	0.0487 U	0.0768 U
1,2,3,6,7,8-HxCDD	NL	NL	ng/kg	0.112 U	0.108 J	0.333 J	0.276 J	0.0987 U	0.186 U
1,2,3,7,8,9-HxCDF	NL	NL	ng/kg	0.108 U	0.122 U	0.254 U	0.141 U	0.075 U	0.109 U
1,2,3,7,8,9-HxCDD	NL	NL	ng/kg	0.119 U	0.135 U	0.279 J	0.183 J	0.105 U	0.197 U
1,2,3,7,8-PeCDF	NL	NL	ng/kg	0.0742 U	0.067 U	0.223 U	0.0854 JK	0.0802 U	0.078 U
1,2,3,7,8-PeCDD	NL	NL	ng/kg	0.1 U	0.0798 U	0.24 J	0.131 U	0.202 JK	0.111 J
2,3,4,6,7,8-HxCDF	NL	NL	ng/kg	0.0732 U	0.0848 U	0.232 U	0.127 U	0.0512 U	0.08 U
2,3,4,7,8-PeCDF	NL	NL	ng/kg	0.139 U	0.11 JK	0.263 U	0.163 U	0.0811 U	0.0869 J
2,3,7,8-TCDF	NL	NL	ng/kg	0.236 U	0.213 U	0.302 U	0.328 U	0.284 JK	0.401 J
2,3,7,8-TCDD	NL	NL	ng/kg	0.0723 JK	0.0639 U	0.116 JK	0.0868 U	0.0691 U	0.136 U
TOTAL HpCDF	NL	NL	ng/kg	0.465 JK	0.497 J	2.39 J	2.38 J	1.11 J	0.818 J
TOTAL HpCDD	NL	NL	ng/kg	1.31 JK	0.944 J	4.89	6.39	3.48 J	1.97 J
TOTAL HxCDF	NL	NL	ng/kg	0.344 JK	0.426 JK	1.97 JK	1.78 JK	0.555 JK	0.63 J
TOTAL HxCDD	NL	NL	ng/kg	0.775 JK	1.2 J	3.01 J	3.46 JK	2.31 J	0.988 J
TOTAL PeCDF	NL	NL	ng/kg	0.24 JK	0.213 JK	1.01 J	1.1 JK	0.229 JK	0.0869 J
TOTAL PeCDD	NL	NL	ng/kg	0.379 J	1.18 JK	2.16 JK	2.21 J	2.87 JK	0.832 J
TOTAL TCDF	NL	NL	ng/kg	0.535 J	0.769 JK	1.26 K	1.49 K	0.979 K	1.06 B
TOTAL TCDD	NL	NL	ng/kg	0.447 JK	1.8 K	1.81 K	2.57 K	3.78 K	0.239 JK
Dioxin Equivalent Concentration	0.85	21.5	ng/kg	0.215	0.193	0.555	0.239	0.316	0.317

Table 3-7a
Focus Area 1 Sediment Sample Analytical Results - Dioxin/Furan
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-11	USR11-13	USR11-45	USR11-45	USR11-45	USR11-45
			Field Sample ID	USR11-11-006	USR11-13-006	USR11-45-006	USR11-45-006-FS	USR11-45-024	USR11-45-039
			Sample Date	7/21/2011	7/21/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval (in bss)	0- 6	0- 6	0- 6	0- 6	6- 24	24- 39
Chemical	**Level I[1]**	**Level II[2]**	**Unit**						
OCDF	NL	NL	ng/kg	1.63 J	0.592 J	7.25 J	11.7	47.9	168
OCDD	NL	NL	ng/kg	32.2	6.31 J	134	143	2530	6140
1,2,3,4,6,7,8-HpCDF	NL	NL	ng/kg	1.45 J	0.389 J	10.9 J	26.3 J	53.2 J	201 J
1,2,3,4,6,7,8-HpCDD	NL	NL	ng/kg	4.95	0.971 J	19	23.2	550	3890
1,2,3,4,7,8,9-HpCDF	NL	NL	ng/kg	0.133 J	0.122 U	0.213 J	0.422 J	1.43 J	5.41
1,2,3,4,7,8-HxCDF	NL	NL	ng/kg	0.149 U	0.0558 U	0.328 J	0.453 J	6.33	10.1
1,2,3,4,7,8-HxCDD	NL	NL	ng/kg	0.145 J	0.121 U	0.295 J	0.479 J	8.35	12.6
1,2,3,6,7,8-HxCDF	NL	NL	ng/kg	0.151 U	0.0413 J	0.45 J	0.869 J	2.11 J	2.8 J
1,2,3,6,7,8-HxCDD	NL	NL	ng/kg	0.5 J	0.119 U	0.926 J	2.15 J	31.1	203
1,2,3,7,8,9-HxCDF	NL	NL	ng/kg	0.193 U	0.0749 U	0.206 U	0.244 J	0.368 J	0.576 UJ
1,2,3,7,8,9-HxCDD	NL	NL	ng/kg	0.365 J	0.128 U	0.499 J	1.6 J	34.1	102
1,2,3,7,8-PeCDF	NL	NL	ng/kg	0.0955 U	0.0602 U	0.141 U	0.15 U	0.532 J	0.331 J
1,2,3,7,8-PeCDD	NL	NL	ng/kg	0.224 J	0.0814 U	0.208 U	0.266 J	8.58	1.86 J
2,3,4,6,7,8-HxCDF	NL	NL	ng/kg	0.148 U	0.0543 U	0.154 U	0.446 J	1.68 J	2.31 J
2,3,4,7,8-PeCDF	NL	NL	ng/kg	0.197 J	0.047 U	0.117 U	0.215 J	0.526 J	1.11 J
2,3,7,8-TCDF	NL	NL	ng/kg	0.456 J	0.346 J	0.386 U	0.487 U	0.874 U	2.41
2,3,7,8-TCDD	NL	NL	ng/kg	0.338 U	0.167 U	0.18 J	0.211 U	2.18	0.801 J
TOTAL HpCDF	NL	NL	ng/kg	3.43 J	0.956 JK	25.5 K	53.2 K	147	562 K
TOTAL HpCDD	NL	NL	ng/kg	11.1 K	2 J	39.6	54.2 K	1040	6350
TOTAL HxCDF	NL	NL	ng/kg	2.05 J	0.598 JK	9.37	22.4	67.1 K	209
TOTAL HxCDD	NL	NL	ng/kg	6.75	0.961 J	7.17	23.2	306	1630
TOTAL PeCDF	NL	NL	ng/kg	0.941 JK	0.0924 JK	0.117 U	0.919 J	10.3 K	14.8
TOTAL PeCDD	NL	NL	ng/kg	4.44 J	0.718 JK	0.953 J	4.86 J	63.3	65.4
TOTAL TCDF	NL	NL	ng/kg	2.09 BK	1.14 BK	0.685 J	1.48 K	3.67	7.76 K
TOTAL TCDD	NL	NL	ng/kg	1.45	0.212 J	0.475 J	1.14 K	13.3 K	5.91 K
Dioxin Equivalent Concentration	0.85	21.5	ng/kg	0.654	0.206	0.728	**1.279**	**18.301**	**20.838**

Table 3-7a
Focus Area 1 Sediment Sample Analytical Results - Dioxin/Furan
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-46	USR11-46	USR11-46	USR11-47	USR11-47	USR11-49
			Field Sample ID	USR11-46-006	USR11-46-024	USR11-46-051	USR11-47-006	USR11-47-006-FS	USR11-49-006
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/24/2011	7/24/2011	7/24/2011
			Depth Interval (in bss)	0- 6	6- 24	24- 51	0- 6	0- 6	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**						
OCDF	NL	NL	ng/kg	108	135	0.274 JK	3.72 J	0.938 J	21.1
OCDD	NL	NL	ng/kg	2650	828	1.55 U	35.8	9.01 U	227
1,2,3,4,6,7,8-HpCDF	NL	NL	ng/kg	97.6	263	0.384 U	6.61	1.11 U	33.3
1,2,3,4,6,7,8-HpCDD	NL	NL	ng/kg	328	102	0.282 J	4.61 J	1.18 J	25.9
1,2,3,4,7,8,9-HpCDF	NL	NL	ng/kg	2.29 J	1.8 J	0.137 U	0.126 U	0.0804 U	0.546 J
1,2,3,4,7,8-HxCDF	NL	NL	ng/kg	2.07 U	2.78 U	0.0588 U	0.169 JK	0.0532 U	0.686 U
1,2,3,4,7,8-HxCDD	NL	NL	ng/kg	1.84 J	1.13 J	0.104 U	0.0874 J	0.0802 U	0.316 J
1,2,3,6,7,8-HxCDF	NL	NL	ng/kg	1.5 U	4.6 U	0.0569 U	0.144 U	0.0378 U	0.553 U
1,2,3,6,7,8-HxCDD	NL	NL	ng/kg	11.1	11.7	0.101 U	0.287 J	0.0918 J	1.48 J
1,2,3,7,8,9-HxCDF	NL	NL	ng/kg	0.474 J	0.829 J	0.0828 U	0.0769 U	0.0578 U	0.15 U
1,2,3,7,8,9-HxCDD	NL	NL	ng/kg	4.6 J	6.19	0.109 U	0.223 J	0.0863 U	0.919 J
1,2,3,7,8-PeCDF	NL	NL	ng/kg	0.203 JK	0.362 J	0.0607 U	0.0691 U	0.0529 U	0.133 J
1,2,3,7,8-PeCDD	NL	NL	ng/kg	1.45 J	1.11 J	0.11 U	0.115 J	0.0692 U	0.265 JK
2,3,4,6,7,8-HxCDF	NL	NL	ng/kg	1.06 J	1.56 J	0.0608 U	0.159 JK	0.044 JK	0.709 J
2,3,4,7,8-PeCDF	NL	NL	ng/kg	0.49 U	0.758 U	0.0603 U	0.146 JK	0.0863 JK	0.328 U
2,3,7,8-TCDF	NL	NL	ng/kg	1.74	0.681 U	0.285 U	0.394 U	0.323 U	0.934 U
2,3,7,8-TCDD	NL	NL	ng/kg	0.712 J	0.436 J	0.0788 U	0.159 JK	0.0501 U	0.286 J
TOTAL HpCDF	NL	NL	ng/kg	281	503 K	0.746 JK	12.8 K	2.27 J	65.9 K
TOTAL HpCDD	NL	NL	ng/kg	700	208	0.506 J	10.2 K	2.71 J	52.4
TOTAL HxCDF	NL	NL	ng/kg	82	138 K	0.206 JK	4.75 JK	1.03 JK	24.1 K
TOTAL HxCDD	NL	NL	ng/kg	79	86.3	0.508 JK	3.72 JK	0.824 JK	11.7 K
TOTAL PeCDF	NL	NL	ng/kg	8.55 K	9.3 KQ	0.0624 JK	1.3 JK	0.424 JK	5.5 K
TOTAL PeCDD	NL	NL	ng/kg	15.3 K	12.6 KQ	0.482 J	2.81 JK	0.624 JK	3.52 JK
TOTAL TCDF	NL	NL	ng/kg	7.52 K	3.72 K	0.688 JK	2.06 K	1.03 K	3.65 K
TOTAL TCDD	NL	NL	ng/kg	8.74 K	5.76 K	0.952 K	2.9 K	0.488 JK	1.64 K
Dioxin Equivalent Concentration	0.85	21.5	ng/kg	**5.393**	**5.969**	0.161	0.527	0.153	**1.375**

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

ID - Identification
in bss - inches below sediment surface
J - Estimated Value
K - Estimated Maximum Possible Concentration
ng/kg - Nanogram per kilogram
NL - Not Listed
Q - Quantitative Interference
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I
[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-7b
Focus Area 2 Sediment Sample Analytical Results - Dioxin/Furan
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-15	USR11-15	USR11-21	USR11-23	USR11-27	USR11-29	USR11-29
			Field Sample ID	USR11-15-017	USR11-15-017-FS	USR11-21-006	USR11-23-016	USR11-27-006	USR11-29-006	USR11-29-021
			Sample Date	7/21/2011	7/21/2011	7/20/2011	7/21/2011	7/21/2011	7/23/2011	7/23/2011
			Depth Interval	0- 17	0- 17	0- 6	0- 16	0- 6	0- 6	6- 21
Chemical	**Level I[1]**	**Level II[2]**	**Unit**							
OCDF	NL	NL	ng/kg	0.199 JK	0.238 J	0.971 J	1640	15.5	25.5	43
OCDD	NL	NL	ng/kg	1.43 J	3.36 J	5.3 J	65100 E	261	398	1190
1,2,3,4,6,7,8-HpCDF	NL	NL	ng/kg	0.175 JK	0.222 J	0.343 J	298	16.8	33.6	23.8
1,2,3,4,6,7,8-HpCDD	NL	NL	ng/kg	0.355 JK	0.656 J	1 J	3480	27.3	45.1	99.8
1,2,3,4,7,8,9-HpCDF	NL	NL	ng/kg	0.0873 U	0.115 U	0.156 U	26.2 J	1.11 J	0.544 J	0.94 JK
1,2,3,4,7,8-HxCDF	NL	NL	ng/kg	0.0651 U	0.0767 U	0.186 U	7.62 J	1.13 J	0.591 U	0.548 U
1,2,3,4,7,8-HxCDD	NL	NL	ng/kg	0.12 U	0.143 U	0.167 U	11.9 J	0.195 J	0.206 J	0.467 J
1,2,3,6,7,8-HxCDF	NL	NL	ng/kg	0.0585 U	0.0718 U	0.178 U	4.87 J	0.828 J	1.37 U	1.11 U
1,2,3,6,7,8-HxCDD	NL	NL	ng/kg	0.113 U	0.139 U	0.177 U	58	1.04 J	1.63 J	3.25 J
1,2,3,7,8,9-HxCDF	NL	NL	ng/kg	0.0793 U	0.0999 U	0.235 U	3.57 J	0.307 J	0.169 J	0.211 J
1,2,3,7,8,9-HxCDD	NL	NL	ng/kg	0.125 U	0.151 U	0.185 U	24.9 J	0.56 J	0.622 J	1.02 J
1,2,3,7,8-PeCDF	NL	NL	ng/kg	0.0678 U	0.0638 U	0.137 U	1.62 U	0.123 JK	0.163 J	0.195 J
1,2,3,7,8-PeCDD	NL	NL	ng/kg	0.0764 U	0.113 U	0.0761 U	3.4 U	0.138 U	0.113 U	0.242 JK
2,3,4,6,7,8-HxCDF	NL	NL	ng/kg	0.062 U	0.0759 U	0.192 U	6.06 J	0.553 J	0.484 J	0.719 J
2,3,4,7,8-PeCDF	NL	NL	ng/kg	0.0624 J	0.0858 JK	0.104 U	3.59 J	0.295 J	0.27 U	0.453 U
2,3,7,8-TCDF	NL	NL	ng/kg	0.335 J	0.33 J	0.291 J	2.69 J	0.316 J	0.525 U	0.693 U
2,3,7,8-TCDD	NL	NL	ng/kg	0.134 U	0.191 U	0.139 U	2.9 U	0.146 U	0.142 J	0.213 JK
TOTAL HpCDF	NL	NL	ng/kg	0.341 JK	0.535 J	0.859 J	1650 K	40.4	78.2 K	79.3 K
TOTAL HpCDD	NL	NL	ng/kg	0.643 JK	1.31 JK	1.76 J	8800	48.8	99.5	226
TOTAL HxCDF	NL	NL	ng/kg	0.101 J	0.242 J	0.206 J	339 K	16.9	28.8 K	27.1 K
TOTAL HxCDD	NL	NL	ng/kg	0.357 J	0.808 J	0.487 J	1260	8.91	14.6 K	27.3 K
TOTAL PeCDF	NL	NL	ng/kg	0.0624 J	0.0858 JK	0.104 U	9.11 J	1.34 JK	3.07 J	4.99 KQ
TOTAL PeCDD	NL	NL	ng/kg	0.413 J	0.71 J	0.227 J	118	1.17 J	2.7 JKQ	4.6 JKQ
TOTAL TCDF	NL	NL	ng/kg	0.813 BJK	0.747 BJK	0.501 BJ	13.2 K	1.14 BK	3.84 K	8.21 K
TOTAL TCDD	NL	NL	ng/kg	0.366 JK	0.295 J	0.0828 JK	20.3 K	0.277 JK	2.4 K	3.52 K
Dioxin Equivalent Concentration	0.85	21.5	ng/kg	0.202	0.270	0.240	**27.507**	**0.941**	**1.005**	**1.518**

Table 3-7b
Focus Area 2 Sediment Sample Analytical Results - Dioxin/Furan
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-30	USR11-30	USR11-31	USR11-31	USR11-32	USR11-32	USR11-32
			Field Sample ID	USR11-30-006	USR11-30-021	USR11-31-006	USR11-31-026	USR11-32-006	USR11-32-006-DP	USR11-32-025
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval	0- 6	6- 21	0- 6	6- 26	0- 6	0- 6	6- 25
Chemical	**Level I[1]**	**Level II[2]**	**Unit**							
OCDF	NL	NL	ng/kg	21.2	29.3	4.51 J	203	9.43 J	7.25 J	2710
OCDD	NL	NL	ng/kg	189	1020	55.7	2270	80.4	36.5	7870
1,2,3,4,6,7,8-HpCDF	NL	NL	ng/kg	30.8	14.4	7.96	447	23.6	14.2	7140
1,2,3,4,6,7,8-HpCDD	NL	NL	ng/kg	21.9	83.6	5.59	167	8.97	3.91 J	619
1,2,3,4,7,8,9-HpCDF	NL	NL	ng/kg	0.235 U	0.75 J	0.186 U	4.19 J	0.362 J	0.117 J	47.1
1,2,3,4,7,8-HxCDF	NL	NL	ng/kg	0.626 U	0.377 U	0.187 JK	5.58	0.388 U	0.215 J	48.7
1,2,3,4,7,8-HxCDD	NL	NL	ng/kg	0.407 J	0.499 JK	0.165 U	1.02 J	0.178 U	0.123 J	5.58
1,2,3,6,7,8-HxCDF	NL	NL	ng/kg	1.19 U	0.706 U	0.454 JK	23.7	1.08 U	0.519 U	217
1,2,3,6,7,8-HxCDD	NL	NL	ng/kg	1.11 J	2.61 J	0.36 J	7.35	0.476 J	0.306 J	46.2
1,2,3,7,8,9-HxCDF	NL	NL	ng/kg	0.231 JK	0.142 JK	0.0838 JK	1.82 J	0.183 U	0.168 U	17.6 J
1,2,3,7,8,9-HxCDD	NL	NL	ng/kg	0.704 JK	0.874 JK	0.177 U	2.43 J	0.237 J	0.143 U	17
1,2,3,7,8-PeCDF	NL	NL	ng/kg	0.227 J	0.174 JK	0.0847 U	1.24 J	0.134 U	0.0633 U	10.9
1,2,3,7,8-PeCDD	NL	NL	ng/kg	0.291 J	0.2 J	0.128 U	0.554 J	0.122 U	0.0836 U	1.26 J
2,3,4,6,7,8-HxCDF	NL	NL	ng/kg	0.571 JK	0.401 J	0.175 J	4.75 J	0.313 J	0.173 J	37.8
2,3,4,7,8-PeCDF	NL	NL	ng/kg	0.385 JK	0.259 U	0.148 U	2.13 U	0.263 U	0.153 U	13.7
2,3,7,8-TCDF	NL	NL	ng/kg	0.409 U	0.385 U	0.347 U	0.515 U	0.374 J	0.35 U	0.815 U
2,3,7,8-TCDD	NL	NL	ng/kg	0.132 J	0.154 JK	0.0816 U	0.301 J	0.113 J	0.0895 J	0.507 J
TOTAL HpCDF	NL	NL	ng/kg	64.4	60	16.5	869	46.3 K	27.9 K	12700 EK
TOTAL HpCDD	NL	NL	ng/kg	46.8	190	13 K	407	22	8.73	1520
TOTAL HxCDF	NL	NL	ng/kg	24.8 K	19.1 K	7.62 K	291 K	18.7	11.1 K	3140 E
TOTAL HxCDD	NL	NL	ng/kg	11 K	21.2 K	3.36 J	67.1 K	5.39 K	2.8 JK	312
TOTAL PeCDF	NL	NL	ng/kg	2.98 JK	2.2 JK	0.993 JK	24.2 KQ	1.8 J	1.29 JK	86.4 K
TOTAL PeCDD	NL	NL	ng/kg	4.16 J	2.81 JK	1.61 JK	12.5 Q	1.82 JK	1.42 JK	34
TOTAL TCDF	NL	NL	ng/kg	2.62 K	1.76 K	1.36 K	7.88 K	1.49 K	1.16 K	18.7 K
TOTAL TCDD	NL	NL	ng/kg	2.99 K	0.914 JK	1.64 K	9.61 K	1.68 K	0.836 JK	10.9
Dioxin Equivalent Concentration	0.85	21.5	ng/kg	**1.382**	**1.170**	0.380	**10.581**	0.685	0.470	**118.262**

Table 3-7b
Focus Area 2 Sediment Sample Analytical Results - Dioxin/Furan
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-32	USR11-33	USR11-33	USR11-34	USR11-34	USR11-34	USR11-35
			Field Sample ID	USR11-32-025-DP	USR11-33-006	USR11-33-022	USR11-34-006	USR11-34-024	USR11-34-040	USR11-35-006
			Sample Date	7/23/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
			Depth Interval	6- 25	0- 6	6- 22	0- 6	6- 24	24- 40	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**							
OCDF	NL	NL	ng/kg	91.2	4.4 J	5.6 J	17.8	17.3	227	4.64 J
OCDD	NL	NL	ng/kg	817	67.6	60.9	490	152	21300 E	51.1
1,2,3,4,6,7,8-HpCDF	NL	NL	ng/kg	179	6.24 J	3.77 J	44	44.3	36.1	9.2 J
1,2,3,4,6,7,8-HpCDD	NL	NL	ng/kg	67.2	8.2	7.03	63.3	22.3	837	5.69
1,2,3,4,7,8,9-HpCDF	NL	NL	ng/kg	1.91 J	0.223 U	0.274 U	0.67 J	0.353 JK	3.01 J	0.234 U
1,2,3,4,7,8-HxCDF	NL	NL	ng/kg	1.82 U	0.203 J	0.195 J	0.857 J	0.542 J	1.61 JQ	0.514 J
1,2,3,4,7,8-HxCDD	NL	NL	ng/kg	0.381 J	0.357 U	0.251 U	0.359 J	0.155 U	1.07 JQ	0.183 J
1,2,3,6,7,8-HxCDF	NL	NL	ng/kg	8.31	0.381 J	0.193 J	1.78 J	1.24 J	0.755 JQ	0.594 J
1,2,3,6,7,8-HxCDD	NL	NL	ng/kg	3.56 J	0.365 U	0.407 J	3.66 J	1.26 J	11.7 Q	0.4 J
1,2,3,7,8,9-HxCDF	NL	NL	ng/kg	0.92 J	0.256 U	0.277 U	0.371 J	0.218 J	0.678 JQ	0.203 U
1,2,3,7,8,9-HxCDD	NL	NL	ng/kg	1.35 J	0.388 U	0.266 U	1.78 J	0.585 JK	6.37	0.307 J
1,2,3,7,8-PeCDF	NL	NL	ng/kg	0.413 J	0.155 U	0.137 U	0.201 J	0.185 J	1.04 JQ	0.12 U
1,2,3,7,8-PeCDD	NL	NL	ng/kg	0.175 U	0.174 U	0.166 U	0.308 J	0.337 J	1.11 JQ	0.134 U
2,3,4,6,7,8-HxCDF	NL	NL	ng/kg	1.89 J	0.192 U	0.193 U	0.882 J	0.532 J	0.883 JQ	0.307 J
2,3,4,7,8-PeCDF	NL	NL	ng/kg	0.679 U	0.13 U	0.124 J	0.439 J	0.26 J	1.45 JQ	0.167 J
2,3,7,8-TCDF	NL	NL	ng/kg	0.359 U	0.436 J	0.375 U	0.582 J	0.744 J	29 Q	0.405 U
2,3,7,8-TCDD	NL	NL	ng/kg	0.124 JK	0.369 U	0.287 U	0.207 U	0.178 U	4.43 Q	0.319 U
TOTAL HpCDF	NL	NL	ng/kg	339 K	14	9.39	90.6	79.6 K	148	19.2 K
TOTAL HpCDD	NL	NL	ng/kg	166	16.2	13.6	127	51.6	1820	12.4
TOTAL HxCDF	NL	NL	ng/kg	115 K	5.61	3.76 J	36.2 K	25.1	36.1 Q	9.64
TOTAL HxCDD	NL	NL	ng/kg	29.1 K	1.92 JK	2.83 JK	22.3	11.6 K	92.3 Q	4.64 J
TOTAL PeCDF	NL	NL	ng/kg	8.3 K	0.195 J	0.369 J	2.23 J	1.2 J	12.6 KQ	1.14 JK
TOTAL PeCDD	NL	NL	ng/kg	2.23 J	0.355 J	0.166 U	3.57 J	3.27 JK	6.68 KQ	1.08 JK
TOTAL TCDF	NL	NL	ng/kg	1.84 K	0.751 JK	0.857 J	2.05 B	2.32 BK	78.7 KQ	0.661 J
TOTAL TCDD	NL	NL	ng/kg	1.37 K	0.369 U	0.287 U	0.996 K	0.693 JK	8.87 Q	0.319 U
Dioxin Equivalent Concentration	0.85	21.5	ng/kg	**3.821**	0.582	0.485	**1.854**	**1.399**	**12.256**	0.678

Table 3-7b
Focus Area 2 Sediment Sample Analytical Results - Dioxin/Furan
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-35	USR11-36	USR11-36	USR11-37	USR11-38	USR11-38	USR11-39
			Field Sample ID	USR11-35-026	USR11-36-006	USR11-36-032	USR11-37-017	USR11-38-006	USR11-38-019	USR11-39-006
			Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
			Depth Interval	6- 26	0- 6	6- 32	0- 17	0- 6	6- 19	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**							
OCDF	NL	NL	ng/kg	9.52 J	48.6	97.3	3.46 J	12.4	126	75
OCDD	NL	NL	ng/kg	249	868	1240	44.5	335	4140 E	1020
1,2,3,4,6,7,8-HpCDF	NL	NL	ng/kg	27.7 J	25	31.7 J	6.64	17	77.9	167
1,2,3,4,6,7,8-HpCDD	NL	NL	ng/kg	48.2	71.2	85.4	5.06	38.6	522	125
1,2,3,4,7,8,9-HpCDF	NL	NL	ng/kg	0.427 U	0.881 J	1.5 J	0.197 J	0.405 J	3.11 J	1.95 J
1,2,3,4,7,8-HxCDF	NL	NL	ng/kg	0.554 J	0.579 J	0.589 J	0.182 U	0.352 J	2.17 J	2.33 J
1,2,3,4,7,8-HxCDD	NL	NL	ng/kg	0.909 J	0.459 J	0.344 J	0.171 U	0.49 J	1.57 J	1.93 J
1,2,3,6,7,8-HxCDF	NL	NL	ng/kg	1.42 J	0.684 J	0.362 J	0.243 U	0.492 J	2.71 J	4.69 J
1,2,3,6,7,8-HxCDD	NL	NL	ng/kg	2.02 J	2.65 J	2.73 J	0.315 J	1.9 J	18.5	10.5
1,2,3,7,8,9-HxCDF	NL	NL	ng/kg	0.233 U	0.276 U	0.199 U	0.166 U	0.151 U	0.631 J	0.736 J
1,2,3,7,8,9-HxCDD	NL	NL	ng/kg	1.62 J	1.07 J	1.03 J	0.19 U	1.45 J	7.72	7.2
1,2,3,7,8-PeCDF	NL	NL	ng/kg	0.162 U	0.201 U	0.174 U	0.0887 U	0.119 U	0.557 J	0.536 J
1,2,3,7,8-PeCDD	NL	NL	ng/kg	0.535 J	0.54 J	0.75 J	0.125 U	0.437 J	1.65 J	2.7 J
2,3,4,6,7,8-HxCDF	NL	NL	ng/kg	0.558 J	0.435 J	0.435 J	0.13 U	0.322 J	1.34 J	2.02 J
2,3,4,7,8-PeCDF	NL	NL	ng/kg	0.311 J	0.217 J	0.14 U	0.118 J	0.211 J	0.893 J	0.952 J
2,3,7,8-TCDF	NL	NL	ng/kg	0.551 U	0.892 J	0.937 U	0.516 J	0.725 J	6.79	3.16
2,3,7,8-TCDD	NL	NL	ng/kg	0.268 U	0.433 U	0.504 J	0.215 U	0.219 U	1.57	1.42
TOTAL HpCDF	NL	NL	ng/kg	54.9	81.5	119 K	12.9	38.7	243 K	331 K
TOTAL HpCDD	NL	NL	ng/kg	78.8	153	209 K	10.8	77.8	920	258
TOTAL HxCDF	NL	NL	ng/kg	27.2	20.8	25.9	4.4 JK	11.6	81.7 K	116 K
TOTAL HxCDD	NL	NL	ng/kg	18.8	24.3	20.6 K	1.7 JKQ	18.6 K	124 K	91.3 K
TOTAL PeCDF	NL	NL	ng/kg	0.946 JK	0.861 J	0.272 J	0.229 JK	0.747 J	10.6 K	7.13
TOTAL PeCDD	NL	NL	ng/kg	3.22 J	4.8 JK	4.29 JK	0.367 J	4.46 JK	12.1 K	21 K
TOTAL TCDF	NL	NL	ng/kg	1.9 K	2.39 K	2.44 K	1.05 B	2.14 BK	18.5	10.6 B
TOTAL TCDD	NL	NL	ng/kg	1.01 K	0.512 JK	1.57 K	0.215 U	0.788 JK	7.09 K	8.98 K
Dioxin Equivalent Concentration	0.85	21.5	ng/kg	**1.951**	**1.787**	**2.226**	0.418	**1.341**	**7.525**	**8.824**

Table 3-7b
Focus Area 2 Sediment Sample Analytical Results - Dioxin/Furan
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-39	USR11-40	USR11-40	USR11-41	USR11-42	USR11-42	USR11-43
			Field Sample ID	USR11-39-024	USR11-40-006	USR11-40-034	USR11-41-016	USR11-42-006	USR11-42-033	USR11-43-006
			Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval	6- 24	0- 6	6- 34	0- 16	0- 6	6- 33	0- 6
Chemical	**Level I[1]**	**Level II[2]**	**Unit**							
OCDF	NL	NL	ng/kg	520	5.26 J	42.5	1420	10.2	141	229
OCDD	NL	NL	ng/kg	8080 E	63.3	1420	6410	151	2410	3180
1,2,3,4,6,7,8-HpCDF	NL	NL	ng/kg	361	9.13	27.3	2160	23.3 J	62.9 J	162 J
1,2,3,4,6,7,8-HpCDD	NL	NL	ng/kg	635	8.86	104	1370	14.6	248	369
1,2,3,4,7,8,9-HpCDF	NL	NL	ng/kg	7.82	0.175 JK	0.862 J	17.5 J	0.383 J	2.88 J	4.1 J
1,2,3,4,7,8-HxCDF	NL	NL	ng/kg	5.77	0.157 J	0.438 J	40.2	0.439 J	1.76 J	2.01 J
1,2,3,4,7,8-HxCDD	NL	NL	ng/kg	3.74 J	0.118 JK	0.345 J	27.7	0.377 J	1.4 J	0.75 J
1,2,3,6,7,8-HxCDF	NL	NL	ng/kg	9.41	0.448 J	1.05 J	48.2	0.656 J	2.45 J	1.21 J
1,2,3,6,7,8-HxCDD	NL	NL	ng/kg	30.5	0.402 JK	3.07 J	140	1.11 J	9.3	11.2
1,2,3,7,8,9-HxCDF	NL	NL	ng/kg	1.38 JQ	0.148 U	0.206 U	7.85	0.319 U	0.46 J	0.523 J
1,2,3,7,8,9-HxCDD	NL	NL	ng/kg	13.2	0.163 JK	0.827 J	106	0.593 J	2.92 J	2.65 J
1,2,3,7,8-PeCDF	NL	NL	ng/kg	0.881 J	0.0717 J	0.0993 J	4.71 J	0.158 J	0.436 J	0.217 U
1,2,3,7,8-PeCDD	NL	NL	ng/kg	4.68 J	0.0897 J	0.206 J	54.3	0.239 U	0.849 J	0.393 J
2,3,4,6,7,8-HxCDF	NL	NL	ng/kg	3.96 J	0.13 J	0.387 J	28.2	0.468 J	0.928 J	1.48 J
2,3,4,7,8-PeCDF	NL	NL	ng/kg	1.53 J	0.147 JK	0.241 J	10.3	0.279 J	0.773 J	0.359 J
2,3,7,8-TCDF	NL	NL	ng/kg	8.99	0.43 J	1.17	26.9	0.504 U	7.58	0.88 U
2,3,7,8-TCDD	NL	NL	ng/kg	3.3	0.179 U	0.226 J	21.7	0.354 U	1.47	0.335 U
TOTAL HpCDF	NL	NL	ng/kg	977	21.3 K	91.4 K	3990	46.8	196	570 K
TOTAL HpCDD	NL	NL	ng/kg	1430	17.4	225	2700 EK	29.9	479	735
TOTAL HxCDF	NL	NL	ng/kg	281 K	8.06	28.2	1700 KQ	18.5	57 KQ	119 K
TOTAL HxCDD	NL	NL	ng/kg	200 Q	3.49 JK	22.7 K	1250 KQ	8.44	53.9	56.4
TOTAL PeCDF	NL	NL	ng/kg	23.6 Q	0.219 JK	1.19 J	309 KQ	1.12 J	8.92 K	1.19 JK
TOTAL PeCDD	NL	NL	ng/kg	41.4 Q	1.01 JK	3.61 JK	318 Q	2.54 JK	10.7 K	4.36 JK
TOTAL TCDF	NL	NL	ng/kg	23.3 K	0.966 BJK	2.95 BK	124 KQ	1.82	20.4 K	2.7 K
TOTAL TCDD	NL	NL	ng/kg	17.9 K	0.175 JK	1.57 K	158 KQ	0.466 J	4.8 K	0.489 J
Dioxin Equivalent Concentration	0.85	21.5	ng/kg	**18.781**	0.532	**1.557**	**135.414**	**1.102**	**5.649**	**4.174**

Table 3-7b
Focus Area 2 Sediment Sample Analytical Results - Dioxin/Furan
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

			Location ID	USR11-43	USR11-43	USR11-44	USR11-44	USR11-44
			Field Sample ID	USR11-43-024	USR11-43-053	USR11-44-006	USR11-44-024	USR11-44-037
			Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
			Depth Interval	6- 24	24- 53	0- 6	6- 24	24- 37
Chemical	**Level I[1]**	**Level II[2]**	**Unit**					
OCDF	NL	NL	ng/kg	166	139	5.08 J	1810	13.5
OCDD	NL	NL	ng/kg	9180 J	1210	78.1	1730	15.5
1,2,3,4,6,7,8-HpCDF	NL	NL	ng/kg	83.5 J	38.1 J	8.76 J	3990 J	31.9 J
1,2,3,4,6,7,8-HpCDD	NL	NL	ng/kg	791	96.6	10.4	207	3 U
1,2,3,4,7,8,9-HpCDF	NL	NL	ng/kg	5	2.98 J	0.215 U	19.4 J	0.352 J
1,2,3,4,7,8-HxCDF	NL	NL	ng/kg	1.58 J	0.899 J	0.25 J	31.8	0.403 J
1,2,3,4,7,8-HxCDD	NL	NL	ng/kg	1.16 J	0.465 J	0.264 J	6.55	0.397 U
1,2,3,6,7,8-HxCDF	NL	NL	ng/kg	0.951 J	0.578 J	0.289 J	50.3	0.905 J
1,2,3,6,7,8-HxCDD	NL	NL	ng/kg	17.7	3.35 J	0.479 J	85	0.954 J
1,2,3,7,8,9-HxCDF	NL	NL	ng/kg	0.434 U	0.362 U	0.179 U	13.4	0.324 U
1,2,3,7,8,9-HxCDD	NL	NL	ng/kg	5.08	1.89 J	0.378 J	40.9	0.418 U
1,2,3,7,8-PeCDF	NL	NL	ng/kg	0.172 U	0.161 U	0.114 U	4.84 J	0.165 U
1,2,3,7,8-PeCDD	NL	NL	ng/kg	0.914 J	0.749 J	0.173 J	10	0.215 U
2,3,4,6,7,8-HxCDF	NL	NL	ng/kg	0.92 J	0.515 J	0.186 J	23.1	0.25 U
2,3,4,7,8-PeCDF	NL	NL	ng/kg	0.146 U	0.226 J	0.134 J	11.3	0.188 J
2,3,7,8-TCDF	NL	NL	ng/kg	1.01	0.828 U	0.392 U	1.09	0.35 J
2,3,7,8-TCDD	NL	NL	ng/kg	0.331 J	0.402 J	0.156 U	2.21	0.281 U
TOTAL HpCDF	NL	NL	ng/kg	390 K	143	18 K	7050	57
TOTAL HpCDD	NL	NL	ng/kg	1610	214	34	434	6.15
TOTAL HxCDF	NL	NL	ng/kg	97.7 K	28.4	7.39	2250 E	16.4
TOTAL HxCDD	NL	NL	ng/kg	99.2	27.3	7.25 K	628	5.56
TOTAL PeCDF	NL	NL	ng/kg	3.24 J	2.43 J	0.26 J	142 K	1.13 J
TOTAL PeCDD	NL	NL	ng/kg	8.59	6.97 K	1.36 J	149	1.62 JK
TOTAL TCDF	NL	NL	ng/kg	2.42 K	2.3 K	0.952 JK	14 K	0.733 JK
TOTAL TCDD	NL	NL	ng/kg	2.05 K	3.61 K	0.147 J	24.5	0.281 U
Dioxin Equivalent Concentration	0.85	21.5	ng/kg	**5.122**	**2.433**	0.660	**75.206**	**0.961**

Notes:
Result exceeds SQTs - Level I.
Result exceeds SQTs - Level II.

B - Target analyte was detected in the associated blank
E - Value is estimated - Concentration of the target analyte exceeds the instrument calibration range
ID - Identification
in bss - inches below sediment surface
J - Estimated Value
K - Estimated Maximum Possible Concentration
ng/kg - Nanogram per kilogram
NL - Not Listed
Q - Quantitative Interference
SQT - Sediment Quality Targets
U - Not Detected. The reported numerical value is the laboratory reporting limit.

[1] Evaluation of Numerical SQTs-St Louis River AOC-Level I

[2] Evaluation of Numerical SQTs-St Louis River AOC-Level II

Table 3-8a
Focus Area 1 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-01	USR11-01	USR11-01	USR11-02	USR11-02	USR11-03	USR11-04	USR11-05
	Field Sample ID	USR11-01-006	USR11-01-024	USR11-01-047	USR11-02-006	USR11-02-022	USR11-03-017	USR11-04-016	USR11-05-006
	Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
	Depth Interval (in bss)	0- 6	6- 24	24- 47	0- 6	6- 22	0- 17	0- 16	0- 6
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	100	98.9	99.8	99.2	100	99.3	100	99.8
GRAVEL, MEDIUM	% passing	99.7	96.1	99	99.2	100	98.1	100	99.8
GRAVEL, FINE	% passing	96.1	90.4	98.3	99	100	97.2	100	99.8
SAND, VERY COARSE	% passing	78.7	75.3	96.5	97.5	99.3	95.3	99.2	99.2
SAND, COARSE	% passing	45.3	47.4	91	97	98.9	93.2	99	98
SAND, MEDIUM	% passing	26.7	22.4	32.9	96.5	98.4	91.3	98.4	96.3
SAND, FINE	% passing	19.4	11.2	2.25	88	93.5	72	80.8	75.1
SAND, VERY FINE	% passing	15.1	9.94	1.54	76.7	84.7	59	61	57.7
SILT	% passing	15.4	8.63	2.1	68.7	81.6	58.2	57.7	58.2
CLAY (0.005 mm)	% passing	2	2.51	1.6	11.4	27.5	9.71	2.32	7.47
CLAY (0.001 mm)	% passing	0	0	1.29	0	0	0	0	0
TOC									
TOC	%	1.13	2.59	0.467	1.62	2.53	2.92	0.886	2.14

Table 3-8a
Focus Area 1 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-05	USR11-05	USR11-05	USR11-06	USR11-06	USR11-06	USR11-06	USR11-07
	Field Sample ID	USR11-05-007-FS	USR11-05-024	USR11-05-051	USR11-06-006	USR11-06-006-DP	USR11-06-022	USR11-06-022-DP	USR11-07-017
	Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
	Depth Interval (in bss)	0- 7	6- 24	24- 51	0- 6	0- 6	6- 22	6- 22	0- 17
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	100	NA	100	NA	100
GRAVEL (9.5 mm)	% passing	99.9	99.7	99.4	100	NA	99.6	NA	100
GRAVEL, MEDIUM	% passing	99.5	98.9	99	99.3	NA	92.5	NA	100
GRAVEL, FINE	% passing	99.5	98.3	97.8	92.8	NA	75.7	NA	100
SAND, VERY COARSE	% passing	99.1	96.9	84.1	42.7	NA	38.3	NA	99.5
SAND, COARSE	% passing	98.2	94.4	65.2	21.6	NA	25.4	NA	98.9
SAND, MEDIUM	% passing	96.7	86.5	45.9	17.6	NA	22.6	NA	98.4
SAND, FINE	% passing	75.2	48.3	12.6	12	NA	19.3	NA	95
SAND, VERY FINE	% passing	56.7	37.5	9.6	9.86	NA	17.3	NA	88.1
SILT	% passing	55.5	32.6	9.22	10	NA	16.6	NA	81
CLAY (0.005 mm)	% passing	2.87	7.51	3.71	0	NA	1.8	NA	31.7
CLAY (0.001 mm)	% passing	0	0	0.42	0	NA	0	NA	2.29
TOC									
TOC	%	1.58	2.42	0.593	1.72 J	0.377 J	0.97 J	3.44 J	1.31

Table 3-8a
Focus Area 1 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-08	USR11-08	USR11-08	USR11-09	USR11-09	USR11-09	USR11-10	USR11-10
	Field Sample ID	USR11-08-006	USR11-08-024	USR11-08-043	USR11-09-006	USR11-09-024	USR11-09-036	USR11-10-006	USR11-10-030
	Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
	Depth Interval (in bss)	0- 6	6- 24	24- 43	0- 6	6- 24	24- 36	0- 6	6- 30
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	98.5	100	99.1	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	91.1	99.8	96.8	99.9	100	100	99.7	100
GRAVEL, MEDIUM	% passing	89.8	99.3	94.7	99.8	100	100	99.7	100
GRAVEL, FINE	% passing	88.9	98.9	93.2	99.7	99.9	100	99.5	99.9
SAND, VERY COARSE	% passing	87.5	98.1	90.1	99.3	99.8	99.6	99.5	99.8
SAND, COARSE	% passing	81.8	95.4	70.2	98.4	98.4	91.4	98.5	99
SAND, MEDIUM	% passing	67.9	84.5	36.6	97.4	96.8	71.5	97.4	98.1
SAND, FINE	% passing	50.6	56.6	14.3	68.3	76.1	50.2	90	79.3
SAND, VERY FINE	% passing	42.2	46.3	12.2	46.3	59.3	40.9	76.5	58.9
SILT	% passing	40.4	44.3	12.2	41.2	61.5	40.7	66.4	58.3
CLAY (0.005 mm)	% passing	13.6	12.4	5.53	5.11	14.6	5.14	10.2	6.49
CLAY (0.001 mm)	% passing	0	0	1.55	0	0	0	0	0
TOC									
TOC	%	1.99	1.98	1.81	2.29	0.999	0.855	2.79	1.71

Table 3-8a
Focus Area 1 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-11	USR11-11	USR11-12	USR11-12	USR11-12	USR11-13	USR11-13	USR11-14
	Field Sample ID	USR11-11-006	USR11-11-026	USR11-12-006	USR11-12-024	USR11-12-040	USR11-13-006	USR11-13-018	USR11-14-006
	Sample Date	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
	Depth Interval (in bss)	0- 6	6- 26	0- 6	6- 24	24- 40	0- 6	6- 18	0- 6
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	100	100	99.3	97.3	100	100	100	99.8
GRAVEL, MEDIUM	% passing	100	100	99.3	95.4	100	100	99.9	99.6
GRAVEL, FINE	% passing	100	100	99.1	94.3	100	100	98.5	97.3
SAND, VERY COARSE	% passing	99.2	99.3	94.4	90.9	99.4	99.1	93.6	80.7
SAND, COARSE	% passing	98.9	98.8	73.3	70.8	97.1	98.6	78.9	38.9
SAND, MEDIUM	% passing	98.4	98.2	16.8	25.1	94.1	97.4	61	21.9
SAND, FINE	% passing	80	92.7	7.99	8.88	83.2	78.8	43.4	15.7
SAND, VERY FINE	% passing	66.3	80.8	6.85	7.66	72.9	68.2	37.2	14
SILT	% passing	62.2	78.7	7.03	7.65	67.8	67.2	36.7	14.2
CLAY (0.005 mm)	% passing	8.3	22.9	0	4.83	15.4	19.9	4.61	3.14
CLAY (0.001 mm)	% passing	0	0	0	3.14	0	0	0	0
TOC									
TOC	%	1.56	3.38	0.502	2.6	1.67	2.22	2.01	0.503

Table 3-8a
Focus Area 1 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-14	USR11-45	USR11-45	USR11-45	USR11-45	USR11-46	USR11-46	USR11-46
	Field Sample ID	USR11-14-022	USR11-45-006	USR11-45-006-FS	USR11-45-024	USR11-45-039	USR11-46-006	USR11-46-024	USR11-46-051
	Sample Date	7/21/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
	Depth Interval (in bss)	6- 22	0- 6	0- 6	6- 24	24- 39	0- 6	6- 24	24- 51
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	NA	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	99.8	99.8	NA	99	100	100	99.9	100
GRAVEL, MEDIUM	% passing	99.7	99.5	NA	98	98.3	100	99.7	99.9
GRAVEL, FINE	% passing	98.5	98.6	NA	94.1	95.9	100	99.5	99.7
SAND, VERY COARSE	% passing	85.8	97	NA	90.6	92.3	99.2	98.3	97.2
SAND, COARSE	% passing	65.2	91.1	NA	77.7	87.5	96.7	90.6	86
SAND, MEDIUM	% passing	49.1	40.8	NA	31.4	60.2	91.1	66.1	47.6
SAND, FINE	% passing	41.3	19.2	NA	10.6	23.7	58.6	30.5	20.7
SAND, VERY FINE	% passing	35	15.6	NA	7.92	14.7	39.7	20.5	15
SILT	% passing	35.2	13.9	NA	7.41	15.9	35.9	19.2	13.2
CLAY (0.005 mm)	% passing	4.8	4.79	NA	1.89	3.93	5.81	2.91	3.09
CLAY (0.001 mm)	% passing	0	0	NA	0	0	0	0	0
TOC									
TOC	%	0.725	1.25	1.32	2.12	3.77	3.59	4.85	1.12

Table 3-8a
Focus Area 1 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-47	USR11-47	USR11-48	USR11-48	USR11-49	USR11-49	USR11-50	USR11-50
	Field Sample ID	USR11-47-006	USR11-47-006-FS	USR11-48-006	USR11-48-019	USR11-49-006	USR11-49-034	USR11-50-006	USR11-50-026
	Sample Date	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011	7/24/2011
	Depth Interval (in bss)	0- 6	0- 6	0- 6	6- 19	0- 6	6- 34	0- 6	6- 26
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	NA	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	100	NA	100	99.9	99.6	100	100	100
GRAVEL, MEDIUM	% passing	100	NA	97.1	94.1	99.4	100	99.6	100
GRAVEL, FINE	% passing	100	NA	96	91.7	99	100	99.2	100
SAND, VERY COARSE	% passing	97.8	NA	92.3	88.6	96	99.5	98.2	99.6
SAND, COARSE	% passing	95.4	NA	86	78	89.8	95.4	96.9	98.5
SAND, MEDIUM	% passing	90.3	NA	56.4	47.2	75.3	77.3	88	85.8
SAND, FINE	% passing	57.4	NA	11	8.11	57.1	33.2	67.5	37.6
SAND, VERY FINE	% passing	46.5	NA	7.26	5.92	55.2	25.8	63.1	27.9
SILT	% passing	47.6	NA	5.7	4.45	59.6	23.1	60.2	23.8
CLAY (0.005 mm)	% passing	4.03	NA	0.95	0	22.1	7.53	9.23	3.9
CLAY (0.001 mm)	% passing	0	NA	0	0	0	0	0	0
TOC									
TOC	%	2.62	1.81	0.099	0.353	6.68	0.346	1.83	0.235

Notes:
% - Percent
ID - Identification
in bss - inches below sediment surface
NA - Not Analyzed
TOC - Total Organic Carbon

Table 3-8b
Focus Area 2 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-15	USR11-15	USR11-16	USR11-17	USR11-17	USR11-17	USR11-18	USR11-19
	Field Sample ID	USR11-15-017	USR11-15-017-FS	USR11-16-019	USR11-17-006	USR11-17-006-FS	USR11-17-016	USR11-18-006	USR11-19-006
	Sample Date	7/21/2011	7/21/2011	7/21/2011	7/19/2011	7/19/2011	7/19/2011	7/19/2011	7/20/2011
	Depth Interval (in bss)	0- 17	0- 17	0- 19	0- 6	0- 6	6- 16	0- 6	0- 6
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	98.7	100	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	98.7	99.5	98.5	91.6	97.7	97.4	99.8	99.9
GRAVEL, MEDIUM	% passing	98.2	98.9	96.1	91.3	95.8	92.4	98.3	97.6
GRAVEL, FINE	% passing	95.2	97	89.3	90.2	94	87.8	93	96.5
SAND, VERY COARSE	% passing	79.7	86.6	75.1	88.2	91.9	59.7	41	93.6
SAND, COARSE	% passing	34.3	57.6	45.6	86.1	89.4	52.9	10.3	85
SAND, MEDIUM	% passing	12.6	46.1	30.7	79.7	83.7	47.5	7.24	59.4
SAND, FINE	% passing	6.12	37.9	23.5	66.9	71.5	38.9	6.57	35.5
SAND, VERY FINE	% passing	5.46	32	21.9	58.3	60.4	34.5	6.4	26.2
SILT	% passing	7.85	31.8	21.9	53.1	57.2	38.5	5.99	29
CLAY (0.005 mm)	% passing	5.79	3.08	7.64	6.54	8.67	14.9	2.13	0
CLAY (0.001 mm)	% passing	4.56	0	0	0	0	0.81	0	0
TOC									
TOC	%	1.88	1.49	3.94	3.69	3.67	12.3	0.371	2.74

Table 3-8b
Focus Area 2 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-20	USR11-20	USR11-21	USR11-22	USR11-22	USR11-22	USR11-23	USR11-24
	Field Sample ID	USR11-20-006	USR11-20-027	USR11-21-006	USR11-22-006	USR11-22-033	USR11-22-033-FS	USR11-23-016	USR11-24-006
	Sample Date	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/21/2011	7/21/2011
	Depth Interval (in bss)	0- 6	6- 27	0- 6	0- 6	6- 33	6- 33	0- 16	0- 6
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	100	100	99.2	100	100	100	80.1	100
GRAVEL, MEDIUM	% passing	99.2	99.4	95.7	99.9	100	99.9	60.6	99.6
GRAVEL, FINE	% passing	98.6	98.5	84.4	99.6	100	99.8	44.1	97.6
SAND, VERY COARSE	% passing	97.4	96.3	59.5	99.1	99	99.3	30.6	78.8
SAND, COARSE	% passing	95.7	94.7	31	98.2	98.1	98.2	23.6	39.6
SAND, MEDIUM	% passing	93.4	88	7.06	96.5	96.3	96.8	15.4	21.1
SAND, FINE	% passing	59.8	52.2	2.9	74.1	76.6	79.3	8.84	11
SAND, VERY FINE	% passing	46.6	39.7	2.44	62.1	63	67.8	7.49	10.1
SILT	% passing	49.2	37.9	2.6	59.6	62	64.6	6.87	10.4
CLAY (0.005 mm)	% passing	4.31	10.7	0	6.79	14.3	12.3	0	4.06
CLAY (0.001 mm)	% passing	0	0	0	0	0	0	0	0.27
TOC									
TOC	%	1.54	1.08	0.224	2.11	2.92	2.72	1.76	1.41

Table 3-8b
Focus Area 2 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-24	USR11-24	USR11-25	USR11-25	USR11-25	USR11-25	USR11-25	USR11-25
	Field Sample ID	USR11-24-024	USR11-24-048	USR11-25-006	USR11-25-006-DP	USR11-25-024	USR11-25-024-DP	USR11-25-048	USR11-25-048-DP
	Sample Date	7/21/2011	7/21/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011	7/20/2011
	Depth Interval (in bss)	6- 24	24- 48	0- 6	0- 6	6- 24	6- 24	24- 48	24- 48
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	NA	100	NA	100	NA
GRAVEL (9.5 mm)	% passing	99.1	99.9	97.8	NA	100	NA	100	NA
GRAVEL, MEDIUM	% passing	99.1	98.3	97.7	NA	100	NA	100	NA
GRAVEL, FINE	% passing	96.6	94	97.6	NA	100	NA	100	NA
SAND, VERY COARSE	% passing	70.9	61	96.6	NA	98.8	NA	99.5	NA
SAND, COARSE	% passing	33.8	23.1	95	NA	96.6	NA	97.7	NA
SAND, MEDIUM	% passing	5.67	12.5	93.1	NA	95.2	NA	95.6	NA
SAND, FINE	% passing	1.49	9.18	83.8	NA	81.7	NA	85.7	NA
SAND, VERY FINE	% passing	1.4	8.18	73.8	NA	72	NA	75.9	NA
SILT	% passing	1.84	8.92	67.7	NA	68.8	NA	71.9	NA
CLAY (0.005 mm)	% passing	0	4.43	14.6	NA	17.1	NA	21.2	NA
CLAY (0.001 mm)	% passing	0	1.74	0	NA	0	NA	0	NA
TOC									
TOC	%	0.291	0.729	2.77	2.54	2.85	2.55	2.98	2.12

Table 3-8b
Focus Area 2 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-26	USR11-26	USR11-27	USR11-27	USR11-28	USR11-29	USR11-29	USR11-30
	Field Sample ID	USR11-26-006	USR11-26-030	USR11-27-006	USR11-27-020	USR11-28-006	USR11-29-006	USR11-29-021	USR11-30-006
	Sample Date	7/20/2011	7/20/2011	7/21/2011	7/21/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
	Depth Interval (in bss)	0- 6	6- 30	0- 6	6- 20	0- 6	0- 6	6- 21	0- 6
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	100	100	100	100	100	99.6	100	100
GRAVEL, MEDIUM	% passing	100	100	100	100	98.5	99	99.5	99.7
GRAVEL, FINE	% passing	100	100	100	99.9	96.5	98.3	99.1	99.6
SAND, VERY COARSE	% passing	99.8	99.5	99	99.2	91.8	97.2	98.1	98.9
SAND, COARSE	% passing	99.1	98.2	97	96.3	76.8	91.1	76.9	97
SAND, MEDIUM	% passing	98.1	94.7	94.9	93.8	61.3	81.3	39.5	95.2
SAND, FINE	% passing	87.6	73.8	88.3	84.5	38.7	52.7	25.7	87.5
SAND, VERY FINE	% passing	74.4	61.6	82.6	77.3	29.2	37	17.5	78.7
SILT	% passing	67.8	60.7	78.7	76.8	26	39.5	19.7	68.8
CLAY (0.005 mm)	% passing	12.3	7.97	15.7	26.9	5.3	0	0.69	10.7
CLAY (0.001 mm)	% passing	0	0	0	0	0	0	0	0
TOC									
TOC	%	1.88	2.11	2.93	4.46	5.09	2.13	0.936	6.19

Table 3-8b
Focus Area 2 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-30	USR11-31	USR11-31	USR11-32	USR11-32	USR11-32	USR11-32	USR11-33
	Field Sample ID	USR11-30-021	USR11-31-006	USR11-31-026	USR11-32-006	USR11-32-006-DP	USR11-32-025	USR11-32-025-DP	USR11-33-006
	Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/22/2011
	Depth Interval (in bss)	6- 21	0- 6	6- 26	0- 6	0- 6	6- 25	6- 25	0- 6
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	100	100	100	100	99.9	100	100	95.6
GRAVEL, MEDIUM	% passing	95.6	100	100	99.8	99.4	100	100	95.3
GRAVEL, FINE	% passing	90.3	100	100	99.6	99.2	100	100	94.7
SAND, VERY COARSE	% passing	82.8	98.9	99.2	97.8	96.6	99.2	99.2	91.3
SAND, COARSE	% passing	76.3	98.3	99	97.2	96	98.4	98.3	77
SAND, MEDIUM	% passing	72	97.8	98.8	96.7	95.1	93.1	91.2	64.4
SAND, FINE	% passing	63.4	91.7	93.4	82.9	84.4	66.8	62.5	38.3
SAND, VERY FINE	% passing	54.8	78.8	82.6	69.4	70.3	53	48.1	28.4
SILT	% passing	49.5	68.7	75.7	65.6	66.2	54.6	50.6	25.4
CLAY (0.005 mm)	% passing	6.89	8	16.3	11.7	12.8	8.09	3.81	4.74
CLAY (0.001 mm)	% passing	0	0	0	0	0	0	0	0
TOC									
TOC	%	2.15	2.32	2.19	3.85	2.37	1.99	2.22	2.36

Table 3-8b
Focus Area 2 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-33	USR11-34	USR11-34	USR11-34	USR11-35	USR11-35	USR11-36	USR11-36
	Field Sample ID	USR11-33-022	USR11-34-006	USR11-34-024	USR11-34-040	USR11-35-006	USR11-35-026	USR11-36-006	USR11-36-032
	Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
	Depth Interval (in bss)	6- 22	0- 6	6- 24	24- 40	0- 6	6- 26	0- 6	6- 32
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	98.3	98.2	99.7	95.3	100	99.6	100	100
GRAVEL, MEDIUM	% passing	95.3	98	99.5	89.5	99.8	97.7	99.6	99.9
GRAVEL, FINE	% passing	94	97.5	99.1	81.5	99.1	95.6	99.1	99.8
SAND, VERY COARSE	% passing	91.9	96	98.1	70.5	85.2	77.6	97.4	96.2
SAND, COARSE	% passing	89.1	94.8	97.1	58.8	43.2	30.3	95.2	81.5
SAND, MEDIUM	% passing	79.5	92.9	91.4	49.6	17.9	11.6	90.8	66.3
SAND, FINE	% passing	31.3	75.2	42.9	33.4	12.4	5.68	62.6	40.2
SAND, VERY FINE	% passing	18.8	56.7	27.5	29.7	9.91	4.74	48.9	27
SILT	% passing	17.5	57	25.3	30.4	9.09	5.17	51.8	24.4
CLAY (0.005 mm)	% passing	2.2	5.16	2	0.4	2.5	0.76	7.81	7.1
CLAY (0.001 mm)	% passing	0	0	0	0	0	0	0	0
TOC									
TOC	%	1.32	2.45	1.48	23.7	1.43	2.08	3.63	1.59

Table 3-8b
Focus Area 2 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-37	USR11-38	USR11-38	USR11-39	USR11-39	USR11-40	USR11-40	USR11-41
	Field Sample ID	USR11-37-017	USR11-38-006	USR11-38-019	USR11-39-006	USR11-39-024	USR11-40-006	USR11-40-034	USR11-41-016
	Sample Date	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011	7/22/2011
	Depth Interval (in bss)	0- 17	0- 6	6- 19	0- 6	6- 24	0- 6	6- 34	0- 16
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	97.2	100	99.8	100	100	100	99.5	97.6
GRAVEL, MEDIUM	% passing	96.6	99.8	97.6	98.7	98.6	99.8	99	87.9
GRAVEL, FINE	% passing	95.2	99.4	95.1	96.8	95.2	99	98.2	76.9
SAND, VERY COARSE	% passing	93.7	97.3	91.2	93.7	91.4	96.8	95.7	66.6
SAND, COARSE	% passing	92.4	92.2	87.8	91	88.8	95.1	90.4	59.3
SAND, MEDIUM	% passing	89.2	76.3	74.4	88.4	85.1	89.8	82.9	54.7
SAND, FINE	% passing	60.5	51.8	47.3	77.6	76.7	77.5	69.5	48
SAND, VERY FINE	% passing	46.8	42.1	38.3	68	70.5	66.5	59	42.8
SILT	% passing	48.7	43.1	39.9	62.3	70.9	62.5	57	41.9
CLAY (0.005 mm)	% passing	3.43	0.4	11.7	6.89	19.5	13.8	9.48	8.06
CLAY (0.001 mm)	% passing	0	0	0	0	0	0	0	0
TOC									
TOC	%	1.99	2.81	5.43	4.85	9.24	0.02 U	3.96	17.7

Table 3-8b
Focus Area 2 Sediment Sample Analytical Results - Physical Properties
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

	Location ID	USR11-42	USR11-42	USR11-43	USR11-43	USR11-43	USR11-44	USR11-44	USR11-44
	Field Sample ID	USR11-42-006	USR11-42-033	USR11-43-006	USR11-43-024	USR11-43-053	USR11-44-006	USR11-44-024	USR11-44-037
	Sample Date	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011	7/23/2011
	Depth Interval (in bss)	0- 6	6- 33	0- 6	6- 24	24- 53	0- 6	6- 24	24- 37
Chemical	**Unit**								
Grain Size									
GRAVEL (19 mm)	% passing	100	100	100	100	100	100	100	100
GRAVEL (9.5 mm)	% passing	100	99.3	100	100	100	100	96.2	95.1
GRAVEL, MEDIUM	% passing	98.7	97.4	99.8	99.8	99.5	99.9	92.3	82.9
GRAVEL, FINE	% passing	97.3	92.9	99.5	99.4	99.2	99.8	88.4	66.6
SAND, VERY COARSE	% passing	95.8	90.6	98.3	94.9	96.9	99.3	82.9	45.1
SAND, COARSE	% passing	90.4	82.9	95.8	84.2	93	93.2	69	34.1
SAND, MEDIUM	% passing	74	54.2	87.1	73.3	88.1	52.2	38.8	27.3
SAND, FINE	% passing	56.1	34.7	52.7	57.1	70	14.1	18.8	18.3
SAND, VERY FINE	% passing	45.2	28.8	33.5	49.3	57.8	10.1	13.9	15.4
SILT	% passing	46.2	30	31.5	51.1	57.6	10.8	14.8	15.6
CLAY (0.005 mm)	% passing	10	3.72	6.1	17.3	17.6	5.22	7.19	2.75
CLAY (0.001 mm)	% passing	0	0	0	0	0	1.86	2.63	0
TOC									
TOC	%	4.24	4.36	2.48	9.84	5.99	0.304	5.39	30.8

Notes:
% - Percent
ID - Identification
in bss - inches below sediment surface
NA - Not Analyzed
TOC - Total Organic Carbon

Table 4-1
QHEI Scores for the Preliminary Habitat Assessment
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

ID	Substrate[1]	Instream Cover[1]	Channel Morphology[1]	Bank Erosion/ Riparian Zone[2]	Pool/Glide Quality[3]	Riffle/Run Quality[4]	Gradient[5]	QHEI Score[6]
USR11-03	17	14	17	9	9	8	4	**78**
USR11-08	20	15	17	9	8	0	4	**73**
USR11-12	11	15	17	9	8	0	4	**64**
USR11-25	20	11	17	8.5	8	0	4	**68.5**
USR11-29	12	7	15	7	8	0	4	**53**
USR11-34	7	5	15	5.5	9	0	4	**45.5**
USR11-39	18	15	15	9	9	0	4	**70**
USR11-44	18	9	18	8	8	0	4	**65**
USR11-48	11	8	17	6.5	9	8	4	**63.5**
USR11-50	19	7	15	7	9	0	4	**61**
Average	**15.3**	**10.6**	**16.3**	**7.9**	**8.5**	**1.6**	**4**	**64.2**

Notes:

[1]Maximum Score of 20

[2]Maximum Score of 10

[3]Maximum Score of 12

[4]Maximum Score of 8

[5]Maximum Score of 4

[6]Maximum Score of 100

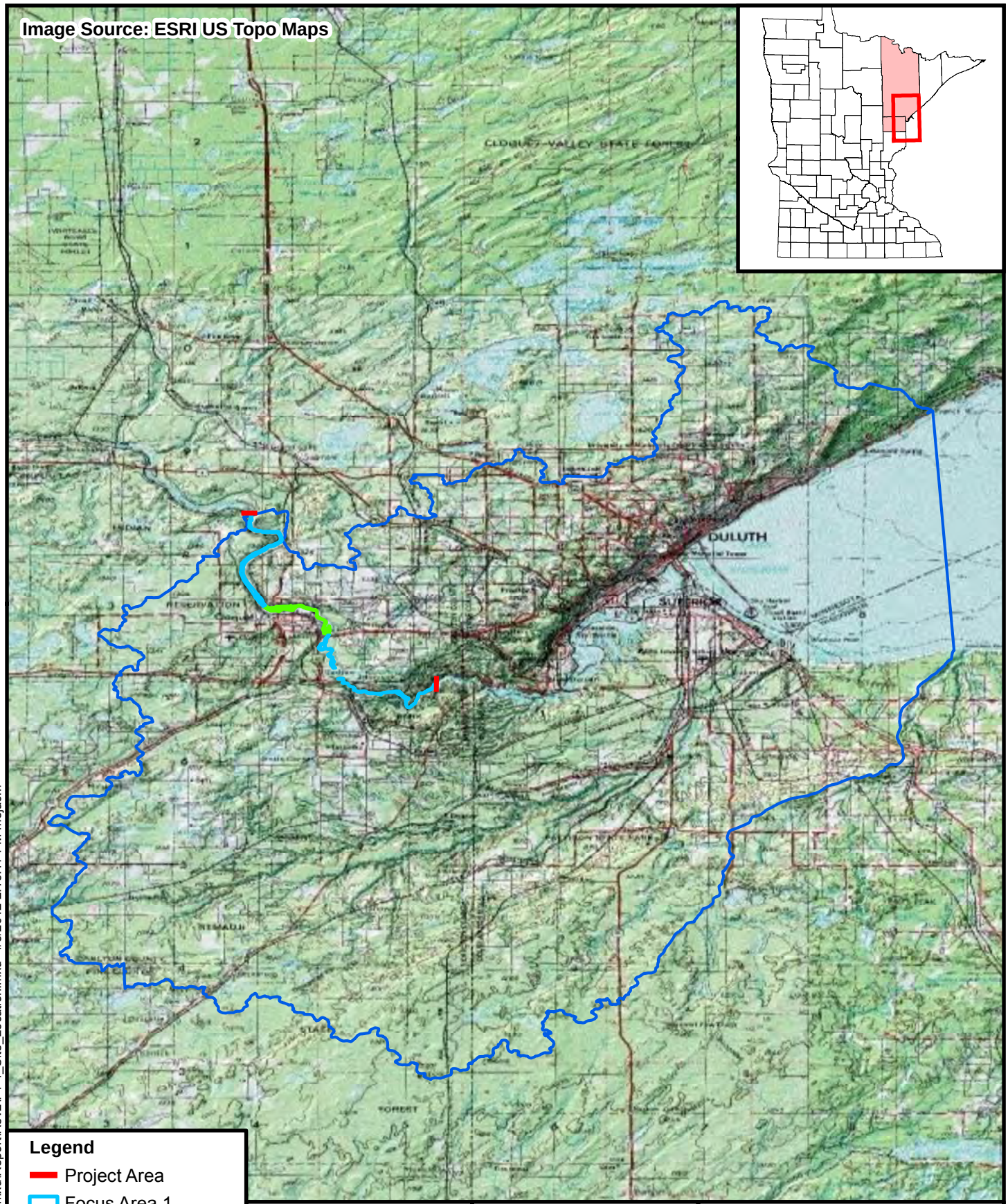
ID - Identification
QHEI - Qualitative Habitat Evaluation Index

Table 4-2
Water Quality Measurements for the Preliminary Habitat Assessment
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

ID	Temperature (°C)	DO (mg/L)	Conductivity (µS/cm)	pH (S.U.)	ORP (mV)	Secchi Depth (cm)
USR11-03	13.8	10.9	209	7.8	136.8	120
USR11-08	14.8	8.2	204	7.5	199	120
USR11-12	14.2	9.9	202	7.4	159.4	120
USR11-25	13.5	9.4	204	7.6	251	110
USR11-29	13.8	9.9	205	7.5	134.2	110
USR11-34	12.1	12.1	282	7.3	127	120
USR11-39	12.2	11.9	280	7.1	127.8	120
USR11-44	10.7	12.5	220	7.5	152.4	100
USR11-48	9.8	15.1	272	8	81.2	110
USR11-50	11.2	13.7	275	7.7	107.4	100
Average	**12.6**	**11.4**	**235**	**7.5**	**147.6**	**113**

Notes:
°C - Degrees Celsius
cm - Centimeter
DO - dissolved oxygen
µS/cm - Microsiemen per centimeter
mg/L - Milligram per Liter
mV - Millivolt
ORP - oxidation reduction potential
S.U. - Standard Unit

FIGURES



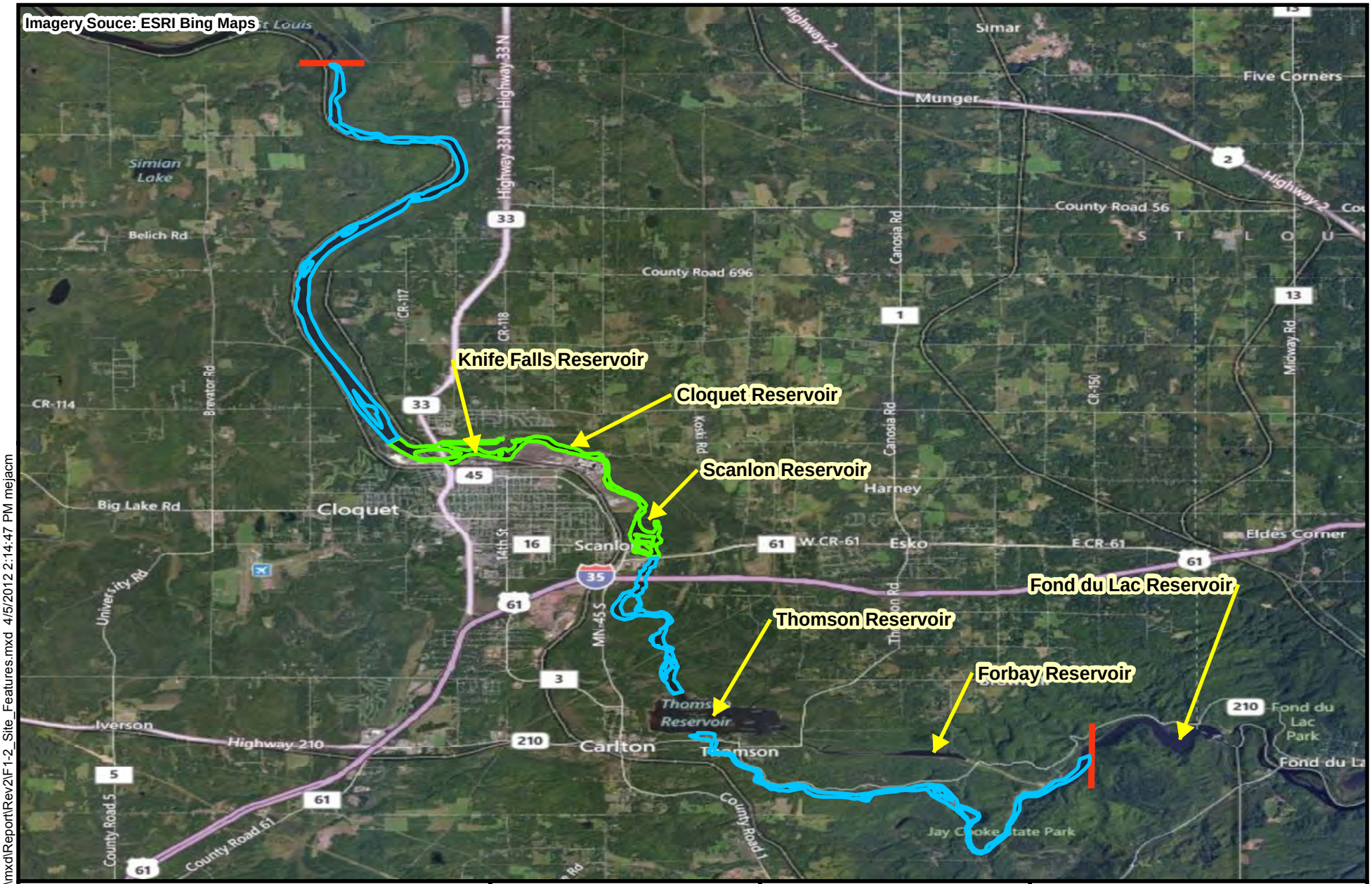
Prepared for:
U.S. EPA REGION V

Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
DCN: 1399-2A-ARXY

Prepared By:
WESTON SOLUTIONS, INC
20 N. Wacker Drive
Suite 1210
Chicago, Illinois 60606

Figure 1-1
Site Location Map
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F1-1_Site_Location.mxd 4/5/2012 2:13:17 PM mejacm



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TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Figure 1-2
Site Features Map
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F1-2_Site_Features.mxd 4/5/2012 2:14:47 PM mejacm

Imagery Source: ESRI Bing Maps

Legend

- Focus Area 1 Locations
- Focus Area 2 Locations
- Preliminary Habitat Assessment Location

0 6,500 Feet

N

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DCN:1399-2A-ARXY

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Figure 2-1
Sampling Location Map
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F2-1_Sample_Locations.mxd 4/5/2012 2:38:23 PM mejacm

Imagery Source: ESRI Bing Maps

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

0 6,500 Feet

N

Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Figure 3-1
Sampling Results Exceeding the
St. Louis River AOC Sediment Quality Targets
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-1_All_Exceeds.mxd 4/10/2012 9:12:08 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-19 07/20/11

Depth	Parameter	Result	Units
0-6	4-METHYLPHENOL	60 J	ug/kg
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	37 J	ug/kg
0-6	DI-N-BUTYLPHTHALATE	84 J	ug/kg
0-6	DIMETHYL PHTHALATE	98 J	ug/kg
0-6	PHENOL	62 J	ug/kg

USR11-25 07/20/11

Depth	Parameter	Result	Units
0-6	DIMETHYL PHTHALATE	77 J	ug/kg
24-48	DI-N-BUTYLPHTHALATE	220	ug/kg
24-48	DI-N-BUTYLPHTHALATE	46 J	ug/kg

USR11-28 07/23/11

Depth	Parameter	Result	Units
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	62 J	ug/kg

USR11-30 07/23/11

Depth	Parameter	Result	Units
6-21	4-METHYLPHENOL	110 J	ug/kg

USR11-15 07/21/11

Depth	Parameter	Result	Units
0-17	BIS(2-ETHYLHEXYL)PHTHALATE	500 J	ug/kg
0-17	BIS(2-ETHYLHEXYL)PHTHALATE	390 J	ug/kg

USR11-22 07/20/11

Depth	Parameter	Result	Units
6-33	4-METHYLPHENOL	86 J	ug/kg
6-33	BIS(2-ETHYLHEXYL)PHTHALATE	47 J	ug/kg

USR11-31 07/23/11

Depth	Parameter	Result	Units
6-26	4-METHYLPHENOL	31 J	ug/kg
6-26	BIS(2-ETHYLHEXYL)PHTHALATE	80 J	ug/kg

USR11-32 07/23/11

Depth	Parameter	Result	Units
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	97 J	ug/kg
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	120 J	ug/kg
6-25	4-METHYLPHENOL	60 J	ug/kg
6-25	4-METHYLPHENOL	140 J	ug/kg
6-25	BIS(2-ETHYLHEXYL)PHTHALATE	95 J	ug/kg
6-25	BIS(2-ETHYLHEXYL)PHTHALATE	84 J	ug/kg

USR11-36 07/22/11

Depth	Parameter	Result	Units
6-32	4-METHYLPHENOL	56 J	ug/kg

USR11-29 07/23/11

Depth	Parameter	Result	Units
0-6	4-METHYLPHENOL	55 J	ug/kg
6-21	4-METHYLPHENOL	62 J	ug/kg

USR11-37 07/22/11

Depth	Parameter	Result	Units
0-17	DI-N-BUTYLPHTHALATE	29 J	ug/kg

USR11-34 07/22/11

Depth	Parameter	Result	Units
0-6	DI-N-BUTYLPHTHALATE	34 J	ug/kg
24-40	2-METHYLPHENOL	170 J	ug/kg
24-40	2,4,6-TRICHLOROPHENOL	89 J	ug/kg
24-40	4-METHYLPHENOL	1500	ug/kg
24-40	PHENOL	350	ug/kg

USR11-39 07/22/11

Depth	Parameter	Result	Units
0-6	4-METHYLPHENOL	140 J	ug/kg
0-6	BENZALDEHYDE	300 J	ug/kg
6-24	4-METHYLPHENOL	510 J	ug/kg
6-24	BENZALDEHYDE	45 J	ug/kg
6-24	PHENOL	73 J	ug/kg

USR11-20 07/20/11

Depth	Parameter	Result	Units
0-6	CARBAZOLE	30 J	ug/kg

USR11-35 07/22/11

Depth	Parameter	Result	Units
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	65 J	ug/kg
6-26	BENZALDEHYDE	78 J	ug/kg
6-26	BIS(2-ETHYLHEXYL)PHTHALATE	74 J	ug/kg

USR11-41 07/22/11

Depth	Parameter	Result	Units
0-16	4-METHYLPHENOL	910 J	ug/kg
0-16	BENZALDEHYDE	84 J	ug/kg
0-16	PHENOL	120 J	ug/kg

USR11-16 07/21/11

Depth	Parameter	Result	Units
0-19	4-METHYLPHENOL	96 J	ug/kg
0-19	BIS(2-ETHYLHEXYL)PHTHALATE	130 J	ug/kg
0-19	DI-N-BUTYLPHTHALATE	340 J	ug/kg
0-19	PHENOL	56 J	ug/kg

USR11-27 07/21/11

Depth	Parameter	Result	Units
0-6	DIMETHYL PHTHALATE	64 J	ug/kg
6-20	4-METHYLPHENOL	130 J	ug/kg
6-20	BIS(2-ETHYLHEXYL)PHTHALATE	84 J	ug/kg

USR11-43 07/23/11

Depth	Parameter	Result	Units
0-6	4-METHYLPHENOL	270	ug/kg
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	82 J	ug/kg
6-24	2-METHYLPHENOL	88 J	ug/kg
6-24	4-METHYLPHENOL	3000	ug/kg
6-24	BIS(2-ETHYLHEXYL)PHTHALATE	82 J	ug/kg
6-24	PENTACHLOROPHENOL	55 J	ug/kg
6-24	PHENOL	180 J	ug/kg
24-53	4-METHYLPHENOL	1100	ug/kg
24-53	BIS(2-ETHYLHEXYL)PHTHALATE	110 J	ug/kg
24-53	PHENOL	50 J	ug/kg

USR11-26 07/20/11

Depth	Parameter	Result	Units
0-6	4-METHYLPHENOL	50 J	ug/kg
6-30	DI-N-BUTYLPHTHALATE	42 J	ug/kg

USR11-17 07/19/11

Depth	Parameter	Result	Units
0-6	4-METHYLPHENOL	92 J	ug/kg
0-6	DIMETHYL PHTHALATE	61 J	ug/kg
6-16	4-METHYLPHENOL	63 J	ug/kg
6-16	DI-N-BUTYLPHTHALATE	380	ug/kg
6-16	PHENOL	51 J	ug/kg

USR11-24 07/21/11

Depth	Parameter	Result	Units
0-6	ACETOPHENONE	31 J	ug/kg
0-6	BENZALDEHYDE	31 J	ug/kg
0-6	BENZYL BUTYL PHTHALATE	29 J	ug/kg
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	160 J	ug/kg
0-6	CARBAZOLE	31 J	ug/kg
6-24	BIS(2-ETHYLHEXYL)PHTHALATE	310 J	ug/kg
6-24	CARBAZOLE	32 J	ug/kg
24-48	BIS(2-ETHYLHEXYL)PHTHALATE	100 J	ug/kg
24-48	CARBAZOLE	47 J	ug/kg

USR11-38 07/22/11

Depth	Parameter	Result	Units
0-6	4-METHYLPHENOL	62 J	ug/kg
6-19	4-METHYLPHENOL	650 J	ug/kg
6-19	PHENOL	60 J	ug/kg

USR11-40 07/22/11

Depth	Parameter	Result	Units
6-34	4-METHYLPHENOL	93 J	ug/kg

USR11-23 07/21/11

Depth	Parameter	Result	Units
0-16	BENZYL BUTYL PHTHALATE	40 J	ug/kg
0-16	BIS(2-ETHYLHEXYL)PHTHALATE	1400 J	ug/kg
0-16	CARBAZOLE	260 J	ug/kg
0-16	DI-N-BUTYLPHTHALATE	23 J	ug/kg
0-16	DIBENZOFURAN	70 J	ug/kg

USR11-44 07/23/11

Depth	Parameter	Result	Units
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	57 J	ug/kg
6-24	4-METHYLPHENOL	800	ug/kg
6-24	BIS(2-ETHYLHEXYL)PHTHALATE	54 J	ug/kg
6-24	PHENOL	62 J	ug/kg
24-37	4-METHYLPHENOL	450	ug/kg
24-37	BENZALDEHYDE	130 J	ug/kg
24-37	PHENOL	140 J	ug/kg

USR11-42 07/23/11

Depth	Parameter	Result	Units
0-6	4-METHYLPHENOL	310	ug/kg
0-6	BENZALDEHYDE	35 J	ug/kg
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	110 J	ug/kg
6-33	4-METHYLPHENOL	120 J	ug/kg
6-33	BIS(2-ETHYLHEXYL)PHTHALATE	72 J	ug/kg

Legend

- At Least One Detection
- No Detections

0 2,000 Feet

N

Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Chicago, Illinois 60606

Figure 3-10
Detected Sampling Results for Focus Area 2 – TCL SVOCs
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-10_Area2_Detects_SVOCs.mxd 4/5/2012 6:02:01 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-23 07/21/11

Depth	Parameter	Result	Units	[Criteria]
0-16	COPPER	91.9	mg/kg	[1]
0-16	NICKEL	29.9	mg/kg	[1]
0-16	ZINC	295	mg/kg	[1]

USR11-27 07/21/11

Depth	Parameter	Result	Units	[Criteria]
0-6	NICKEL	26.1	mg/kg	[1]
6-20	COPPER	53.8	mg/kg	[1]
6-20	LEAD	43.4	mg/kg	[1]
6-20	MERCURY	1	mg/kg	[1]
6-20	NICKEL	28	mg/kg	[1]
6-20	ZINC	585	mg/kg	[1,2]

USR11-32 07/23/11

Depth	Parameter	Result	Units	[Criteria]
6-25	MERCURY	0.31 J-	mg/kg	[1]

USR11-34 07/22/11

Depth	Parameter	Result	Units	[Criteria]
24-40	CADMIUM	2.1 J-	mg/kg	[1]
24-40	COPPER	36.8 J-	mg/kg	[1]
24-40	LEAD	51.8 J-	mg/kg	[1]
24-40	MERCURY	0.39 J-	mg/kg	[1]
24-40	ZINC	207 J-	mg/kg	[1]

USR11-36 07/22/11

Depth	Parameter	Result	Units	[Criteria]
6-32	MERCURY	0.2 J-	mg/kg	[1]

USR11-41 07/22/11

Depth	Parameter	Result	Units	[Criteria]
0-16	COPPER	43.7 J-	mg/kg	[1]
0-16	MERCURY	1.4 J-	mg/kg	[1,2]
0-16	ZINC	134 J-	mg/kg	[1]

USR11-17 07/19/11

Depth	Parameter	Result	Units	[Criteria]
6-16	NICKEL	23.5	mg/kg	[1]

USR11-38 07/22/11

Depth	Parameter	Result	Units	[Criteria]
0-6	COPPER	63 J-	mg/kg	[1]
6-19	MERCURY	0.2 J-	mg/kg	[1]

USR11-39 07/22/11

Depth	Parameter	Result	Units	[Criteria]
0-6	MERCURY	0.19 J-	mg/kg	[1]
6-24	MERCURY	1.1 J-	mg/kg	[1]
6-24	NICKEL	25.8 J-	mg/kg	[1]
6-24	ZINC	162 J-	mg/kg	[1]

USR11-43 07/23/11

Depth	Parameter	Result	Units	[Criteria]
6-24	MERCURY	0.41 J-	mg/kg	[1]

USR11-24 07/21/11

Depth	Parameter	Result	Units	[Criteria]
0-6	COPPER	44.8 J	mg/kg	[1]

USR11-40 07/22/11

Depth	Parameter	Result	Units	[Criteria]
6-34	MERCURY	0.45 J-	mg/kg	[1]
6-34	ZINC	122 J-	mg/kg	[1]

USR11-42 07/23/11

Depth	Parameter	Result	Units	[Criteria]
6-33	COPPER	54.6 J-	mg/kg	[1]

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-11_Area2_Excds_Metals.mxd 4/5/2012 6:07:35 PM mejacm

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

Number in Criteria Column Reflects the Following:
1 - Result Exceeds St. Louis River AOC SQT Level I Criteria
2 - Result Exceeds St. Louis River AOC SQT Level II Criteria
All Level II Exceeds are **Bold and Red**

0 2,000 Feet

N

Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Chicago, Illinois 60606

Figure 3-11
Sampling Results Exceeding the St. Louis River AOC
Sediment Quality Targets for Focus Area 2 – TAL Metals
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

Imagery Source: ESRI Bing Maps

USR11-27 07/21/11

Depth	Parameter	Result	Units	[Criteria]
6-20	TOTAL PCB	120	ug/kg	[60]

USR11-34 07/22/11

Depth	Parameter	Result	Units	[Criteria]
24-40	TOTAL PCB	340	ug/kg	[60]

USR11-23 07/21/11

Depth	Parameter	Result	Units	[Criteria]
0-16	TOTAL PCB	580	ug/kg	[60]

USR11-36 07/22/11

Depth	Parameter	Result	Units	[Criteria]
6-32	TOTAL PCB	130	ug/kg	[60]

USR11-40 07/22/11

Depth	Parameter	Result	Units	[Criteria]
6-34	TOTAL PCB	340	ug/kg	[60]

USR11-43 07/23/11

Depth	Parameter	Result	Units	[Criteria]
6-24	TOTAL PCB	200	ug/kg	[60]

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-12_Area2_Excds_PCBs.mxd 4/5/2012 6:11:51 PM mejacm

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

0 2,000 Feet

N

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Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Figure 3-12
Sampling Results Exceeding the St. Louis River AOC
Sediment Quality Targets for Focus Area 2 – Total PCBs
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

Imagery Source: ESRI Bing Maps

USR11-23 07/21/11

Depth	Parameter	Result	Units	[Criteria]
0-16	4,4'-DDT	4.8 J	ug/Kg	[1]

USR11-44 07/23/11

Depth	Parameter	Result		Units	[Criteria]
0-6	4,4'-DDD	72	J	ug/Kg	[1,2]
0-6	4,4'-DDE	64		ug/Kg	[1,2]
0-6	4,4'-DDT	150		ug/Kg	[1,2]
0-6	ENDRIN	10	NJ	ug/Kg	[1]
0-6	HEPTACHLOR EPOXIDE	61	NJ	ug/Kg	[1,2]

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

Number in Criteria Column Reflects the Following:
1 - Result Exceeds St. Louis River AOC SQT Level I Criteria
2 - Result Exceeds St. Louis River AOC SQT Level II Criteria
All Level II Exceeds are **Bold and Red**

N

0 2,000 Feet

Prepared For:
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Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
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Figure 3-13
Sampling Results Exceeding the St. Louis River AOC
Sediment Quality Targets for Focus Area 2 – TCL Pesticides
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-13_Area2_Excds_Pest.mxd 4/5/2012 6:13:46 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-16 07/21/11

Depth	Parameter	Result	Units
0-19	TPH DRO	130	mg/kg

USR11-22 07/20/11

Depth	Parameter	Result	Units
6-33	TPH DRO	120	mg/kg

USR11-34 07/22/11

Depth	Parameter	Result	Units
24-40	TPH DRO	5100	mg/kg

USR11-37 07/22/11

Depth	Parameter	Result	Units
0-17	TPH DRO	120	mg/kg

USR11-17 07/19/11

Depth	Parameter	Result	Units
6-16	TPH DRO	260	mg/kg

USR11-27 07/21/11

Depth	Parameter	Result	Units
0-6	TPH DRO	130	mg/kg
6-20	TPH DRO	1400	mg/kg

USR11-41 07/22/11

Depth	Parameter	Result	Units
0-16	TPH DRO	1900	mg/kg

USR11-38 07/22/11

Depth	Parameter	Result	Units
6-19	TPH DRO	200	mg/kg

USR11-42 07/23/11

Depth	Parameter	Result	Units
0-6	TPH DRO	280	mg/kg
6-33	TPH DRO	250	mg/kg

USR11-39 07/22/11

Depth	Parameter	Result	Units
0-6	TPH DRO	180	mg/kg
6-24	TPH DRO	430	mg/kg

USR11-43 07/23/11

Depth	Parameter	Result	Units
6-24	TPH DRO	300	mg/kg

USR11-44 07/23/11

Depth	Parameter	Result	Units
6-24	TPH DRO	320	mg/kg
24-37	TPH DRO	2300	mg/kg

Legend

TPH DRO (mg/kg)

- Non-Detect
- 0 - 100
- 100 - 500
- > 500

0 2,000 Feet

N

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US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Figure 3-14
Sampling Results for Focus Area 2 – TPH DRO
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-14_Area2_TPH-DRO.mxd 4/5/2012 6:28:28 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-15 07/21/11

Depth	Parameter	Result	Units
0-17	TPH ORO	120 J	mg/kg

USR11-16 07/21/11

Depth	Parameter	Result	Units
0-19	TPH ORO	330	mg/kg

USR11-17 07/19/11

Depth	Parameter	Result	Units
0-6	TPH ORO	280	mg/kg
0-6	TPH ORO	270	mg/kg
6-16	TPH ORO	630	mg/kg

USR11-19 07/20/11

Depth	Parameter	Result	Units
0-6	TPH ORO	240	mg/kg

USR11-20 07/20/11

Depth	Parameter	Result	Units
0-6	TPH ORO	260	mg/kg
6-27	TPH ORO	130	mg/kg

USR11-22 07/20/11

Depth	Parameter	Result	Units
0-6	TPH ORO	300	mg/kg
6-33	TPH ORO	250	mg/kg
6-33	TPH ORO	250	mg/kg

USR11-23 07/21/11

Depth	Parameter	Result	Units
0-16	TPH ORO	1200 J	mg/kg

USR11-24 07/21/11

Depth	Parameter	Result	Units
0-6	TPH ORO	800 D	mg/kg
6-24	TPH ORO	420 D	mg/kg
24-48	TPH ORO	460 D	mg/kg

USR11-25 07/20/11

Depth	Parameter	Result	Units
0-6	TPH ORO	350	mg/kg
0-6	TPH ORO	380	mg/kg
6-24	TPH ORO	290	mg/kg
6-24	TPH ORO	270	mg/kg
24-48	TPH ORO	290	mg/kg
24-48	TPH ORO	270	mg/kg

USR11-26 07/20/11

Depth	Parameter	Result	Units
0-6	TPH ORO	240	mg/kg
6-30	TPH ORO	520	mg/kg

USR11-27 07/21/11

Depth	Parameter	Result	Units
0-6	TPH ORO	760	mg/kg
6-20	TPH ORO	3800 D	mg/kg

USR11-28 07/23/11

Depth	Parameter	Result	Units
0-6	TPH ORO	180	mg/kg

USR11-29 07/23/11

Depth	Parameter	Result	Units
0-6	TPH ORO	330	mg/kg
6-21	TPH ORO	290	mg/kg

USR11-30 07/23/11

Depth	Parameter	Result	Units
0-6	TPH ORO	480	mg/kg
6-21	TPH ORO	500	mg/kg

USR11-31 07/23/11

Depth	Parameter	Result	Units
0-6	TPH ORO	310	mg/kg
6-26	TPH ORO	340	mg/kg

USR11-32 07/23/11

Depth	Parameter	Result	Units
0-6	TPH ORO	350	mg/kg
0-6	TPH ORO	340	mg/kg
6-25	TPH ORO	410	mg/kg
6-25	TPH ORO	520	mg/kg

USR11-34 07/22/11

Depth	Parameter	Result	Units
0-6	TPH ORO	300	mg/kg
6-24	TPH ORO	170	mg/kg
24-40	TPH ORO	9100 D	mg/kg

USR11-33 07/22/11

Depth	Parameter	Result	Units
0-6	TPH ORO	130	mg/kg
6-22	TPH ORO	200	mg/kg

USR11-35 07/22/11

Depth	Parameter	Result	Units
6-26	TPH ORO	120	mg/kg

USR11-37 07/22/11

Depth	Parameter	Result	Units
0-17	TPH ORO	340	mg/kg

USR11-38 07/22/11

Depth	Parameter	Result	Units
0-6	TPH ORO	330	mg/kg
6-19	TPH ORO	800	mg/kg

USR11-39 07/22/11

Depth	Parameter	Result	Units
0-6	TPH ORO	620	mg/kg
6-24	TPH ORO	1700	mg/kg

USR11-40 07/22/11

Depth	Parameter	Result	Units
0-6	TPH ORO	340	mg/kg
6-34	TPH ORO	470	mg/kg

USR11-42 07/23/11

Depth	Parameter	Result	Units
0-6	TPH ORO	530	mg/kg
6-33	TPH ORO	580	mg/kg

USR11-36 07/22/11

Depth	Parameter	Result	Units
0-6	TPH ORO	240	mg/kg

USR11-41 07/22/11

Depth	Parameter	Result	Units
0-16	TPH ORO	6100 D	mg/kg

USR11-43 07/23/11

Depth	Parameter	Result	Units
0-6	TPH ORO	230	mg/kg
6-24	TPH ORO	900	mg/kg
24-53	TPH ORO	150	mg/kg

USR11-44 07/23/11

Depth	Parameter	Result	Units
24-37	TPH ORO	2000	mg/kg

Legend

TPH ORO (mg/kg)

- Non-Detect
- 0 - 100
- 100 - 500
- > 500

0 2,000 Feet

N

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TDD: S05-0008-1103-010
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Prepared By:
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Chicago, Illinois 60606

Figure 3-15
Sampling Results for Focus Area 2 – TPH ORO
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-15_Area2_TPH-ORO.mxd 4/5/2012 6:27:34 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-29 07/23/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	1.00504	ng/kg	[1]
6-21	Dioxin TEQ	1.51793	ng/kg	[1]

USR11-30 07/23/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	1.38181	ng/kg	[1]
6-21	Dioxin TEQ	1.1699	ng/kg	[1]

USR11-27 07/21/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	0.9408	ng/kg	[1]

USR11-31 07/23/11

Depth	Parameter	Result	Units	[Criteria]
6-26	Dioxin TEQ	10.5814	ng/kg	[1]

USR11-32 07/23/11

Depth	Parameter	Result	Units	[Criteria]
6-25	Dioxin TEQ	118.262	ng/kg	[1,2]
6-25	Dioxin TEQ	3.8206	ng/kg	[1]

USR11-34 07/22/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	1.85383	ng/kg	[1]
6-24	Dioxin TEQ	1.39861	ng/kg	[1]
24-40	Dioxin TEQ	12.2561	ng/kg	[1]

USR11-23 07/21/11

Depth	Parameter	Result	Units	[Criteria]
6-16	Dioxin TEQ	27.507	ng/kg	[1,2]

USR11-35 07/22/11

Depth	Parameter	Result	Units	[Criteria]
6-26	Dioxin TEQ	1.95126	ng/kg	[1]

USR11-39 07/22/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	8.8244	ng/kg	[1]
6-24	Dioxin TEQ	18.7808	ng/kg	[1]

USR11-36 07/22/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	1.78659	ng/kg	[1]
6-32	Dioxin TEQ	2.22605	ng/kg	[1]

USR11-41 07/22/11

Depth	Parameter	Result	Units	[Criteria]
0-16	Dioxin TEQ	135.413	ng/kg	[1,2]

USR11-38 07/22/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	1.34126	ng/kg	[1]
6-19	Dioxin TEQ	7.52485	ng/kg	[1]

USR11-42 07/23/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	1.10183	ng/kg	[1]
6-33	Dioxin TEQ	5.6492	ng/kg	[1]

USR11-40 07/22/11

Depth	Parameter	Result	Units	[Criteria]
6-34	Dioxin TEQ	1.5571	ng/kg	[1]

USR11-43 07/23/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	4.17413	ng/kg	[1]
6-24	Dioxin TEQ	5.1215	ng/kg	[1]
24-53	Dioxin TEQ	2.43322	ng/kg	[1]

USR11-44 07/23/11

Depth	Parameter	Result	Units	[Criteria]
6-24	Dioxin TEQ	75.2055	ng/kg	[1,2]
24-37	Dioxin TEQ	0.960925	ng/kg	[1]

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

Number in Criteria Column Reflects the Following:
1 - Result Exceeds St. Louis River AOC SQT Level I Criteria
2 - Result Exceeds St. Louis River AOC SQT Level II Criteria
All Level II Exceeds are **Bold and Red**

N

0 2,000 Feet

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Contract No.: EP-S5-06-04
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DCN:1399-2A-ARXY

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Chicago, Illinois 60606

Figure 3-16
Sampling Results Exceeding the St. Louis River AOC
Sediment Quality Targets for Focus Area 2 –
Dioxin Equivalent Concentration Results
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-16_Area2_Excds_DF.mxd 4/9/2012 12:42:21 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-03 07/24/11

Depth	Parameter	Result	Units
0-17	BIS(2-ETHYLHEXYL)PHTHALATE	270	ug/kg

USR11-06 07/24/11

Depth	Parameter	Result	Units
6-22	DI-N-BUTYLPHTHALATE	25 J	ug/kg

USR11-04 07/24/11

Depth	Parameter	Result	Units
0-16	BIS(2-ETHYLHEXYL)PHTHALATE	120 J	ug/kg

USR11-05 07/24/11

Depth	Parameter	Result	Units
0-7	CAPROLACTAM	32 J	ug/kg

USR11-07 07/24/11

Depth	Parameter	Result	Units
0-17	DI-N-BUTYLPHTHALATE	600	ug/kg

USR11-09 07/21/11

Depth	Parameter	Result	Units
6-24	BIS(2-ETHYLHEXYL)PHTHALATE	59 J	ug/kg
24-36	BIS(2-ETHYLHEXYL)PHTHALATE	32 J	ug/kg
24-36	DI-N-BUTYLPHTHALATE	31 J	ug/kg

USR11-11 07/21/11

Depth	Parameter	Result	Units
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	370 J	ug/kg
6-26	DI-N-BUTYLPHTHALATE	47 J	ug/kg

USR11-12 07/21/11

Depth	Parameter	Result	Units
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	260 J	ug/kg
6-24	BENZYL BUTYL PHTHALATE	47 J	ug/kg
6-24	BIS(2-ETHYLHEXYL)PHTHALATE	90 J	ug/kg
6-24	CARBAZOLE	63 J	ug/kg
6-24	DI-N-BUTYLPHTHALATE	51 J	ug/kg
6-24	DI-N-OCTYLPHTHALATE	49 J	ug/kg
6-24	DIETHYL PHTHALATE	40 J	ug/kg
24-40	CARBAZOLE	31 J	ug/kg

USR11-13 07/21/11

Depth	Parameter	Result	Units
6-18	BIS(2-ETHYLHEXYL)PHTHALATE	120 J	ug/kg
6-18	DI-N-BUTYLPHTHALATE	1200 J	ug/kg

USR11-14 07/21/11

Depth	Parameter	Result	Units
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	250 J	ug/kg
0-6	DI-N-BUTYLPHTHALATE	35 J	ug/kg
6-22	ACETOPHENONE	37 J	ug/kg
6-22	BIS(2-ETHYLHEXYL)PHTHALATE	50 J	ug/kg

USR11-45 07/23/11

Depth	Parameter	Result	Units
0-6	BENZALDEHYDE	86 J	ug/kg
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	76 J	ug/kg
0-6	BIS(2-ETHYLHEXYL)PHTHALATE	69 J	ug/kg
6-24	4-METHYLPHENOL	220	ug/kg
6-24	BENZALDEHYDE	42 J	ug/kg
6-24	BIS(2-ETHYLHEXYL)PHTHALATE	72 J	ug/kg
24-39	2-METHYLPHENOL	49 J	ug/kg
24-39	4-METHYLPHENOL	1700	ug/kg
24-39	BENZALDEHYDE	77 J	ug/kg
24-39	BENZYL BUTYL PHTHALATE	190	ug/kg
24-39	BIS(2-ETHYLHEXYL)PHTHALATE	71 J	ug/kg
24-39	PHENOL	130 J	ug/kg

USR11-46 07/23/11

Depth	Parameter	Result	Units
0-6	4-METHYLPHENOL	180	ug/kg
0-6	PHENOL	140 J	ug/kg
6-24	4-METHYLPHENOL	580	ug/kg
6-24	BENZALDEHYDE	33 J	ug/kg
6-24	PHENOL	88 J	ug/kg

Legend

- At Least One Detection
- No Detections

0 6,500 Feet

N

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DCN:1399-2A-ARXY

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Chicago, Illinois 60606

Figure 3-2
Detected Sampling Results for Focus Area 1 – TCL SVOCs
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-2_Area1_Detects_SVOCs.mxd 4/5/2012 3:29:31 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-02 07/24/11

Depth	Parameter	Result	Units	[Criteria]
6-22	NICKEL	24.8 J-	mg/kg	[23]

USR11-12 07/21/11

Depth	Parameter	Result	Units	[Criteria]
24-40	NICKEL	25.9	mg/kg	[23]

USR11-13 07/21/11

Depth	Parameter	Result	Units	[Criteria]
0-6	NICKEL	23.3 J-	mg/kg	[23]

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

0 6,500 Feet

N

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Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Figure 3-3
Sampling Results Exceeding the St. Louis River AOC
Sediment Quality Targets for Focus Area 1 – TAL Metals
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-3_Area1_Excds_Metals.mxd 4/5/2012 4:03:25 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-45 07/23/11

Depth	Parameter	Result	Units	[Criteria]
24-39	TOTAL PCB	280	ug/kg	[60]

USR11-46 07/23/11

Depth	Parameter	Result	Units	[Criteria]
0-6	TOTAL PCB	70	ug/kg	[60]

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

0 6,500 Feet

N

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Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Figure 3-4
Sampling Results Exceeding the St. Louis River AOC
Sediment Quality Targets for Focus Area 1 – Total PCBs
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-4_Area1_Exceds_PCBs.mxd 4/5/2012 4:07:59 PM mejacm

Imagery Source: ESRI Bing Maps

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

0 6,500 Feet

N

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DCN:1399-2A-ARXY

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Figure 3-5
Sampling Results for Focus Area 1 – TCL Pesticides
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-5_Area1_Results_Pest.mxd 4/5/2012 4:21:27 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-05 07/24/11

Depth	Parameter	Result	Units
6-24	TPH DRO	120	mg/kg

USR11-08 07/21/11

Depth	Parameter	Result	Units
0-6	TPH DRO	130	mg/kg
6-24	TPH DRO	150	mg/kg
24-43	TPH DRO	110	mg/kg

USR11-45 07/23/11

Depth	Parameter	Result	Units
0-6	TPH DRO	200 J	mg/kg
24-39	TPH DRO	280	mg/kg

USR11-49 07/24/11

Depth	Parameter	Result	Units
0-6	TPH DRO	180	mg/kg

Legend

TPH DRO (mg/kg)

- Non-Detect
- 0 - 100
- 100 - 500
- > 500

0 6,500 Feet

N

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US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Figure 3-6
Sampling Results for Focus Area 1 – TPH DRO
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-6_Area1_TPH-DRO.mxd 4/5/2012 4:25:58 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-03 07/24/11

Depth	Parameter	Result	Units
0-17	TPH ORO	270	mg/kg

USR11-04 07/24/11

Depth	Parameter	Result	Units
0-16	TPH ORO	120	mg/kg

USR11-05 07/24/11

Depth	Parameter	Result	Units
0-6	TPH ORO	230	mg/kg
0-7	TPH ORO	240	mg/kg
6-24	TPH ORO	210	mg/kg

USR11-06 07/24/11

Depth	Parameter	Result	Units
6-22	TPH ORO	260 J	mg/kg

USR11-09 07/21/11

Depth	Parameter	Result	Units
0-6	TPH ORO	190	mg/kg
6-24	TPH ORO	260	mg/kg
24-36	TPH ORO	120	mg/kg

USR11-10 07/21/11

Depth	Parameter	Result	Units
0-6	TPH ORO	190	mg/kg
6-30	TPH ORO	130	mg/kg

USR11-01 07/24/11

Depth	Parameter	Result	Units
0-6	TPH ORO	120	mg/kg
6-24	TPH ORO	170	mg/kg

USR11-08 07/21/11

Depth	Parameter	Result	Units
0-6	TPH ORO	260	mg/kg
6-24	TPH ORO	320	mg/kg
24-43	TPH ORO	250	mg/kg

USR11-02 07/24/11

Depth	Parameter	Result	Units
0-6	TPH ORO	220	mg/kg
6-22	TPH ORO	180	mg/kg

USR11-45 07/23/11

Depth	Parameter	Result	Units
0-6	TPH ORO	580 J	mg/kg
6-24	TPH ORO	140	mg/kg
24-39	TPH ORO	700	mg/kg

USR11-11 07/21/11

Depth	Parameter	Result	Units
0-6	TPH ORO	130	mg/kg
6-26	TPH ORO	200	mg/kg

USR11-46 07/23/11

Depth	Parameter	Result	Units
0-6	TPH ORO	180	mg/kg
6-24	TPH ORO	280	mg/kg

USR11-12 07/21/11

Depth	Parameter	Result	Units
6-24	TPH ORO	170	mg/kg
24-40	TPH ORO	130	mg/kg

USR11-13 07/21/11

Depth	Parameter	Result	Units
0-6	TPH ORO	270	mg/kg

USR11-50 07/24/11

Depth	Parameter	Result	Units
0-6	TPH ORO	210	mg/kg

USR11-49 07/24/11

Depth	Parameter	Result	Units
0-6	TPH ORO	750	mg/kg

USR11-47 07/24/11

Depth	Parameter	Result	Units
0-6	TPH ORO	220	mg/kg
0-6	TPH ORO	140	mg/kg

Legend

TPH ORO (mg/kg)

- Non-Detect
- 0 - 100
- 100 - 500
- > 500

0 6,500 Feet

N

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Contract No.: EP-S5-06-04
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Figure 3-7
Sampling Results for Focus Area 1 – TPH ORO
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-7_Area1_TPH-ORO.mxd 4/9/2012 12:37:08 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-45 07/23/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	1.27901	ng/kg	[0.85]
6-24	Dioxin TEQ	18.3013	ng/kg	[0.85]
24-39	Dioxin TEQ	20.8377	ng/kg	[0.85]

USR11-46 07/23/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	5.39325	ng/kg	[0.85]
6-24	Dioxin TEQ	5.96873	ng/kg	[0.85]

USR11-49 07/24/11

Depth	Parameter	Result	Units	[Criteria]
0-6	Dioxin TEQ	1.37451	ng/kg	[0.85]

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

0 6,500 Feet

N

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Figure 3-8
Sampling Results Exceeding the St. Louis River AOC
Sediment Quality Targets for Focus Area 1 –
Dioxin Equivalent Concentration Results
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-8_Area1_Excds_DF.mxd 4/9/2012 12:38:34 PM mejacm

Imagery Source: ESRI Bing Maps

USR11-24 07/21/11

Depth	Parameter	Result	Units	[Criteria]
0-6	TOTAL PAH 17	2252	ug/Kg	[1600]
6-24	TOTAL PAH 17	1942	ug/Kg	[1600]
24-48	TOTAL PAH 17	1630	ug/Kg	[1600]

USR11-23 07/21/11

Depth	Parameter	Result	Units	[Criteria]
0-16	TOTAL PAH 17	20922	ug/Kg	[1600]

USR11-38 07/22/11

Depth	Parameter	Result	Units	[Criteria]
0-6	TOTAL PAH 17	1890	ug/Kg	[1600]

FILE: D:\Upper_St_Louis\mxd\Report\Rev2\F3-9_Area2_Excds_PAHs.mxd 4/9/2012 12:39:26 PM mejacm

Legend

- Level I & II Exceedances
- Level I Exceedances Only
- No Exceedances

0 2,000 Feet

N

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TDD: S05-0008-1103-010
DCN:1399-2A-ARXY

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Figure 3-9
Sampling Results Exceeding the St. Louis River AOC
Sediment Quality Targets for Focus Area 2 – Total PAHs
Upper St. Louis River
Cloquet, Carlton and St. Louis County, Minnesota

APPENDIX A
PHOTOGRAPHIC DOCUMENTATION

Site: Upper St. Louis River
Photograph No.: 1 **Date:** 7/20/11
Direction: Southeast **Photographer:** Jon Colomb
Subject: View of Upper Reach

Site: Upper St. Louis River
Photograph No.: 2 **Date:** 7/20/11
Direction: South **Photographer:** Jon Colomb
Subject: View of Middle Reach

Site: Upper St. Louis River
Photograph No.: 3 **Date:** 7/20/11
Direction: South **Photographer:** Jon Colomb
Subject: View of Lower Reach

Site: Upper St. Louis River
Photograph No.: 4 **Date:** 7/20/11
Direction: Down **Photographer:** Jon Colomb
Subject: Affiliated Researchers (Affiliated) pontoon vibracoring system

Site: Upper St. Louis River
Photograph No.: 5 **Date:** 7/21/11
Direction: Not applicable **Photographer:** Jon Colomb
Subject: Sediment core collected from sampling location USR11-10

Site: Upper St. Louis River
Photograph No.: 6 **Date:** 7/21/11
Direction: Not applicable **Photographer:** Jon Colomb
Subject: Sediment core collected from sampling location USR11-13

Site: Upper St. Louis River
Photograph No.: 7 **Date:** 7/21/11
Direction: Not applicable **Photographer:** Jon Colomb
Subject: Sediment core collected from sampling location USR11-23

Site: Upper St. Louis River
Photograph No.: 8 **Date:** 7/21/11
Direction: Not applicable **Photographer:** Jon Colomb
Subject: Sediment core collected from sampling location USR11-24

Site: Upper St. Louis River
Photograph No.: 9 **Date:** 7/22/11
Direction: Not applicable **Photographer:** Jon Colomb
Subject: Sediment core collected from sampling location USR11-43

Site: Upper St. Louis River
Photograph No.: 10 **Date:** 7/22/11
Direction: Not applicable **Photographer:** Jon Colomb
Subject: Sediment core collected from sampling location USR11-43

Site: Upper St. Louis River
Photograph No.: 11 **Date:** 7/22/11
Direction: Not applicable **Photographer:** Jon Colomb
Subject: Sediment core collected from sampling location USR11-46

Site: Upper St. Louis River
Photograph No.: 12 **Date:** 7/22/11
Direction: Not applicable **Photographer:** Jon Colomb
Subject: Sediment core collected from sampling location USR11-46

APPENDIX B
SEDIMENT OBSERVATIONS

Appendix B
Sediment Core Observations
Upper St. Louis River-St. Louis River AOC
Cloquet, Carlton and St. Louis County, Minnesota

Location ID	Sample ID	Depth (inches)		Technique	Observations
		Start	End		
USR11-01	USR11-01-006	0	6	ponar	brown medium grained sand to fine grained sand, some organics
USR11-01	USR11-01-024	6	24	hand-drive	brown medium and fine grained sand, hard organics from 19 to 24"
USR11-01	USR11-01-047	24	47	hand-drive	brown medium and fine grained sand, hard organics from 19 to 24"
USR11-02	USR11-02-006	0	6	ponar	brown silt and clay with trace fine grained sands, few organics
USR11-02	USR11-02-022	6	22	hand-drive	brown silt and clay with trace fine grained sands, few organics
USR11-03	USR11-03-017	0	17	ponar, vibracore	silty and clay with trace fine grained sands, soft organics at 7 to 8", hard organics at 13 to 15"
USR11-03	USR11-03-017	6	17	vibracore	silty and clay with trace fine grained sands, soft organics at 7 to 8", hard organics at 13 to 15"
USR11-04	USR11-04-016	0	16	ponar, vibracore	sandy silt fine grained to silty fine grained sand, brown
USR11-05	USR11-05-006	0	6	ponar	brown sandy fine grained silt with soft organics at 0 to 3"
USR11-05	USR11-05-007-FS	0	7	ponar	brown sandy fine grained silt with soft organics at 0 to 3"
USR11-05	USR11-05-024	6	24	vibracore	fine sand with trace silt, hard organics at 13 to 14" and 19 to 21", medium grained at 17"
USR11-05	USR11-05-051	24	51	vibracore	brown medium grained sand with some fine dark organics at 31 to 34", coarse grained at 44", then medium grained
USR11-06	USR11-06-006	0	6	ponar	brown poorly sorted fine to coarse grained sand with trace silt
USR11-06	USR11-06-006-DP	0	6	ponar	brown poorly sorted fine to coarse grained sand with trace silt
USR11-06	USR11-06-022	6	22	vibracore	shells at 6 to 9", fine to medium grained sand with trace silt and coarse grained at 15 to 17", hard organics with silt at 18 to 22", poorly sorted brown sand with trace silt, silty fine sand at 20 to 22"
USR11-06	USR11-06-022-DP	6	22	vibracore	shells at 6 to 9", fine to medium grained sand with trace silt and coarse grained at 15 to 17", hard organics with silt at 18 to 22", poorly sorted brown sand with trace silt, silty fine sand at 20 to 22"
USR11-07	USR11-07-017	0	17	ponar, vibracore	gray clay with few organics
USR11-07	USR11-07-017	6	17	vibracore	gray clay with few organics
USR11-08	USR11-08-006	0	6	ponar	brown silt with fines, some wood chips, some live snails
USR11-08	USR11-08-024	6	24	vibracore	brown silt with fines, fine sand with silt, silt with wood chips trace fine sands
USR11-08	USR11-08-043	24	43	vibracore	brown silt with wood chips and fine sands, medium grained sand at 30", brown
USR11-09	USR11-09-006	0	6	ponar	brown silt with fine sand to fine sand with silt
USR11-09	USR11-09-024	6	24	vibracore	brown fine sand with silt, trace organics
USR11-09	USR11-09-036	24	36	vibracore	brown silty fine sand with trace organics, fine to medium grained sand at 33"
USR11-10	USR11-10-006	0	6	ponar	brown silty with trace fine sands, hard and soft organics
USR11-10	USR11-10-030	6	30	vibracore	brown sandy fine silt with trace hard organics
USR11-11	USR11-11-006	0	6	ponar	brown silt and fine sands, some soft organics
USR11-11	USR11-11-026	6	26	vibracore	brown silt with trace hard and soft organics
USR11-12	USR11-12-006	0	6	ponar	brown silty medium and fine grained sand, trace silts below 2"
USR11-12	USR11-12-024	6	24	vibracore	brown medium and fine grained sand, wood chips with fines
USR11-12	USR11-12-040	24	40	vibracore	brown silty medium and fine grained sand, few organics, silt with some organics, brown
USR11-13	USR11-13-006	0	6	ponar	gray/brown silt with trace fine sand and fibrous organics
USR11-13	USR11-13-018	6	18	vibracore	silty and fine sands at 6 to 10", silty fine sand to coarse grained at 13", hard organics at 13", medium and fine sand no organics at 13 to 18"
USR11-14	USR11-14-006	0	6	ponar	brown silty sand coarse to fine grained

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Location ID	Sample ID	Depth (inches)		Technique	Observations
		Start	End		
USR11-14	USR11-14-022	6	22	vibracore	brown coarse to fine sand, some shells, trace hard organics
USR11-15	USR11-15-017	0	17	ponar, vibracore	brown silty fine and medium sand, coarse at 12", some hard and soft organics
USR11-15	USR11-15-017	6	17	vibracore	brown silty fine and medium sand, coarse at 12", some hard and soft organics
USR11-15	USR11-15-017-FS	0	17	ponar, vibracore	brown silty fine and medium sand, coarse at 12", some hard and soft organics
USR11-15	USR11-15-017-FS	6	17	vibracore	brown silty fine and medium sand, coarse at 12", some hard and soft organics
USR11-16	USR11-16-019	0	19	ponar, hand-drive	brown medium to fine grained sand with some shells/wood chips
USR11-17	USR11-17-006	0	6	ponar	gray/brown silt with fine sand, some organics, few cobbles, wood chips present
USR11-17	USR11-17-006-FS	0	6	ponar	gray/brown silt with fine sand, some organics, few cobbles, wood chips present
USR11-17	USR11-17-016	6	17	vibracore	gray/dark brown silt with trace fine sand, some coal/organics/wood chips, fine to medium grained sand, few wood chips
USR11-17	USR11-17-016	0	16	ponar, vibracore	gray/dark brown silt with trace fine sand, some coal/organics/wood chips, fine to medium grained sand, few wood chips
USR11-18	USR11-18-006	0	6	ponar	dark gray/brown coarse and medium sand with shells and decomposing bark
USR11-19	USR11-19-006	0	6	vibracore	fine sand with some silt, trace hard organics (bark chips), some soft organics (leaves/grass)
USR11-20	USR11-20-006	0	6	ponar	silt with trace fine sand, many live snails and trace fibrous organics
USR11-20	USR11-20-027	6	27	vibracore	fine sand and silt, some hard organics (sticks, bark)
USR11-21	USR11-21-006	0	6	ponar	brown medium sand with some coarse sand, few pieces of tree bark, wood debris
USR11-22	USR11-22-006	0	6	ponar	gray/brown silt with trace fine sand, some hard organics, some live snails
USR11-22	USR11-22-033	6	33	vibracore	gray/brown silt with some fine sand, soft organics, hard organics at 30", large wood chips
USR11-22	USR11-22-033-FS	6	33	vibracore	gray/brown silt with some fine sand, soft organics, hard organics at 30", large wood chips
USR11-23	USR11-23-016	0	16	ponar, hand-drive	brown/black gravely silty sand
USR11-23	USR11-23-016	6	16	hand-drive	brown/black gravely silty sand
USR11-24	USR11-24-006	0	6	ponar	brown fine and medium sand with silt and soft organics
USR11-24	USR11-24-024	6	24	hand-drive	brown fine to coarse sand with trace silt, little to no organics, graded bedding, coarse at 6 to 14"
USR11-24	USR11-24-048	24	48	hand-drive	brown sand coarse to medium at 24 to 31", fine brown sand with silt at 31 to 37", medium and coarse brown sand at 37 to 42", silt with trace fine sand with soft organics at 42 to 44"
USR11-25	USR11-25-006	0	6	ponar	gray/dark brown silt with trace very fine sand, organics, few shells
USR11-25	USR11-25-006-DP	0	6	ponar	gray/dark brown silt with trace very fine sand, organics, few shells
USR11-25	USR11-25-024	6	24	vibracore	gray/dark brown silty with organics
USR11-25	USR11-25-024-DP	6	24	vibracore	gray/dark brown silty with organics
USR11-25	USR11-25-048	24	48	vibracore	gray/dark brown silt, organics, trace wood chips
USR11-25	USR11-25-048-DP	24	48	vibracore	gray/dark brown silt, organics, trace wood chips
USR11-26	USR11-26-006	0	6	ponar	gray/brown silt with few mollusks, some fibrous organics, few solid organics
USR11-26	USR11-26-030	6	30	vibracore	gray/brown silt with trace fine sand, trace fibrous organics
USR11-27	USR11-27-006	0	6	ponar	gray/brown silt with trace organics
USR11-27	USR11-27-020	6	20	vibracore	gray/brown silt with trace fine sands and soft organics, black silt at 17 to 18"
USR11-28	USR11-28-006	0	6	ponar	brown/gray silty sand medium to fine grained with some hard organics
USR11-29	USR11-29-006	0	6	ponar	brown/gray silt with some fine sand, organics

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Location ID	Sample ID	Depth (inches)		Technique	Observations
		Start	End		
USR11-29	USR11-29-021	6	21	hand-drive	brown/gray silt with some fine sand, organics, cobbles after 12", medium and fine sand
USR11-30	USR11-30-006	0	6	ponar	brown silt with trace fine sand and some soft organics
USR11-30	USR11-30-021	6	21	hand-drive	brown silt with trace fine sand and some soft organics, poorly sorted medium to coarse with few gravels
USR11-31	USR11-31-006	0	6	ponar	brown silt with trace fine sand and soft organics
USR11-31	USR11-31-026	6	26	hand-drive	brown sandy silt
USR11-32	USR11-32-006	0	6	ponar	brown silt with trace fine sand, hard and soft organics, few snails
USR11-32	USR11-32-006-DP	0	6	ponar	brown silt with trace fine sand, hard and soft organics, few snails
USR11-32	USR11-32-025	6	25	hand-drive	brown sandy fine silt, some hard organics, to silty fine sands
USR11-32	USR11-32-025-DP	6	25	hand-drive	brown sandy fine silt, some hard organics, to silty fine sands
USR11-33	USR11-33-006	0	6	ponar	brown silty fine sand
USR11-33	USR11-33-022	6	22	hand-drive	brown silty fine sand, hard organics at 8 to 12", silty fine and medium sand, few wood chips
USR11-34	USR11-34-006	0	6	ponar	brown silty fine sand with soft organics
USR11-34	USR11-34-024	6	24	hand-drive	brown silty fine sand
USR11-34	USR11-34-040	24	40	hand-drive	brown silty fine sand to black silt with trace very fine sand
USR11-35	USR11-35-006	0	6	ponar	brown medium and fine sand, few organics
USR11-35	USR11-35-026	6	26	hand-drive	brown medium sand, hard and soft organics at 12"
USR11-36	USR11-36-006	0	6	ponar	brown silty fine sand with trace medium sand, light gray at 5"
USR11-36	USR11-36-032	6	32	vibracore	black charred wood at 6", brown silty sand , trace cobbles
USR11-37	USR11-37-017	0	17	ponar, hand-drive	brown silty fine sand, soft organics
USR11-38	USR11-38-006	0	6	ponar	brown silt with soft organics, trace very fine sand, few snails
USR11-38	USR11-38-019	6	19	hand-drive	brown silt with fine sand fine and medium sand at 7", hard organics from 7 to 17", sandy fine silt at 17"
USR11-39	USR11-39-006	0	6	ponar	gray/brown silty with soft organics and trace very fine sand
USR11-39	USR11-39-024	6	24	hand-drive	brown silt with soft organics and trace very fine sand, black layer at 17"
USR11-40	USR11-40-006	0	6	ponar	brown sandy fine silt with soft organics
USR11-40	USR11-40-034	6	34	hand-drive	brown sandy fine silt with soft organics, sand layer at 27"
USR11-41	USR11-41-016	0	16	ponar, hand-drive	black/brown to gray/brown silt with trace fine sand and soft organics
USR11-42	USR11-42-006	0	6	ponar	brown silty fine and medium sand, with hard and soft organics
USR11-42	USR11-42-033	6	33	vibracore	brown silty fine sand to silt with hard and soft organics
USR11-43	USR11-43-006	0	6	ponar	brown/gray sandy fine silt, some soft organics
USR11-43	USR11-43-024	6	24	vibracore	gray/brown sandy fine silt, medium to fine sand with silt at 13"
USR11-43	USR11-43-053	24	53	vibracore	medium to fine sand with silt, few hard organics, light brown at 31", silt with some fine sand and fibrous soft organics
USR11-44	USR11-44-006	0	6	ponar	fine and medium brown sand, little to no organics
USR11-44	USR11-44-024	6	24	vibracore	brown fine and medium sand to silt with fine sand hard organics, wood chips
USR11-44	USR11-44-037	24	37	vibracore	medium to fine sand at 24 to 28", hard organics
USR11-45	USR11-45-006	0	6	ponar	brown silty medium and fine sand with few hard and soft organics

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		Start	End		
USR11-45	USR11-45-006-FS	0	6	ponar	brown silty medium and fine sand with few hard and soft organics
USR11-45	USR11-45-024	6	24	vibracore	brown medium and fine sand to coarse and fine sand at 16", organic rich silt medium to fine sand at 16 to 22", silty fine and medium sand with some organics
USR11-45	USR11-45-039	24	39	vibracore	brown/gray/black silty fine and medium sand with some soft and hard organics
USR11-46	USR11-46-006	0	6	ponar	light brown silty with some fine and medium sand and organics
USR11-46	USR11-46-024	6	24	hand-drive	light brown silty with some fine and medium sand and organics, more organics at 17"
USR11-46	USR11-46-051	24	51	hand-drive	light brown silty with some fine and medium sand and organics, more organics at 17", coarse at 37 to 39", silty with some fine sand at 37 to 48"
USR11-47	USR11-47-006	0	6	ponar	brown/gray silty fine sand with hard organics
USR11-47	USR11-47-006-FS	0	6	ponar	brown/gray silty fine sand with hard organics
USR11-48	USR11-48-006	0	6	ponar	brown medium and fine sand with few gravels, little to no organics
USR11-48	USR11-48-019	6	19	hand-drive	medium and fine sands with coarse sand from 13 to 14", medium and fine sand at 14"
USR11-49	USR11-49-006	0	6	ponar	brown silt with soft organics and trace fine sand
USR11-49	USR11-49-034	6	34	hand-drive	brown fine sand with some silt, little to no organics
USR11-50	USR11-50-006	0	6	ponar	brown/gray wilt with soft organics, and trace fine sand
USR11-50	USR11-50-026	6	26	hand-drive	light brown fine and medium sand, trace silt, little to no organics

APPENDIX C
QHEI AND USE ASSESSMENT FIELD SHEETS

OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 78

Stream & Location: Upper St. Louis River, site #3 **RM:** . **Date:** 7/20/11

Jonathon M. DeWitte **Scorers Full Name & Affiliation:** AFE Field Researcher

River Code: ___-___-___ **STORET #:** _____ **Lat./ Long.:** 46.7939 92.4643 (NAD 83 - decimal °) **Office verified location** ☐

1] SUBSTRATE
Check *ONLY* **Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐☐ BLDR /SLABS [10]	___	___	☐☐ HARDPAN [4]	___	___
■☐ BOULDER [9]	___	___	☐☐ DETRITUS [3]	___	___
☐☐ COBBLE [8]	___	___	☐☐ MUCK [2]	___	___
☐☐ GRAVEL [7]	___	___	☐☐ SILT [2]	___	___
☐■ SAND [6]	___	___	☐☐ ARTIFICIAL [0]	___	___
☐☐ BEDROCK [5]	___	___	(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT
- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ■ FREE [1]

EMBEDDEDNESS
- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ■ NONE [1]

Substrate 17 *Maximum 20*

Comments Almost all boulder with small amounts of sand

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

___ UNDERCUT BANKS [1]	___ POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
___ OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	___ AQUATIC MACROPHYTES [1]
___ SHALLOWS (IN SLOW WATER) [1]	___ BOULDERS [1]	___ LOGS OR WOODY DEBRIS [1]
___ ROOTMATS [1]		

AMOUNT
Check ONE (*Or 2 & average*)
- ■ EXTENSIVE >75% [11]
- ☐ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments Riffle/rapids area dominated by large boulders

Cover 14 *Maximum 20*

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ■ MODERATE [3]
- ☐ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ■ GOOD [5]
- ☐ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ■ NONE [6]
- ☐ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ■ HIGH [3]
- ☐ MODERATE [2]
- ☐ LOW [1]

Comments

Channel 17 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE
Check ONE in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION (L / R)
- ■■ NONE / LITTLE [3]
- ☐☐ MODERATE [2]
- ☐☐ HEAVY / SEVERE [1]

RIPARIAN WIDTH (L / R)
- ☐☐ WIDE > 50m [4]
- ■■ MODERATE 10-50m [3]
- ☐☐ NARROW 5-10m [2]
- ☐☐ VERY NARROW < 5m [1]
- ☐☐ NONE [0]

FLOOD PLAIN QUALITY (L / R)
- ■■ FOREST, SWAMP [3]
- ☐☐ SHRUB OR OLD FIELD [2]
- ☐☐ RESIDENTIAL, PARK, NEW FIELD [1]
- ☐☐ FENCED PASTURE [1]
- ☐☐ OPEN PASTURE, ROWCROP [0]
- ☐☐ CONSERVATION TILLAGE [1]
- ☐☐ URBAN OR INDUSTRIAL [0]
- ☐☐ MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 9 *Maximum 10*

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH
Check **ONE** (*ONLY!*)
- ■ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☐ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH
Check ONE (*Or 2 & average*)
- ■ POOL WIDTH > RIFFLE WIDTH [2]
- ☐ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY
Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ■ MODERATE [1]
- ☐ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments Turbulent flow in riffle

Pool / Current 9 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ■ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ■ MAXIMUM > 50cm [2]
- ☐ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ■ STABLE (e.g., Cobble, Boulder) [2]
- ☐ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ■ NONE [2]
- ☐ LOW [1]
- ☐ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments

Riffle / Run 8 *Maximum 8*

6] GRADIENT
DRAINAGE AREA (ft/mi) (mi²)
- ■ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

%POOL: ___ %GLIDE: ___
%RUN: 25 %RIFFLE: 75

Gradient 4 *Maximum 10*

A] SAMPLED REACH

Check ALL that apply

METHOD
- [x] BOAT
- [ ] WADE
- [ ] L. LINE
- [ ] OTHER

STAGE (1st -sample pass- 2nd)
- [ ] HIGH [ ]
- [ ] UP [ ]
- [x] NORMAL [x]
- [ ] LOW [ ]
- [ ] DRY [ ]

DISTANCE
- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER 50 meters

CLARITY (1st --sample pass-- 2nd)
- [ ] < 20 cm [ ]
- [ ] 20-<40 cm [ ]
- [ ] 40-70 cm [ ]
- [x] > 70 cm/ CTB [x]
- [ ] SECCHI DEPTH [ ]

1st pass 120 cm
2nd 120 cm

CANOPY
- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

water is tannin-stained
Dissolved oxygen: 10.9 mg/L ORP: 136.8
Temperature: 13.8°C
Conductivity: 209 uS/cm
pH: 7.8

B] AESTHETICS

- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION

POOL: AREA [x] >100ft² DEPTH [x] >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

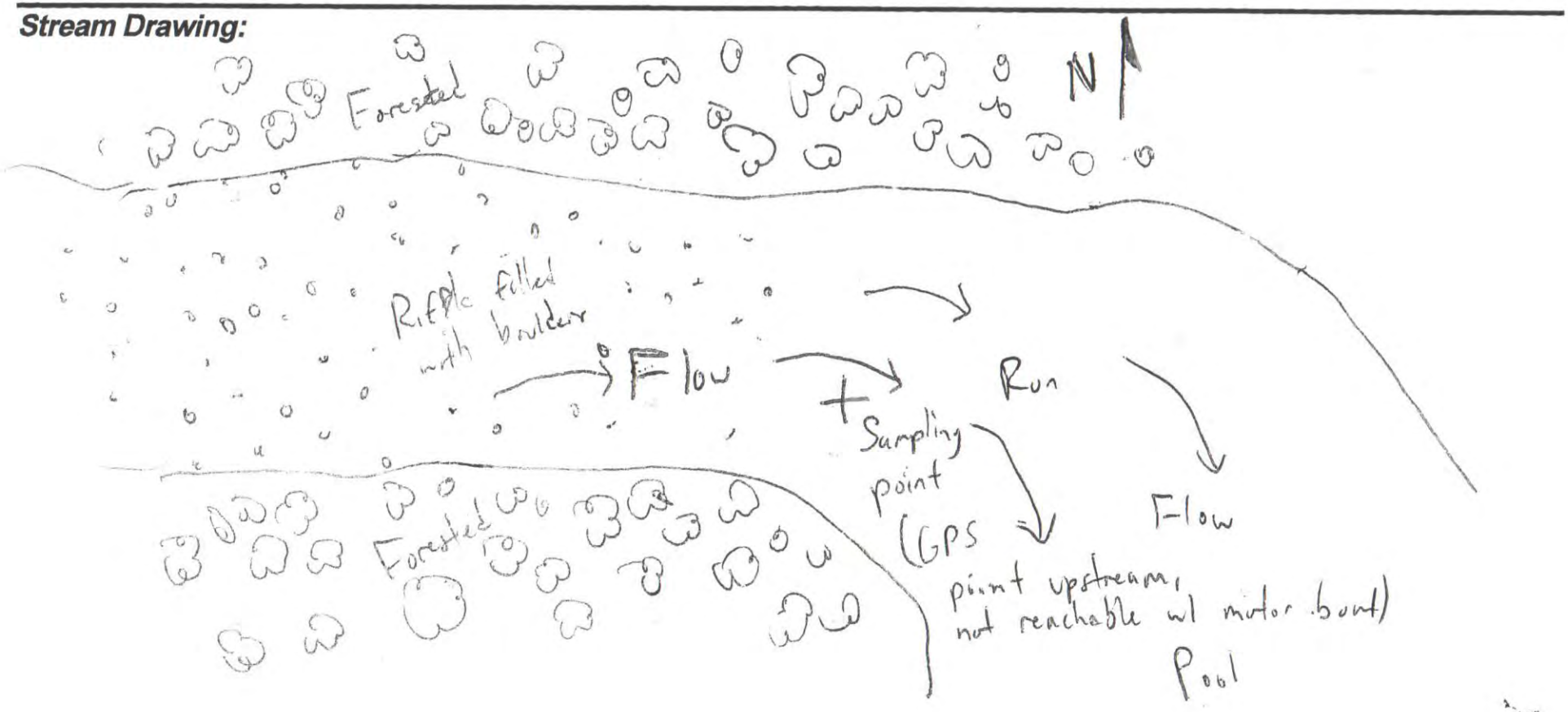
E] ISSUES

WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMEN

$\bar{x}$ width
$\bar{x}$ depth = 4.0'
max. depth
$\bar{x}$ bankfull width
bankfull $\bar{x}$ depth
W/D ratio
bankfull max. depth
floodprone x^2 width
entrench. ratio
Legacy Tree:

Stream Drawing:



OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 73

Stream & Location: Upper St. Louis River - Site #8 **RM:** ___ **Date:** 7/19/11

Scorers Full Name & Affiliation: Jonathan M. DeVilbiss / Affiliated Researchers

River Code: ___-___-___ **STORET #:** ___ **Lat./Long.:** 46.46D8" / 92.29'26" (NAD 83 - decimal °) **Office verified location** ☐

1] SUBSTRATE
Check *ONLY* Two substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐☐ BLDR /SLABS [10]			☐☐ HARDPAN [4]		
■☐ BOULDER [9]	■		☐■ DETRITUS [3]	*	
☐☐ COBBLE [8]			☐☐ MUCK [2]		
☐☐ GRAVEL [7]			☐■ SILT [2]	*	
☐■ SAND [6]	■		☐☐ ARTIFICIAL [0]		
☐☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

* Small amounts

Check ONE (*Or 2 & average*)

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT / EMBEDDEDNESS
- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ■ NORMAL [0]
- ☐ FREE [1]
- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ■ NORMAL [0]
- ☐ NONE [1]

Substrate 20 *Maximum 20*

Comments Poor gobr grt some sand, silt, wood chips - sand/silt along shorelines

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

- ___ UNDERCUT BANKS [1]
- ✓ OVERHANGING VEGETATION [1]
- ✓ SHALLOWS (IN SLOW WATER) [1]
- ___ ROOTMATS [1]
- ___ POOLS > 70cm [2]
- ___ ROOTWADS [1]
- ✓ BOULDERS [1]
- ✓ OXBOWS, BACKWATERS [1]
- ✓ AQUATIC MACROPHYTES [1]
- ✓ LOGS OR WOODY DEBRIS [1]

AMOUNT Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ■ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments Poor gobr bright up wood chips

Cover 15 *Maximum 20*

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ■ MODERATE [3]
- ☐ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ■ GOOD [5]
- ☐ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ■ NONE [6]
- ☐ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ■ HIGH [3]
- ☐ MODERATE [2]
- ☐ LOW [1]

Comments

Channel 17 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE
Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION (L / R)
- ■ ■ NONE / LITTLE [3]
- ☐ ☐ MODERATE [2]
- ☐ ☐ HEAVY / SEVERE [1]

RIPARIAN WIDTH (L / R)
- ☐ ☐ WIDE > 50m [4]
- ■ ■ MODERATE 10-50m [3]
- ☐ ☐ NARROW 5-10m [2]
- ☐ ☐ VERY NARROW < 5m [1]
- ☐ ☐ NONE [0]

FLOOD PLAIN QUALITY (L / R)
- ■ ■ FOREST, SWAMP [3]
- ☐ ☐ SHRUB OR OLD FIELD [2]
- ☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]
- ☐ ☐ FENCED PASTURE [1]
- ☐ ☐ OPEN PASTURE, ROWCROP [0]
- ☐ ☐ CONSERVATION TILLAGE [1]
- ☐ ☐ URBAN OR INDUSTRIAL [0]
- ☐ ☐ MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 9 *Maximum 10*

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH Check **ONE** (*ONLY!*)
- ■ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☐ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH Check ONE (*Or 2 & average*)
- ☐ POOL WIDTH > RIFFLE WIDTH [2]
- ■ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☐ MODERATE [1]
- ■ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 8 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ■ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☐ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ■ MAXIMUM > 50cm [2]
- ☐ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ■ STABLE (e.g., Cobble, Boulder) [2]
- ☐ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ■ NONE [2]
- ☐ LOW [1]
- ☐ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments

Riffle / Run Ø *Maximum 8*

6] GRADIENT (ft/mi) DRAINAGE AREA (mi²)
- ■ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

%POOL: ___ %GLIDE: 100
%RUN: ___ %RIFFLE: ___

Gradient 4 *Maximum 10*

A] SAMPLED REACH
Check ALL that apply

METHOD
- [x] BOAT
- [ ] WADE
- [ ] L. LINE
- [ ] OTHER

DISTANCE
- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER 50 meters

CANOPY
- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

STAGE (1st-sample pass- 2nd)

	1st	2nd
HIGH	☐	☐
UP	☐	☐
NORMAL	■	■
LOW	☐	☐
DRY	☐	☐

CLARITY (1st --sample pass-- 2nd)

	1st	2nd
< 20 cm	☐	☐
20-<40 cm	☐	☐
40-70 cm	☐	☐
> 70 cm/ CTB	■	■
SECCHI DEPTH	■	■

1st pass: 120 cm
2nd pass: 120 cm

C] RECREATION AREA DEPTH
POOL: ■ >100ft² ■ >3ft

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Water is tanning-stained
Dissolved oxygen = 8.2 mg/L ORP = 199.0
Temperature 14.8°C
Conductivity 2.04 µS/cm²
pH = 7.5

B] AESTHETICS
- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

D] MAINTENANCE
PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

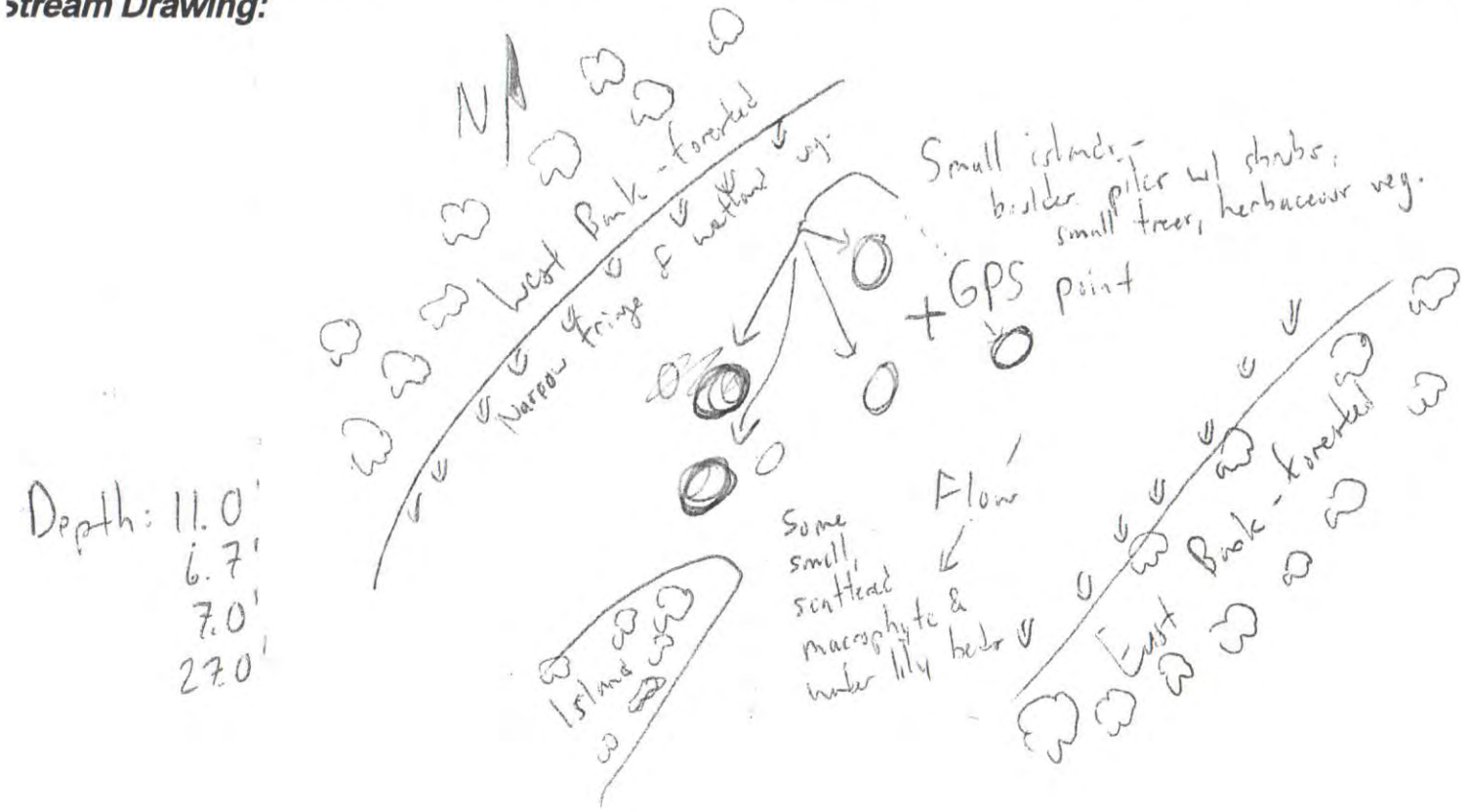
Circle some & *COMMENT*
Rock-pile islands may be man-made, historic

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- x̄ width
- x̄ depth —
- max. depth 27.5'
- x̄ bankfull width
- bankfull x̄ depth
- W/D ratio
- bankfull max. depth
- floodprone x² width
- entrench. ratio

Legacy Tree:

Stream Drawing:



Ohio EPA — Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 64

Stream & Location: Upper St. Louis River - Site #12 **RM:** **Date:** 7/19/11

Scorers Full Name & Affiliation: Jonathan M. DeNike, Assistant Researcher

River Code: ___-___-___ **STORET #:** **Lat./Long.:** 46.44'14" 92.28'51" (NAD 83 - decimal °) **Office verified location** ☐

1] SUBSTRATE
Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐☐ BLDR /SLABS [10]			☐☐ HARDPAN [4]		
■■ BOULDER [9]	100		☐☐ DETRITUS [3]		
☐☐ COBBLE [8]			☐☐ MUCK [2]		
☐☐ GRAVEL [7]			☐☐ SILT [2]		
☐☐ SAND [6]			☐☐ ARTIFICIAL [0]		
☐☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT / EMBEDDEDNESS
- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ■ FREE [1]
- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ■ NONE [1]

Substrate: 11 (Maximum 20)

Comments Ponar grabs got nothing - island nearby has boulders

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

- ___ UNDERCUT BANKS [1]
- ✓ OVERHANGING VEGETATION [1]
- ✓ SHALLOWS (IN SLOW WATER) [1]
- ___ ROOTMATS [1]
- ✓ POOLS > 70cm [2]
- ___ ROOTWADS [1]
- ✓ BOULDERS [1]
- ✓ OXBOWS, BACKWATERS [1]
- ✓ AQUATIC MACROPHYTES [1]
- ✓ LOGS OR WOODY DEBRIS [1]

AMOUNT Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ■ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments

Cover 15 (Maximum 20)

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	■ NONE [6]	■ HIGH [3]
■ MODERATE [3]	■ GOOD [5]	☐ RECOVERED [4]	☐ MODERATE [2]
☐ LOW [2]	☐ FAIR [3]	☐ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel 17 (Maximum 20)

4] BANK EROSION AND RIPARIAN ZONE
Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION (L / R)
- ■■ NONE / LITTLE [3]
- ☐☐ MODERATE [2]
- ☐☐ HEAVY / SEVERE [1]

RIPARIAN WIDTH (L / R)
- ☐☐ WIDE > 50m [4]
- ■■ MODERATE 10-50m [3]
- ☐☐ NARROW 5-10m [2]
- ☐☐ VERY NARROW < 5m [1]
- ☐☐ NONE [0]

FLOOD PLAIN QUALITY (L / R)
- ■■ FOREST, SWAMP [3]
- ☐☐ SHRUB OR OLD FIELD [2]
- ☐☐ RESIDENTIAL, PARK, NEW FIELD [1]
- ☐☐ FENCED PASTURE [1]
- ☐☐ OPEN PASTURE, ROWCROP [0]
- ☐☐ CONSERVATION TILLAGE [1]
- ☐☐ URBAN OR INDUSTRIAL [0]
- ☐☐ MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 9 (Maximum 10)

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH Check **ONE** (*ONLY!*)
- ■ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☐ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH Check ONE (*Or 2 & average*)
- ☐ POOL WIDTH > RIFFLE WIDTH [2]
- ■ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☐ MODERATE [1]
- ■ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 8 (Maximum 12)

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ■ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☐ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ■ MAXIMUM > 50cm [2]
- ☐ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ■ STABLE (e.g., Cobble, Boulder) [2]
- ☐ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ■ NONE [2]
- ☐ LOW [1]
- ☐ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments

Riffle / Run 0 (Maximum 8)

6] GRADIENT (ft/mi)
DRAINAGE AREA (mi²)

- ■ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

%POOL: 100 %GLIDE: %RUN: %RIFFLE:

Gradient 4 (Maximum 10)

Yes

] SAMPLED REACH
Check ALL that apply

IETHOD
-] BOAT
-] WADE
-] L. LINE
-] OTHER

STAGE (1st -sample pass- 2nd)
- ☐ HIGH ☐
- ☐ UP ☐
- ■ NORMAL ■
- ☐ LOW ☐
- ☐ DRY ☐

)ISTANCE
-] 0.5 Km
-] 0.2 Km
-] 0.15 Km
-] 0.12 Km
-] OTHER

50 meters

CLARITY (1st --sample pass-- 2nd)
- ☐ < 20 cm ☐
- ☐ 20-<40 cm ☐
- ☐ 40-70 cm ☐
- ■ > 70 cm/ CTB ■
- ■ SECCHI DEPTH ■

pass: 1st 120 cm; 2nd 120 cm

CANOPY
-] > 85%- OPEN
-] 55%-<85%
-] 30%-<55%
-] 10%-<30%
-] <10%- CLOSED

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

water is strongly tannin-stained
Dissolved oxygen 9.9 mg/L ORP 159.4
Temperature (14.2° C) 78.6° F on depth sounder
Conductivity 202 uS/cm (?) Ponar grabs got nothing
pH 7.36

B] AESTHETICS
- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION AREA DEPTH
POOL: ■ >100ft² ■ >3ft

D] MAINTENANCE
PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & *COMMENT*

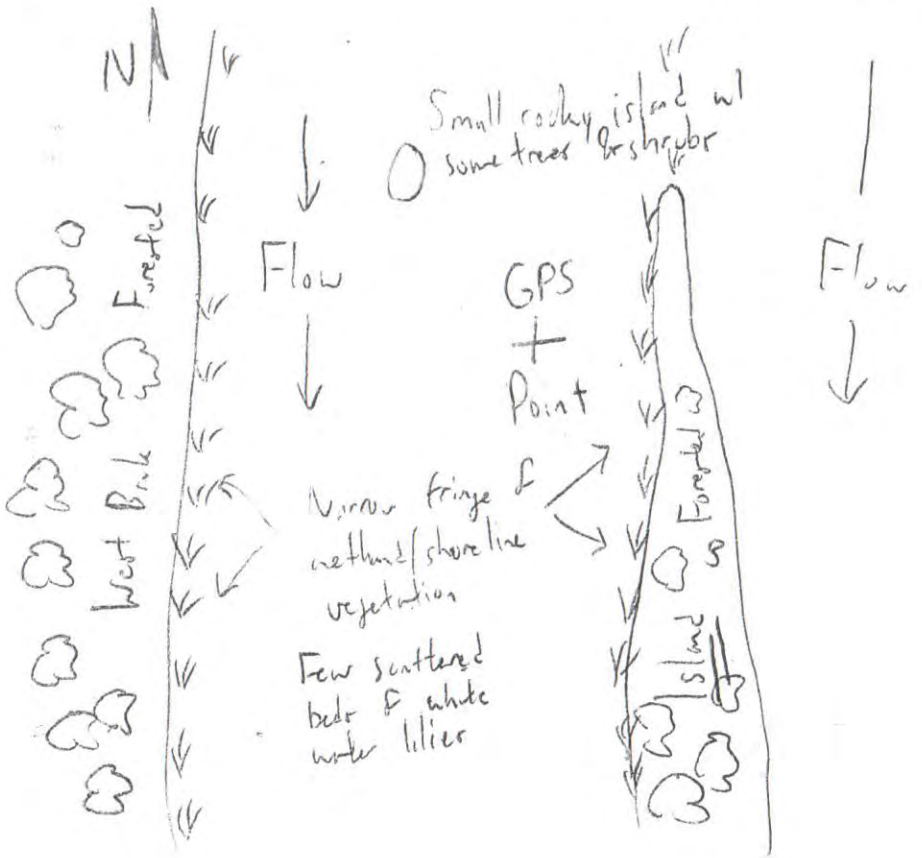
Small, boulder-pile island may be man-made, historic

Narrow wetland fringe →

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- x̄ width
- x̄ depth −4.6'
- max. depth −6.5'
- x̄ bankfull width
- bankfull x̄ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio
- *Legacy Tree:*

Stream Drawing:



Depth measurements: 3.3'
4.2'
6.5'
5.0
4.7'
4.2'
27.9/6 = 4.6'

OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 68.5

Stream & Location: Upper St. Louis River, Site #25 **RM:** _____ **Date:** 7/20/11

Scorers Full Name & Affiliation: Jonathon M. DeNike, Affiliated Researchers

River Code: _____ **STORET #:** _____ **Lat./Long.:** 41.7267 / 82.4577 (NAD 83 - decimal °) **Office verified location** ☐

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]	____	____	☐ ☐ HARDPAN [4]	____	____
■ ☐ BOULDER [9]	____	____	■ ☐ DETRITUS [3]	____	____
☐ ☐ COBBLE [8]	____	____	☐ ☐ MUCK [2]	____	____
☐ ☐ GRAVEL [7]	____	____	☐ ■ SILT [2]	____	____
☐ ■ SAND [6]	____	____	☐ ☐ ARTIFICIAL [0]	____	____
☐ ☐ BEDROCK [5]	____	____	(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ■ 4 or more [2] ■ 3 or less [0]

ORIGIN	QUALITY	
☐ LIMESTONE [1]	☐ HEAVY [-2]	
☐ TILLS [1]	☐ MODERATE [-1]	
☐ WETLANDS [0]	SILT ■ NORMAL [0]	
☐ HARDPAN [0]	☐ FREE [1]	
☐ SANDSTONE [0]	☐ EXTENSIVE [-2]	
☐ RIP/RAP [0]	EMBEDDEDNESS ☐ MODERATE [-1]	
☐ LACUSTURINE [0]	■ NORMAL [0]	
☐ SHALE [-1]	☐ NONE [1]	
☐ COAL FINES [-2]		

Check ONE (*Or 2 & average*)

Substrate 20 *Maximum 20*

Comments Silty w/ fine sand closer to shore, boulders & sand towards middle of channel

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

____ UNDERCUT BANKS [1]	✓ POOLS > 70cm [2]	✓ OXBOWS, BACKWATERS [1]
✓ OVERHANGING VEGETATION [1]	✓ ROOTWADS [1]	✓ AQUATIC MACROPHYTES [1]
✓ SHALLOWS (IN SLOW WATER) [1]	✓ BOULDERS [1]	✓ LOGS OR WOODY DEBRIS [1]
____ ROOTMATS [1]		

AMOUNT Check ONE (*Or 2 & average*)

☐ EXTENSIVE >75% [11]
☐ MODERATE 25-75% [7]
■ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

Comments

Cover 11 *Maximum 20*

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	■ NONE [6]	■ HIGH [3]
■ MODERATE [3]	■ GOOD [5]	☐ RECOVERED [4]	☐ MODERATE [2]
☐ LOW [2]	☐ FAIR [3]	☐ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel 17 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION (L / R)	RIPARIAN WIDTH (L / R)	FLOOD PLAIN QUALITY (L / R)
■ ■ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	■ ■ FOREST, SWAMP [3]
☐ ☐ MODERATE [2]	■ ■ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]
☐ ☐ HEAVY / SEVERE [1]	☐ ☐ NARROW 5-10m [2]	■ ☐ RESIDENTIAL (PARK, NEW FIELD) [1]
	☐ ☐ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]
	☐ ☐ NONE [0]	☐ ☐ OPEN PASTURE, ROWCROP [0]

☐ ☐ CONSERVATION TILLAGE [1]
☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 8.5 *Maximum 10*

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH Check **ONE** (*ONLY!*)

■ > 1m [6]
☐ 0.7-<1m [4]
☐ 0.4-<0.7m [2]
☐ 0.2-<0.4m [1]
☐ < 0.2m [0]

CHANNEL WIDTH Check ONE (*Or 2 & average*)

☐ POOL WIDTH > RIFFLE WIDTH [2]
■ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY Check ALL that apply

☐ TORRENTIAL [-1]
☐ VERY FAST [1]
☐ FAST [1]
☐ MODERATE [1]
■ SLOW [1]
☐ INTERSTITIAL [-1]
☐ INTERMITTENT [-2]
☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 8 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ■ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☐ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0] ☐ EXTENSIVE [-1]

Comments

Riffle / Run 0 *Maximum 8*

6] GRADIENT

(ft/mi) ■ VERY LOW - LOW [2-4] ☐ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (mi²)

%POOL: ____ %GLIDE: 100
%RUN: ____ %RIFFLE: ____

Gradient 4 *Maximum 10*

A] SAMPLED REACH
Check ALL that apply

METHOD
- [x] BOAT
- [ ] WADE
- [ ] L. LINE
- [ ] OTHER

DISTANCE
- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER 50 meters

CANOPY
- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

STAGE (1st -sample pass- 2nd)
- [ ] HIGH [ ]
- [ ] UP [ ]
- [x] NORMAL [x]
- [ ] LOW [ ]
- [ ] DRY [ ]

CLARITY (1st --sample pass-- 2nd)
- [ ] < 20 cm [ ]
- [ ] 20-<40 cm [ ]
- [ ] 40-70 cm [ ]
- [x] > 70 cm/ CTB [x]
- [x] SECCHI DEPTH [x]

1st pass 110 cm
2nd 110 cm

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Water is tannin-stained
Dissolved oxygen = 9.41 mg/L ORP = 251.0
Temperature = 13.5 °C
Conductivity = 204. mS/cm
pH = 7.58

B] AESTHETICS
- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION
AREA DEPTH
POOL: [x] >100ft² [x] >3ft

D] MAINTENANCE
Circle some & *COMMENT*

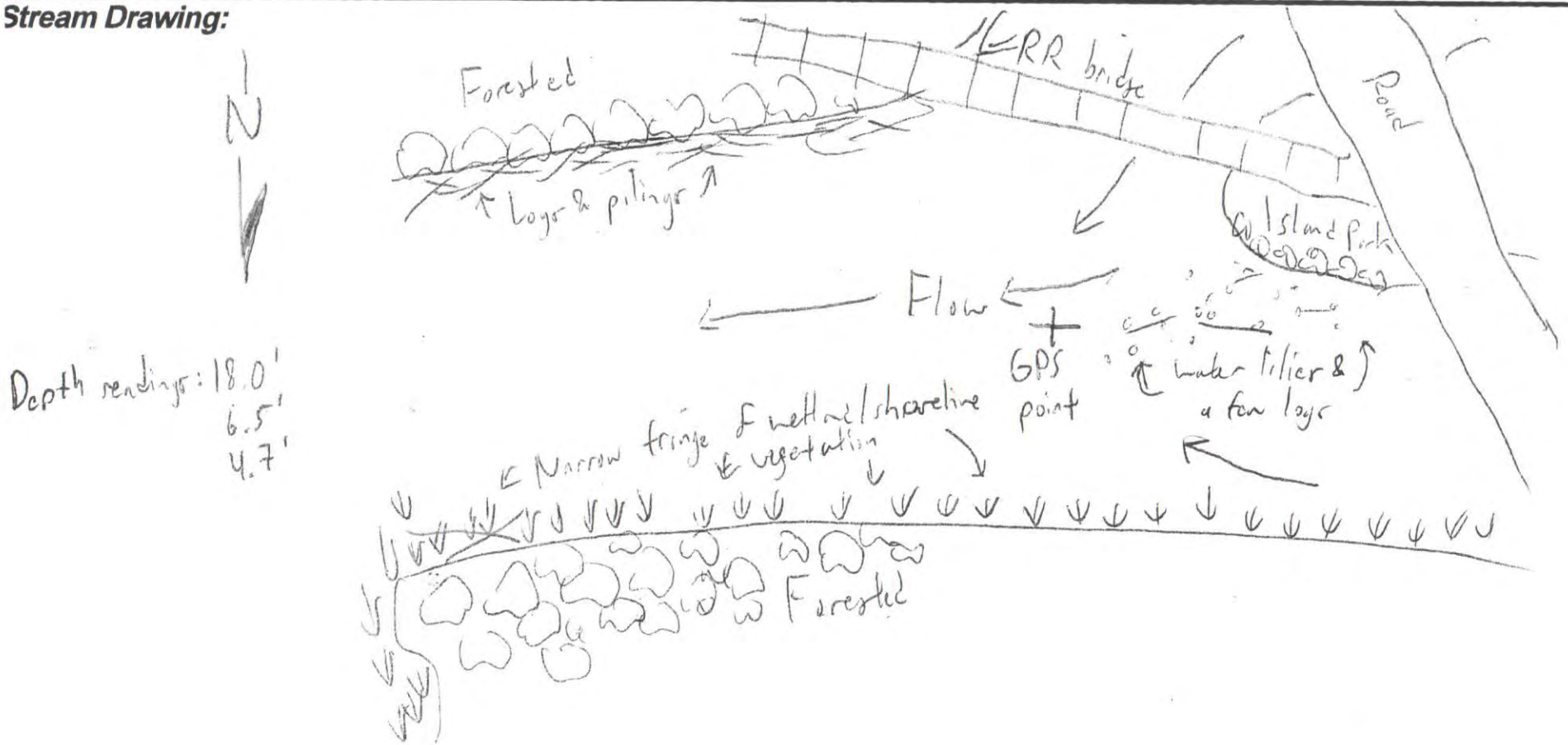
PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

banks have parts → Almost all natural

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- $\bar{x}$ width
- $\bar{x}$ depth
- max. depth
- $\bar{x}$ bankfull width
- bankfull $\bar{x}$ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio
- *Legacy Tree:*

Stream Drawing:



OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 53

Stream & Location: Upper St. Louis River, sampling point #29 **RM:** ___ **Date:** 7/20/11

Scorers Full Name & Affiliation: Jonathan M. DeNike, Affiliated Researchers

River Code: ___-___-___ **STORET #:** ___ **Lat./Long.:** 46.7288 / 82.4399 (NAD 83 - decimal °) **Office verified location** ☐

1] SUBSTRATE
Check *ONLY* Two substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
■ BLDR /SLABS [10]			☐ HARDPAN [4]		
☐ BOULDER [9]			☐ DETRITUS [3]		
☐ COBBLE [8]			☐ MUCK [2]		
☐ GRAVEL [7]			☐ SILT [2]		
☐ SAND [6]			☐ ARTIFICIAL [0]		
☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT
- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ■ FREE [1]

EMBEDDEDNESS
- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ■ NONE [1]

Substrate 12 *Maximum 20*

Comments

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

- ___ UNDERCUT BANKS [1]
- ✓ OVERHANGING VEGETATION [1]
- ___ SHALLOWS (IN SLOW WATER) [1]
- ___ ROOTMATS [1]
- ___ POOLS > 70cm [2]
- ___ ROOTWADS [1]
- ✓ BOULDERS [1]
- ✓ OXBOWS, BACKWATERS [1]
- ___ AQUATIC MACROPHYTES [1]
- ___ LOGS OR WOODY DEBRIS [1]

AMOUNT
Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ☐ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ■ NEARLY ABSENT <5% [1]

Cover Maximum 20 7

Comments

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ■ MODERATE [3]
- ☐ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☐ GOOD [5]
- ■ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ■ NONE [6]
- ☐ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ■ HIGH [3]
- ☐ MODERATE [2]
- ☐ LOW [1]

Channel Maximum 20 15

Comments

4] BANK EROSION AND RIPARIAN ZONE
Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION

L	R	
■	■	NONE / LITTLE [3]
☐	☐	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

RIPARIAN WIDTH

L	R	
☐	☐	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☐	■	NARROW 5-10m [2]
■	☐	VERY NARROW < 5m [1]
☐	☐	NONE [0]

FLOOD PLAIN QUALITY

L	R	
☐	■	FOREST, SWAMP [3]
☐	■	SHRUB OR OLD FIELD [2]
☐	☐	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☐	☐	OPEN PASTURE, ROWCROP [0]

L	R	
☐	☐	CONSERVATION TILLAGE [1]
■	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Riparian Maximum 10 7

Comments

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH
Check **ONE** (*ONLY!*)
- ■ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☐ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH
Check ONE (*Or 2 & average*)
- ☐ POOL WIDTH > RIFFLE WIDTH [2]
- ■ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY
Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☐ MODERATE [1]
- ■ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Pool / Current Maximum 12 8

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ■ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☐ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☐ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☐ STABLE (e.g., Cobble, Boulder) [2]
- ☐ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☐ MODERATE [0]
- ☐ EXTENSIVE [-1]

Riffle / Run Maximum 8 0

Comments

6] GRADIENT (ft/mi) DRAINAGE AREA (mi²)
- ■ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

%POOL: 100 %GLIDE: ___ %RUN: ___ %RIFFLE: ___

Gradient Maximum 10 4

] SAMPLED REACH
Check ALL that apply

ETHOD
- BOAT
- WADE
- L. LINE
- OTHER

STAGE (1st -sample pass- 2nd)
- ☐ HIGH ☐
- ☐ UP ☐
- ■ NORMAL ■
- ☐ LOW ☐
- ☐ DRY ☐

ISTANCE
- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

50 meters

CLARITY (1st --sample pass-- 2nd)
- ☐ < 20 cm ☐
- ☐ 20-<40 cm ☐
- ☐ 40-70 cm ☐
- ■ > 70 cm/ CTB ■
- ☐ SECCHI DEPTH ☐

CANOPY
- > 85%- OPEN
- 55%-<85%
- 30%-<55%
- 10%-<30%
- <10%- CLOSED

pass 1st 110 cm
pass 2nd 110 cm

C] RECREATION AREA DEPTH
POOL: ■ >100ft² ■ >3ft

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Water is tanin-stained
Dissolved oxygen: 9.9 mg/L ORP: 134.2
Temperature: 13.8°C
Conductivity: 205 µS/cm
pH: 7.46

B] AESTHETICS
- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

D] MAINTENANCE
PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD-CONTROL / DRAINAGE

Circle some & *COMMENT*

Paper plant downstream on left bank

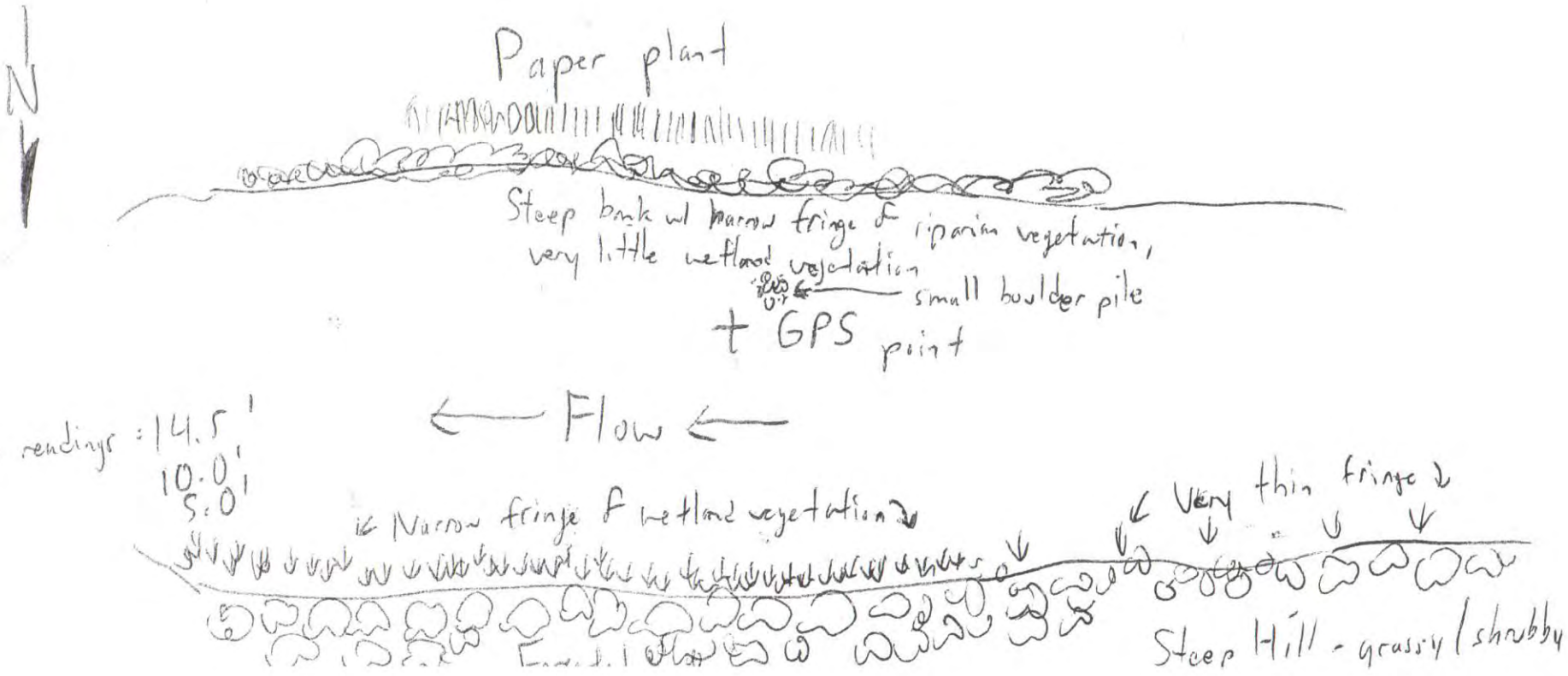
Right bank

Dam ~1500' downstream

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- x̄ width
- x̄ depth
- max. depth
- x̄ bankfull width
- bankfull x̄ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio
- *Legacy Tree:*

Stream Drawing:



OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 45.5

Stream & Location: Upper St. Louis River, site #34 **RM:** ___ **Date:** 7/21/11

Scorers Full Name & Affiliation: Jonathon M. DeMike, Affiliated Researchers

River Code: ___-___-___ **STORET #:** ___ **Lat./Long.:** (NAD 83 - decimal °) 46.7205 92.4274 **Office verified location** ☐

1] SUBSTRATE
Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]	___	___	☐ ☐ HARDPAN [4]	___	___
☐ ☐ BOULDER [9]	___	___	☐ ☐ DETRITUS [3]	___	___
☐ ☐ COBBLE [8]	___	___	☐ ☐ MUCK [2]	___	___
☐ ☐ GRAVEL [7]	___	___	☐ ☐ SILT [2]	___	___
☐ ☐ SAND [6]	___	___	☐ ☐ ARTIFICIAL [0]	___	___
■ ■ BEDROCK [5]	___	___	(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT
- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ■ FREE [1]

EMBEDDEDNESS
- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ■ NONE [1]

Substrate 7 *Maximum 20*

Comments

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

- ___ UNDERCUT BANKS [1]
- ✓ OVERHANGING VEGETATION [1]
- ___ SHALLOWS (IN SLOW WATER) [1]
- ___ ROOTMATS [1]
- ✓ POOLS > 70cm [2]
- ___ ROOTWADS [1]
- ___ BOULDERS [1]
- ✓ OXBOWS, BACKWATERS [1]
- ___ AQUATIC MACROPHYTES [1]
- ___ LOGS OR WOODY DEBRIS [1]

AMOUNT
Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ☐ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ■ NEARLY ABSENT <5% [1]

Cover Maximum 20 5

Comments

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ■ MODERATE [3]
- ☐ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☐ GOOD [5]
- ■ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ■ NONE [6]
- ☐ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ■ HIGH [3]
- ☐ MODERATE [2]
- ☐ LOW [1]

Channel Maximum 20 15

Comments

4] BANK EROSION AND RIPARIAN ZONE
Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION (L / R)
- ■ ■ NONE / LITTLE [3]
- ☐ ☐ MODERATE [2]
- ☐ ☐ HEAVY / SEVERE [1]

RIPARIAN WIDTH (L / R)
- ☐ ☐ WIDE > 50m [4]
- ☐ ☐ MODERATE 10-50m [3]
- ☐ ☐ NARROW 5-10m [2]
- ■ ☐ VERY NARROW < 5m [1]
- ☐ ■ NONE [0]

FLOOD PLAIN QUALITY (L / R)
- ■ ■ FOREST, SWAMP [3]
- ■ ☐ SHRUB OR OLD FIELD [2]
- ☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]
- ☐ ☐ FENCED PASTURE [1]
- ☐ ☐ OPEN PASTURE, ROWCROP [0]
- ☐ ☐ CONSERVATION TILLAGE [1]
- ■ ☐ URBAN OR INDUSTRIAL [0]
- ☐ ☐ MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments Downstream old field/shrubby, upstream industrial on left bank

Riparian Maximum 10 5.5

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH
Check **ONE** (*ONLY!*)
- ■ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☐ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH
Check ONE (*Or 2 & average*)
- ■ POOL WIDTH > RIFFLE WIDTH [2]
- ☐ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY
Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☐ MODERATE [1]
- ■ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Pool / Current Maximum 12 9

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ■ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☐ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☐ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☐ STABLE (e.g., Cobble, Boulder) [2]
- ☐ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☐ MODERATE [0]
- ☐ EXTENSIVE [-1]

Riffle / Run Maximum 8 0

Comments

6] GRADIENT (ft/mi) DRAINAGE AREA (mi²)
- ■ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

%POOL: 100 %GLIDE: ___ %RUN: ___ %RIFFLE: ___

Gradient Maximum 10 4

A] SAMPLED REACH
Check ALL that apply

METHOD
- [x] BOAT
- [ ] WADE
- [ ] L. LINE
- [ ] OTHER

DISTANCE
- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

50 meters

STAGE (1st -sample pass- 2nd)
- [ ] HIGH
- [ ] UP
- [x] NORMAL
- [ ] LOW
- [ ] DRY

CLARITY (1st --sample pass-- 2nd)
- [ ] < 20 cm
- [ ] 20-<40 cm
- [ ] 40-70 cm
- [x] > 70 cm/ CTB
- [ ] SECCHI DEPTH

CANOPY
- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

1st pass 120 cm
2nd 120 cm

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

water is tanin-stained
Dissolved oxygen: 12.1 mg/L ORP: 127.0
Temperature: 12.1 °C
Conductivity: 282 µS/cm
pH: 7.3

B] AESTHETICS
- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION
AREA DEPTH
POOL: [x] >100ft² [x] >3ft

D] MAINTENANCE
PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Dam downstream

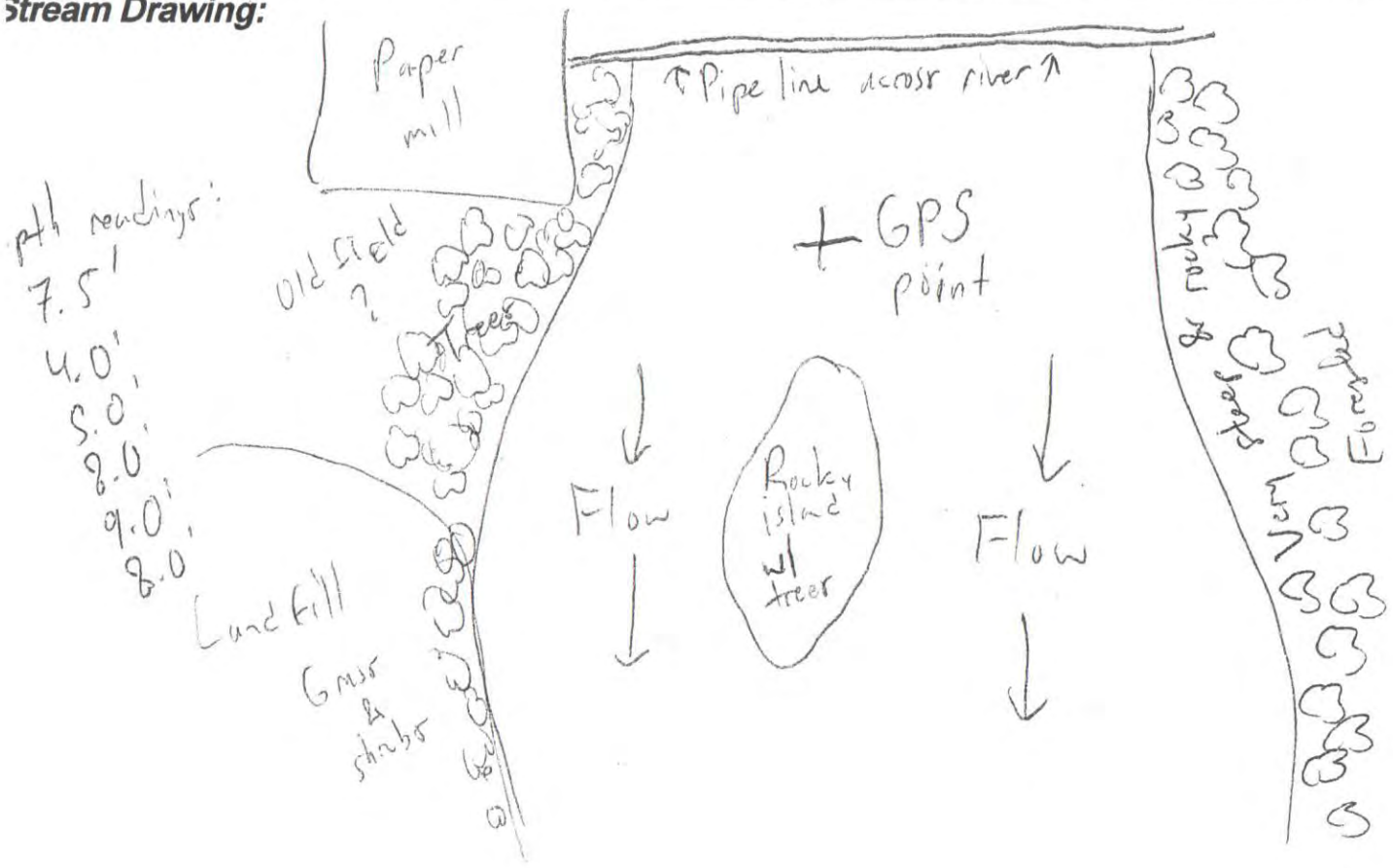
Circle some & *COMMENT*

Paper mill upstream, landfill downstream on L bank, R bank is natural

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_2O / TILE / H_2O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- x̄ width
- x̄ depth - 7.0'
- max. depth
- x̄ bankfull width
- bankfull x̄ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio
- *Legacy Tree:*

Stream Drawing:



OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 70

Stream & Location: Upper St. Louis River, site #39 **RM:** . **Date:** 7/21/11

Scorers Full Name & Affiliation: Jonathon M. DeNike, Affiliated Researchers

River Code: ___-___-___ **STORET #:** _____ **Lat./Long.:** 46.71081 92.4207 (NAD 83 - decimal °) Office verified location ☐

1] SUBSTRATE
Check ***ONLY*** **Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐☐ BLDR /SLABS [10]	___	___	☐☐ HARDPAN [4]	___	___
☐☐ BOULDER [9]	___	___	☐■ DETRITUS [3]	___	___
☐☐ COBBLE [8]	___	___	☐☐ MUCK [2]	___	___
☐■ GRAVEL [7]	___	___	☐■ SILT [2]	___	___
☐■ SAND [6]	___	___	☐☐ ARTIFICIAL [0]	___	___
☐☐ BEDROCK [5]	___	___	(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT
- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ■ NORMAL [0]
- ☐ FREE [1]

EMBEDDEDNESS
- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ■ NORMAL [0]
- ☐ NONE [1]

Comments More sand & silt than gravel in ponar grabs

Substrate 18 *Maximum 20*

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

___ UNDERCUT BANKS [1]	___ POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
___ OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	___ AQUATIC MACROPHYTES [1]
___ SHALLOWS (IN SLOW WATER) [1]	___ BOULDERS [1]	___ LOGS OR WOODY DEBRIS [1]
___ ROOTMATS [1]		

AMOUNT
Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ■ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments Lots of cover between rocky outcrops, lush aquatic weedbeds in cover

Cover 15 *Maximum 20*

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ■ MODERATE [3]
- ☐ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☐ GOOD [5]
- ■ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ■ NONE [6]
- ☐ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ■ HIGH [3]
- ☐ MODERATE [2]
- ☐ LOW [1]

Comments

Channel 15 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE
Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION (L R)
- ■ ■ NONE / LITTLE [3]
- ☐ ☐ MODERATE [2]
- ☐ ☐ HEAVY / SEVERE [1]

RIPARIAN WIDTH (L R)
- ☐ ☐ WIDE > 50m [4]
- ■ ■ MODERATE 10-50m [3]
- ☐ ☐ NARROW 5-10m [2]
- ☐ ☐ VERY NARROW < 5m [1]
- ☐ ☐ NONE [0]

FLOOD PLAIN QUALITY (L R)
- ■ ■ FOREST, SWAMP [3]
- ☐ ☐ SHRUB OR OLD FIELD [2]
- ☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]
- ☐ ☐ FENCED PASTURE [1]
- ☐ ☐ OPEN PASTURE, ROWCROP [0]
- ☐ ☐ CONSERVATION TILLAGE [1]
- ☐ ☐ URBAN OR INDUSTRIAL [0]
- ☐ ☐ MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 9 *Maximum 10*

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH
Check **ONE** (*ONLY!*)
- ■ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☐ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH
Check ONE (*Or 2 & average*)
- ■ POOL WIDTH > RIFFLE WIDTH [2]
- ☐ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY
Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☐ MODERATE [1]
- ■ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 9 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*).

■ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☐ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☐ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☐ STABLE (e.g., Cobble, Boulder) [2]
- ☐ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☐ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments

Riffle / Run 0 *Maximum 8*

6] GRADIENT
DRAINAGE AREA (ft/mi) (mi²)

- ■ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

%POOL: 100 %GLIDE: ___ %RUN: ___ %RIFFLE: ___

Gradient 4 *Maximum 10*

A] SAMPLED REACH
Check ALL that apply

METHOD
- [x] BOAT
- [ ] WADE
- [ ] L. LINE
- [ ] OTHER

DISTANCE
- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

50 meters

STAGE (1st -sample pass- 2nd)
- [ ] HIGH
- [ ] UP
- [x] NORMAL
- [ ] LOW
- [ ] DRY

CLARITY (1st --sample pass-- 2nd)
- [ ] < 20 cm
- [ ] 20-<40 cm
- [ ] 40-70 cm
- [x] > 70 cm/ CTB
- [x] SECCHI DEPTH

1st pass 120 cm
2nd pass 120 cm

CANOPY
- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Water is tan-stained
Dissolved oxygen: 11.9 mg/L ORP: 127.8
Temperature: 12.2°C
Conductivity: 280 µS/cm
pH: 7.1

B] AESTHETICS
- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION AREA ° DEPTH
POOL: [x] >100ft² [x] >3ft

D] MAINTENANCE Circle some & *COMMENT*
PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
~~FLOOD CONTROL / DRAINAGE~~ Dam downstream

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- $\bar{x}$ width
- $\bar{x}$ depth
- max. depth
- $\bar{x}$ bankfull width
- bankfull $\bar{x}$ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio
- *Legacy Tree:*

Stream Drawing:

OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 65

Stream & Location: Upper St. Louis River, site #44 **RM:** . **Date:** 7/20/11

Scorers Full Name & Affiliation: Jonathon M. DeVike, Affiliated Researchers

River Code: - - **STORET #:** **Lat./Long.:** (NAD 83 - decimal °) 46.7045 / 92.4183 **Office verified location** ☐

1] SUBSTRATE
Check *ONLY* Two substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
■ BLDR /SLABS [10]			☐ HARDPAN [4]		
☐ BOULDER [9]			☐ DETRITUS [3]		
☐ COBBLE [8]			☐ MUCK [2]		
☐ GRAVEL [7]	*		■ SILT [2]		
■ SAND [6]			☐ ARTIFICIAL [0]		
☐ BEDROCK [5]			(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN	QUALITY	
☐ LIMESTONE [1]	☐ HEAVY [-2]	
☐ TILLS [1]	☐ MODERATE [-1]	SILT
☐ WETLANDS [0]	■ NORMAL [0]	
☐ HARDPAN [0]	☐ FREE [1]	
☐ SANDSTONE [0]	☐ EXTENSIVE [-2]	EMBEDDEDNESS
☐ RIP/RAP [0]	☐ MODERATE [-1]	
☐ LACUSTURINE [0]	■ NORMAL [0]	
☐ SHALE [-1]	☐ NONE [1]	
☐ COAL FINES [-2]		

Substrate 18 *Maximum 20*

Comments
*Small amount of gravel in pour grabs

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

___ UNDERCUT BANKS [1]	1 POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
1 OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	___ AQUATIC MACROPHYTES [1]
___ SHALLOWS (IN SLOW WATER) [1]	1 BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]
___ ROOTMATS [1]		

AMOUNT (Check ONE (*Or 2 & average*))
☐ EXTENSIVE >75% [11]
☐ MODERATE 25-75% [7]
■ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

Comments

Cover 9 *Maximum 20*

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
■ HIGH [4]	☐ EXCELLENT [7]	■ NONE [6]	■ HIGH [3]
☐ MODERATE [3]	■ GOOD [5]	☐ RECOVERED [4]	☐ MODERATE [2]
☐ LOW [2]	☐ FAIR [3]	☐ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel 18 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE
Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)
River right looking downstream

EROSION (L / R)	RIPARIAN WIDTH (L / R)	FLOOD PLAIN QUALITY (L / R)	
■ ■ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	■ ■ FOREST, SWAMP [3]	☐ ☐ CONSERVATION TILLAGE [1]
☐ ☐ MODERATE [2]	☐ ■ MODERATE 10-50m [3]	■ ☐ SHRUB OR OLD FIELD [2]	☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ HEAVY / SEVERE [1]	☐ ☐ NARROW 5-10m [2]	☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐ ☐ MINING / CONSTRUCTION [0]
	■ ☐ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]	
	☐ ☐ NONE [0]	☐ ☐ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 8 *Maximum 10*

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH (Check **ONE** (*ONLY!*))
■ > 1m [6]
☐ 0.7-<1m [4]
☐ 0.4-<0.7m [2]
☐ 0.2-<0.4m [1]
☐ < 0.2m [0]

CHANNEL WIDTH (Check ONE (*Or 2 & average*))
☐ POOL WIDTH > RIFFLE WIDTH [2]
■ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY (Check ALL that apply)
☐ TORRENTIAL [-1] ■ SLOW [1]
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]
☐ FAST [1] ☐ INTERMITTENT [-2]
☐ MODERATE [1] ☐ EDDIES [1]
Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 8 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ■ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☐ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0] ☐ EXTENSIVE [-1]

Comments

Riffle / Run 0 *Maximum 8*

6] GRADIENT (ft/mi)
DRAINAGE AREA (mi²)

■ VERY LOW - LOW [2-4]
☐ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 100 %GLIDE: %RUN: %RIFFLE:

Gradient 4 *Maximum 10*

A] SAMPLED REACH
Check ALL that apply

METHOD
- [x] BOAT
- [ ] WADE
- [ ] L. LINE
- [ ] OTHER

DISTANCE
- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

50 meters

STAGE

1st -sample pass- 2nd	
☐ HIGH	☐
☐ UP	☐
■ NORMAL	■
☐ LOW	☐
☐ DRY	☐

CLARITY

1st --sample pass-- 2nd	
☐ < 20 cm	☐
☐ 20-<40 cm	☐
☐ 40-70 cm	☐
■ > 70 cm/ CTB	■
■ SECCHI DEPTH	■

pass 1st 100 cm
pass 2nd 100 cm

CANOPY
- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

water is tanin-stained
Dissolved oxygen: 12.5 mg/L ORP: 152.4
Temperature: 10.7 °C
Conductivity: 220 µS/cm
pH: 7.46

B] AESTHETICS
- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION AREA DEPTH
POOL: ■ >100ft² ■ >3ft

D] MAINTENANCE
Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

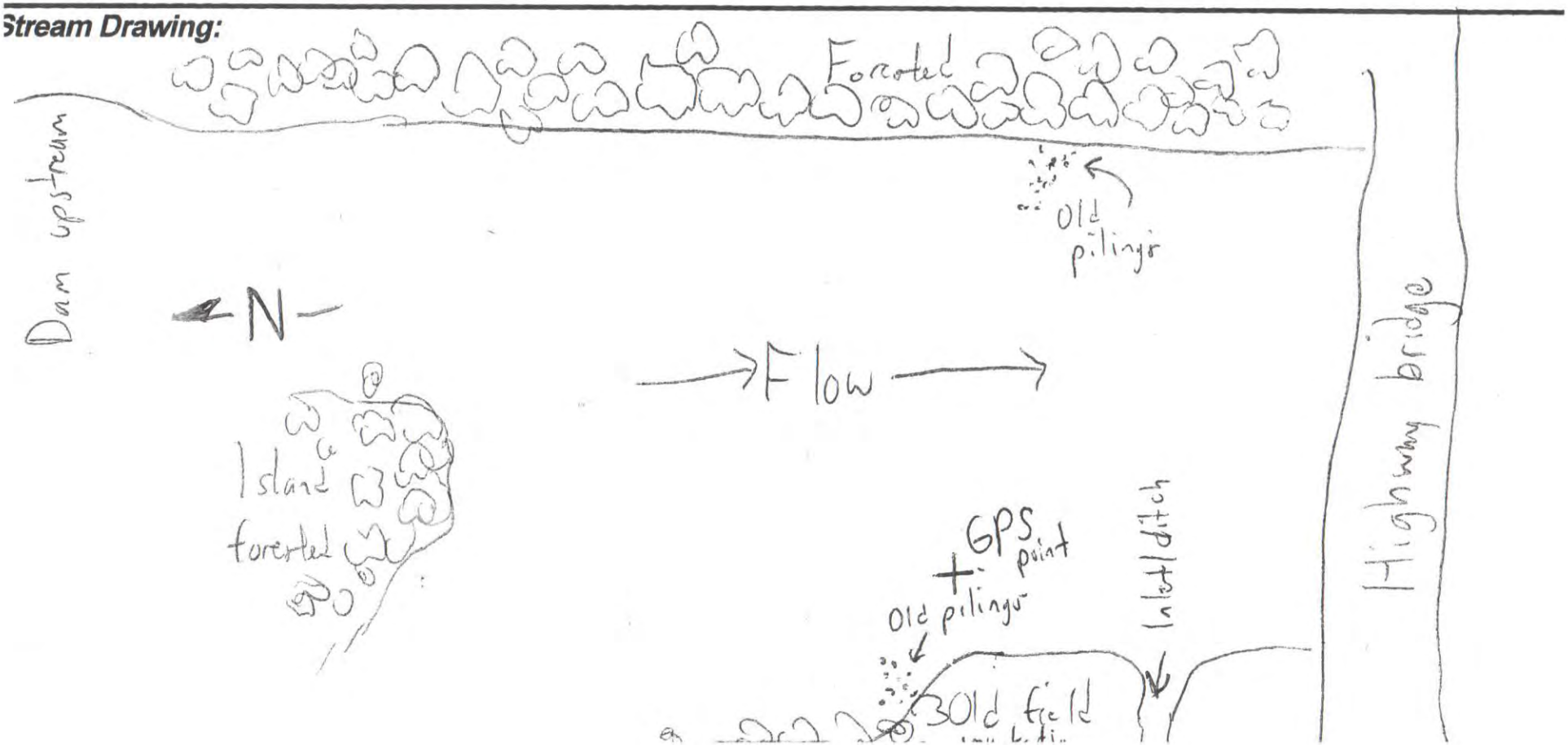
E] ISSUES

WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- x̄ width
- x̄ depth ~10'
- max. depth
- x̄ bankfull width
- bankfull x̄ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:



OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 63.5

Stream & Location: Upper St. Louis River, Stn #98 **RM:** _____ **Date:** 7/21/11

Scorers Full Name & Affiliation: Jonathan M. DeMike, Affiliated Researchers

River Code: ___-___-___ **STORET #:** _____ **Lat./Long.:** (NAD 83 - decimal °) 46.6508 / 92.3395 **Office verified location** ☐

1] SUBSTRATE
Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐☐ BLDR /SLABS [10]	____	____	☐☐ HARDPAN [4]	____	____
■■ BOULDER [9]	____	____	☐☐ DETRITUS [3]	____	____
☐☐ COBBLE [8]	____	____	☐☐ MUCK [2]	____	____
☐☐ GRAVEL [7]	____	____	☐☐ SILT [2]	____	____
☐☐ SAND [6]	____	____	☐☐ ARTIFICIAL [0]	____	____
☐☐ BEDROCK [5]	____	____	(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

Check ONE (Or 2 & average)

ORIGIN
☐ LIMESTONE [1]
☐ TILLS [1]
☐ WETLANDS [0]
☐ HARDPAN [0]
☐ SANDSTONE [0]
☐ RIP/RAP [0]
☐ LACUSTURINE [0]
☐ SHALE [-1]
☐ COAL FINES [-2]

QUALITY
SILT
☐ HEAVY [-2]
☐ MODERATE [-1]
☐ NORMAL [0]
■ FREE [1]
EMBEDDEDNESS
☐ EXTENSIVE [-2]
☐ MODERATE [-1]
☐ NORMAL [0]
■ NONE [1]

Comments

Substrate 11 *Maximum 20*

2] INSTREAM COVER
Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

✓ UNDERCUT BANKS [1]	✓ POOLS > 70cm [2]	____ OXBOWS, BACKWATERS [1]
✓ OVERHANGING VEGETATION [1]	✓ ROOTWADS [1]	✓ AQUATIC MACROPHYTES [1]
____ SHALLOWS (IN SLOW WATER) [1]	✓ BOULDERS [1]	✓ LOGS OR WOODY DEBRIS [1]
____ ROOTMATS [1]		

AMOUNT
Check ONE (Or 2 & average)
☐ EXTENSIVE >75% [11]
☐ MODERATE 25-75% [7]
■ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

Comments

Cover *Maximum 20* 8

3] CHANNEL MORPHOLOGY
Check ONE in each category (Or 2 & average)

SINUOSITY
☐ HIGH [4]
■ MODERATE [3]
☐ LOW [2]
☐ NONE [1]

DEVELOPMENT
☐ EXCELLENT [7]
■ GOOD [5]
☐ FAIR [3]
☐ POOR [1]

CHANNELIZATION
■ NONE [6]
☐ RECOVERED [4]
☐ RECOVERING [3]
☐ RECENT OR NO RECOVERY [1]

STABILITY
■ HIGH [3]
☐ MODERATE [2]
☐ LOW [1]

Comments

Channel *Maximum 20* 17

4] BANK EROSION AND RIPARIAN ZONE
Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream

EROSION

L	R	
■	☐	NONE / LITTLE [3]
☐	■	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

RIPARIAN WIDTH

L	R	
☐	☐	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☐	☐	NARROW 5-10m [2]
■	■	VERY NARROW < 5m [1]
☐	☐	NONE [0]

FLOOD PLAIN QUALITY

L	R	
■	■	FOREST, SWAMP [3]
☐	☐	SHRUB OR OLD FIELD [2]
☐	☐	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☐	☐	OPEN PASTURE, ROWCROP [0]
☐	☐	CONSERVATION TILLAGE [1]
☐	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian *Maximum 10* 6.5

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH
Check ONE (ONLY!)
■ > 1m [6]
☐ 0.7-<1m [4]
☐ 0.4-<0.7m [2]
☐ 0.2-<0.4m [1]
☐ < 0.2m [0]

CHANNEL WIDTH
Check ONE (Or 2 & average)
■ POOL WIDTH > RIFFLE WIDTH [2]
☐ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY
Check ALL that apply
☐ TORRENTIAL [-1]
☐ VERY FAST [1]
☐ FAST [1]
■ MODERATE [1]
☐ SLOW [1]
☐ INTERSTITIAL [-1]
☐ INTERMITTENT [-2]
☐ EDDIES [1]
Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current *Maximum 12* 9

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH
■ BEST AREAS > 10cm [2]
☐ BEST AREAS 5-10cm [1]
☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
■ MAXIMUM > 50cm [2]
☐ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
■ STABLE (e.g., Cobble, Boulder) [2]
☐ MOD. STABLE (e.g., Large Gravel) [1]
☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
■ NONE [2]
☐ LOW [1]
☐ MODERATE [0]
☐ EXTENSIVE [-1]

Comments

Riffle / Run *Maximum 8* 8

6] GRADIENT
DRAINAGE AREA (ft/mi) (mi²)

■ VERY LOW - LOW [2-4]
☐ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: ____ %GLIDE: 50
%RUN: ____ %RIFFLE: 50

Gradient *Maximum 10* 4

A] SAMPLED REACH
Check ALL that apply

METHOD
- [x] BOAT
- [ ] WADE
- [ ] L. LINE
- [ ] OTHER

DISTANCE
- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

50 meters

CANOPY
- [ ] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

STAGE

1st -sample pass-		2nd
☐	HIGH	☐
☐	UP	☐
■	NORMAL	■
☐	LOW	☐
☐	DRY	☐

CLARITY

1st --sample pass--		2nd
☐	< 20 cm	☐
☐	20-<40 cm	☐
☐	40-70 cm	☐
■	> 70 cm/ CTB	■
■	SECCHI DEPTH	■

1st pass 110 cm
2nd 110 cm

C] RECREATION AREA DEPTH
POOL: ■ >100ft² ■ >3ft

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

water is tanin-stained
Dissolved oxygen: 15.1 mg/L ORP: 81.2
Temperature: 9.8°C
Conductivity 272 µS/cm
pH. 7.95

B] AESTHETICS
- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

D] MAINTENANCE
PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

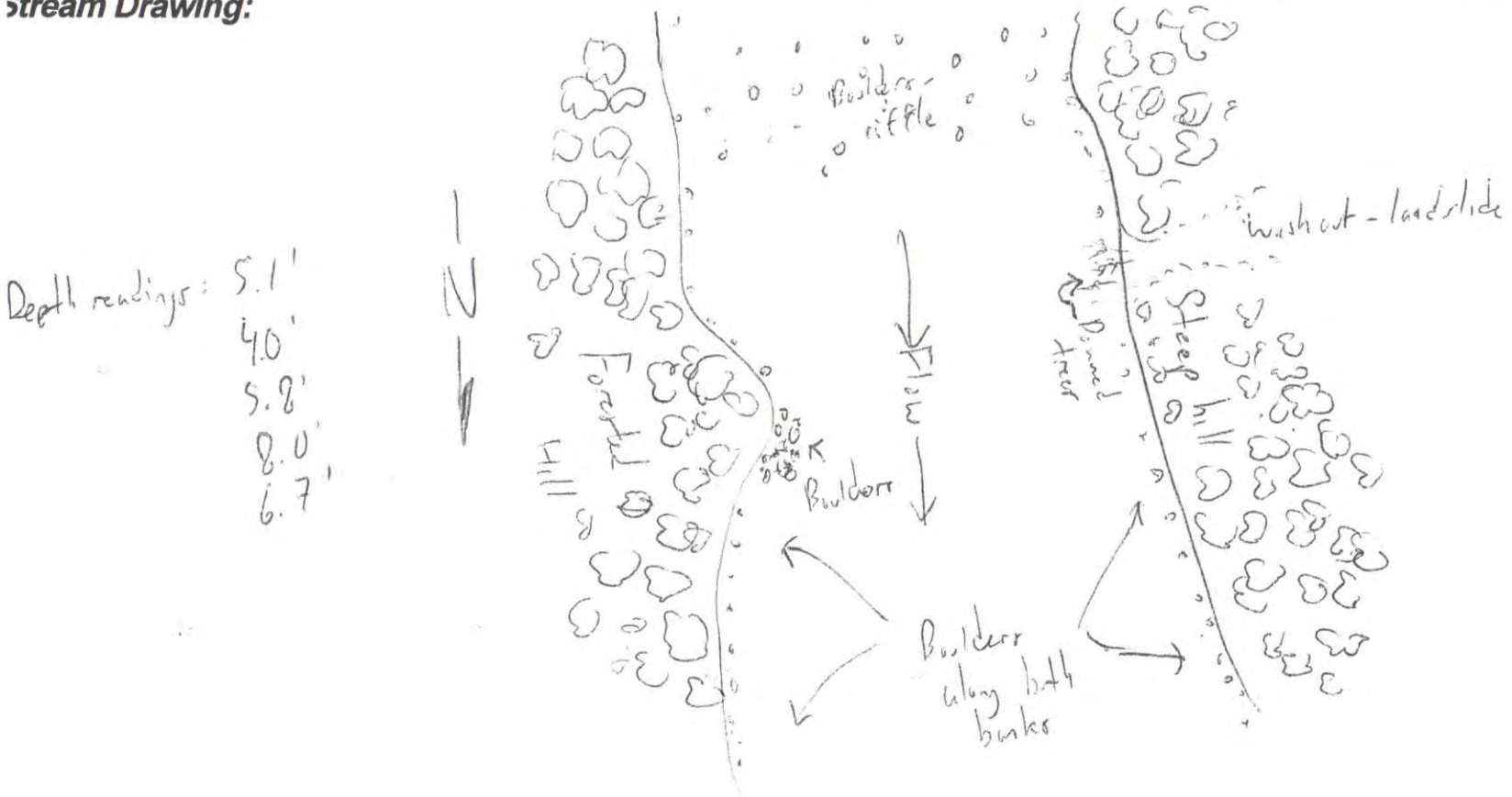
Circle some & *COMMENT*

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- $\bar{x}$ width
- $\bar{x}$ depth
- max. depth
- $\bar{x}$ bankfull width
- bankfull $\bar{x}$ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:



OhioEPA — Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 61

Stream & Location: Upper St. Louis River, Site #50 **RM:** _____ **Date:** 7/21/11

Scorers Full Name & Affiliation: Jonathon M. DeNike — Affiliated Researchers

River Code: ___-___-___ **STORET #:** _____ **Lat./Long.:** (NAD 83 - decimal °) 46.6607 92.3248 **Office verified location** ☐

1] SUBSTRATE
Check *ONLY* Two substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐☐ BLDR /SLABS [10]	____	____	☐☐ HARDPAN [4]	____	____
☐☐ BOULDER [9]	____	____	☐☐ DETRITUS [3]	____	____
■☐ COBBLE [8]	____	____	☐☐ MUCK [2]	____	____
■☐ GRAVEL [7]	____	____	☐■ SILT [2]	*	____
☐☐ SAND [6]	____	____	☐☐ ARTIFICIAL [0]	____	____
☐☐ BEDROCK [5]	____	____	(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

ORIGIN (Check ONE (*Or 2 & average*))
☐ LIMESTONE [1]
☐ TILLS [1]
☐ WETLANDS [0]
☐ HARDPAN [0]
☐ SANDSTONE [0]
☐ RIP/RAP [0]
☐ LACUSTURINE [0]
☐ SHALE [-1]
☐ COAL FINES [-2]

QUALITY
SILT:
☐ HEAVY [-2]
☐ MODERATE [-1]
☐ NORMAL [0]
■ FREE [1]

EMBEDDEDNESS:
☐ EXTENSIVE [-2]
☐ MODERATE [-1]
☐ NORMAL [0]
■ NONE [1]

Substrate 19 (Maximum 20)

Comments
* Western shore has silt in shallow water

2] INSTREAM COVER
Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

___ UNDERCUT BANKS [1]	___ POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
2 OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	1 AQUATIC MACROPHYTES [1]
1 SHALLOWS (IN SLOW WATER) [1]	___ BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]
___ ROOTMATS [1]		

AMOUNT (Check ONE (*Or 2 & average*))
☐ EXTENSIVE >75% [11]
☐ MODERATE 25-75% [7]
☐ SPARSE 5-<25% [3]
■ NEARLY ABSENT <5% [1]

Comments

Cover 7 (Maximum 20)

3] CHANNEL MORPHOLOGY
Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	■ NONE [6]	■ HIGH [3]
■ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	☐ MODERATE [2]
☐ LOW [2]	■ FAIR [3]	☐ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel 15 (Maximum 20)

4] BANK EROSION AND RIPARIAN ZONE
Check ONE in each category for *EACH BANK* (*Or 2 per bank & average*)
River right looking downstream

EROSION (L / R)	RIPARIAN WIDTH (L / R)	FLOOD PLAIN QUALITY (L / R)
■■ NONE / LITTLE [3]	☐☐ WIDE > 50m [4]	■■ FOREST, SWAMP [3]
☐☐ MODERATE [2]	☐☐ MODERATE 10-50m [3]	☐☐ SHRUB OR OLD FIELD [2]
☐☐ HEAVY / SEVERE [1]	☐■ NARROW 5-10m [2]	☐☐ RESIDENTIAL, PARK, NEW FIELD [1]
	☐☐ VERY NARROW < 5m [1]	☐☐ FENCED PASTURE [1]
	■☐ NONE [0]	☐☐ OPEN PASTURE, ROWCROP [0]

☐☐ CONSERVATION TILLAGE [1]
☐☐ URBAN OR INDUSTRIAL [0]
☐☐ MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 7 (Maximum 10)

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH (Check ONE (*ONLY!*))
■ > 1m [6]
☐ 0.7-<1m [4]
☐ 0.4-<0.7m [2]
☐ 0.2-<0.4m [1]
☐ < 0.2m [0]

CHANNEL WIDTH (Check ONE (*Or 2 & average*))
■ POOL WIDTH > RIFFLE WIDTH [2]
☐ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY (Check ALL that apply)
☐ TORRENTIAL [-1]
☐ VERY FAST [1]
☐ FAST [1]
☐ MODERATE [1]
■ SLOW [1]
☐ INTERSTITIAL [-1]
☐ INTERMITTENT [-2]
☐ EDDIES [1]
Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 9 (Maximum 12)

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ■ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☐ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0] ☐ EXTENSIVE [-1]

Comments

Riffle / Run 0 (Maximum 8)

6] GRADIENT (ft/mi)
DRAINAGE AREA (mi²)

■ VERY LOW - LOW [2-4]
☐ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 100 %GLIDE: ____
%RUN: ____ %RIFFLE: ____

Gradient 4 (Maximum 10)

A] SAMPLED REACH
Check ALL that apply

METHOD
- [x] BOAT
- [ ] WADE
- [ ] L. LINE
- [ ] OTHER

DISTANCE
- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER 50 meters

CANOPY
- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

STAGE

1st -sample pass-	2nd
☐ HIGH	☐
☐ UP	☐
■ NORMAL	■
☐ LOW	☐
☐ DRY	☐

CLARITY

1st --sample pass--	2nd
☐ < 20 cm	☐
☐ 20-<40 cm	☐
☐ 40-70 cm	☐
■ > 70 cm/ CTB	■
■ SECCHI DEPTH	■

1st pass 100 cm
2nd 100 cm

C] RECREATION AREA DEPTH
POOL: ■ >100ft² ■ >3ft

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Water is Tannin-stained
Dissolved oxygen: 13.7 mg/L ORP: 107.4
Temperature: 11.2°C
Conductivity: 295 µS/cm
pH: 7.7

B] AESTHETICS
- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

D] MAINTENANCE
Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD-CONTROL / DRAINAGE

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS
- $\bar{x}$ width
- $\bar{x}$ depth
- max. depth
- $\bar{x}$ bankfull width
- bankfull $\bar{x}$ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio
- *Legacy Tree:*

Stream Drawing:

Depth readings: 14.0'
10.5'
10.0'
18.0'