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# **ANNUAL MONITORING REPORT**

## **October 1986 - September 1987**

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### **USS DULUTH WORKS SITE**

Prepared For  
USS, A Division of USX Corporation

January 1988

BARR ENGINEERING CO.  
Minneapolis, Minnesota

ANNUAL MONITORING REPORT  
OCTOBER, 1986 - SEPTEMBER, 1987  
USS DULUTH WORKS SITE

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USS DULUTH WORKS SITE

1.0 INTRODUCTION

The site of the former Duluth Works is located in the southern portion of the City of Duluth in St. Louis County, Minnesota. The Duluth Works was an integrated steel mill (coke production, steel production and finishing, and materials storage) that ended operation in May, 1979. The site is located adjacent to the St. Louis River estuary. A small stream with a 2.8 square mile drainage area flows through the northern portion of the site, immediately north of the former coke plant. The valley of this stream was used as a settling basin to dispose of wastes from operations at the coke plant. A small settling basin in the southern portion of the site was used to dispose of wastes from operations at the wire mill.

Routine water quality monitoring at the USS Duluth Works site began in September, 1985 in accordance with the Monitoring Plan contained in the May, 1985 document entitled "Plans Submitted Pursuant to Part IV and Part V, Task A to Exhibit A, March 26, 1985 Response Order by Consent, U.S. Steel Duluth Works Site". The following sections summarize the results of water quality monitoring during the period from October, 1986 to September, 1987.

2.0 HYDROGEOLOGIC CONDITIONS

The geologic and hydrogeologic setting of the USS Duluth Works Site is summarized in the May, 1985 Barr Engineering Co. report.

As part of the annual monitoring program, water levels were measured in the monitoring wells prior to purging of the wells and collection of samples. The groundwater elevations at the monitoring wells are shown in

Table 1. Surficial groundwater contours were constructed from water level data collected in June, 1987 (Figure 1). Groundwater flow under the site is generally to the east toward the St. Louis River estuary. However, the stream that flows through the northern portion of the site also acts as a groundwater discharge zone for the northern portion of the site.

### 3.0 WATER QUALITY MONITORING PROGRAM

Sampling of monitoring wells and surface water stations at the USS Duluth Works Site was conducted in accordance with procedures specified in the Quality Assurance/Quality Control Plan in the May, 1985 report. The sampling locations are shown in Figure 2.

Seep 2 was destroyed by ditching in 1986 and had not been sampled since March, 1986. Prior to the December 1986 sampling event, the seep was reconstructed by inserting a 4-foot length of 6-inch diameter stainless steel pipe into the embankment.

Samples were collected quarterly (December, March, June, September) at Surface Stations CP-1, CP-2, CP-3, WM-1 and Seep 1. Samples were collected in June at Monitoring Wells W-6, W-7, W-8, W-9 and W-10. Seep 2 and Monitoring Wells W-11, W-12 and W-13 were sampled in December, March and June pursuant to the requirements of the Demolition Landfill Permit (SW-245). The permit was amended on June 9, 1987 by the MPCA and Seep 2 and Monitoring Wells W-11, W-12 and W-13 will be monitored once each year during the month of June until the landfill is placed into operation.

Samples collected from the monitoring wells and surface stations were analyzed for the parameters in Table 2. The June samples from all stations were also analyzed for parameters in Table 3. With the approval of the MPCA the analysis of samples for phenolic compounds was discontinued after the March sampling event with the exception of Seep 1 and CP-3. Monitoring for phenolic compounds continued at Seep 1 and CP-3 during the third quarter of 1987. Pursuant to the requirements of the Demolition Landfill Permit, samples collected at Seep 2 and Monitoring Wells W-11, W-12 and

W-13 were also analyzed for chemical oxygen demand, total dissolved solids, cadmium and chloride.

Due to a sampling error in June, samples were recollected in September at Seep 2 and Monitoring Wells W-11, W-12 and W-13 and the samples were analyzed for chemical oxygen demand and total dissolved solids.

Specific conductance, temperature, and pH were measured in the field immediately after collection of each sample.

#### 4.0 ANALYTICAL RESULTS

Laboratory data reports for the analysis of samples collected at the USS Duluth Works Site during the period from October, 1986 to September, 1987 are in Appendix A.

##### 4.1 PAH and Phenolic Compounds

The results of analysis of samples for PAH and phenolic compounds are presented in Table 4. The geographical distribution of PAH compounds at monitoring wells and surface stations in June, 1987 is shown in Figure 3. Geographical distributions for the analytical program parameters are shown for the June sampling event because this was the only sampling event where all monitoring wells were sampled.

PAH compounds included in the monitoring program are divided into two groups, List 1 and List 2. The List 1 compounds are suspected carcinogens and the List 2 are not suspected carcinogens. The highest concentrations of List 1 and List 2 PAH compounds were found in Monitoring Wells W-6 and W-8 and Surface Stations CP-2, CP-3 and WM-1. Levels of List 1 compounds in W-6 and W-8 exceeded the Recommended Allowable Limits (RALs) for drinking water. The analytical results of the sample collected from Seep 1 in September, 1987 showed 1.2 ug/L of List 1 compounds and 1.4 ug/L of List 2 compounds. Other samples collected from this seep during the monitoring

monitoring period contained no detectable levels of List 1 compounds and concentrations of List 2 compounds ranging from not detectable to 2.3 ug/L. The monitoring wells in the vicinity of the demolition landfill did not contain detectable concentrations of List 1 compounds. Samples from these wells contained only low levels (<0.1 ug/L) of List 2 compounds.

Phenolic compounds were not detected in any of the samples collected from the monitoring wells and surface stations at the site during the monitoring period.

Graphs illustrating the concentration of List 1 and List 2 PAH compounds in the surficial aquifer and surface waters during the period from 1985 to 1987 are shown in Appendix B. List 1 compounds have either been not detected or detected at low levels at the monitoring stations during the last 3 years. There has not been an apparent change in concentrations of List 2 compounds in any of the monitoring wells or surface stations during the last 3 years.

#### 4.2 General Parameters

General parameters in the monitoring program included total organic carbon and the inorganic compounds except metals. The results of analysis of samples for general parameters are presented in Table 5. The geographical distribution of five general parameters (ammonia-nitrogen, total cyanide, thiocyanate, sulfate, total organic carbon) at monitoring wells and surface stations in June, 1987 are shown in Figure 4.

The concentrations of most general parameters in samples collected from monitoring stations at the site were low and demonstrated little spatial or temporal variability. The water quality standard for total cyanide in surface waters was exceeded at Surface Station CP-3 during 3 out of 4 sampling events. Sulfate levels in samples collected from Monitoring Well W-12 and Seep 2 were consistently higher than sulfate levels at other monitoring wells and surface stations.

Thiocyanate and sulfate were selected as indicator parameters for purposes of determining changes in contaminant concentrations with time. These parameters are considered possible indicators of groundwater and surface water contamination at the site for the following reasons: 1) the parameters have been consistently detected at elevated levels at the surface stations and monitoring wells at the site and, 2) thiocyanate and sulfide were major constituents of waste generated at the former steel mill. Graphs illustrating the concentrations of thiocyanate and sulfate in the surficial aquifer and surface waters during the period from 1985 to 1987 are shown in Appendix B. There were no apparent changes in concentrations of sulfate and thiocyanate at the monitoring stations during the period from 1985 to 1987. *(after anomalous peak in 1985).*

#### 4.3 Metals

Metals included in the monitoring program were filtered metals and unfiltered or total metals. The analytical results of samples for metals are presented in Table 6. The geographical distribution of five filtered metals (arsenic, chromium, lead, nickel, zinc) at monitoring wells and surface stations in June, 1987 are shown in Figure 5.

The concentration of metals in samples collected at the site during the monitoring periods were below the RALs for drinking water. *sk*

Both filtered and unfiltered samples were collected for analysis of metals at the surface stations. The collection and analysis of filtered and unfiltered samples was conducted to determine the influence of sediments on the concentration of metals in the surface water. The historical water quality data for filtered and unfiltered samples are presented in Table 7. A paired t-test at the 95% significance level was performed on the data to determine if there is a significant difference in metals concentration between filtered and unfiltered samples. Except for zinc at Surface Stations CP-1, CP-2 and CP-3, none of the metals showed a significant difference between the filtered and unfiltered concentrations. The analytical results of samples for zinc tend to be quite variable at low levels due to the difficulties in preventing trace contamination of zinc



during the sampling and analytical procedures. The apparent difference in zinc concentrations in filtered and unfiltered samples from CP-1, CP-2, and CP-3 may be a function of sampling or laboratory contamination and not an actual difference in zinc concentrations in the environmental samples.

#### 4.4 Field Data

Results of field analysis of samples for specific conductance, temperature and pH are in Table 8.

#### 5.0 QUALITY CONTROL REVIEW

Quality control procedures used in the collection and analysis of samples are described in the Quality Assurance/Quality Control Plan in the May, 1985 report. A review of the quality control data was conducted to assess the integrity of the sampling procedures and analytical results for samples collected during the annual monitoring program at the USS Duluth Works Site.

Field blank samples were collected during each sampling event and analyzed for PAH compounds and metals. The results of analysis of field blank samples for PAH and phenolic compounds and metals are presented in Tables 9 and 10, respectively. The field blank sample collected in September, 1987 was inadvertently not analyzed for metals by the laboratory. Detectable levels of metals and PAH compounds in the field blanks were used to determine possible false positive values in the water quality monitoring data. False positive values in the data were defined as concentrations less than or equal to the amount detected in the field blank. These values are footnoted with an "s" in the water quality monitoring data tables.

A blind duplicate or masked sample was collected at one monitoring station during each sampling event. The duplicate samples were analyzed for PAH and phenolic compounds. Table 11 shows the analytical results of blind duplicate samples. Coefficients of variation were computed for each duplicate pair and are shown in Table 12. A coefficient of variation less

than 0.25 is generally considered an indication of acceptable reproducibility of analytical results by the laboratory. All of the duplicate samples showed acceptable reproducibility except the duplicate sample collected at Surface Station CP-2 in September, 1987. Several compounds including acridine, phenanthridine, fluoranthene, and pyrene were detected in the sample collected from CP-2 but were not detected in the duplicate sample. *Explanation? not to be further investigated in next group of samples.*

#### 6.0 RECOMMENDED MONITORING PLAN FOR 1988

The following modifications in the monitoring plan are recommended for 1988:

- o Discontinue the analysis of samples for phenolic compounds at all monitoring stations with the exception of Seep 1 and CP-3 be monitored for phenolics during the third quarter of 1988.
- o Discontinue the analysis of samples for filtered metals at all surface stations. Samples collected at the surface stations will continue to be analyzed for total metals.
- o Eliminate the following annual monitoring parameters from the monitoring plan: calcium, magnesium, potassium, sodium, alkalinity and chloride. It does not appear that these parameters are providing any additional information on contaminant migration at the site.

The monitoring program as specified in the May, 1985 Barr Engineering Co. report with the above proposed modifications is the recommended routine water quality monitoring plan for the USS Duluth Works Site during 1988.

## Tables

TABLE 1  
GROUNDWATER ELEVATIONS  
October 1986 - September 1987

(Feet MSL)

<u>Well</u>	<u>12/9/86</u>	<u>3/3/87</u>	<u>6/4-5/87</u>	<u>9/8/87</u>
W-6	--	--	606.44	--
W-7	--	--	621.19	--
W-8	--	--	618.00	--
W-9	--	-	619.55	--
W-10	--	--	616.00	--
W-11	618.95	617.18	616.60	615.75
W-12	610.45	609.78	609.72	609.29
W-13	628.79	625.31	623.93	623.57

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-- Not measured

TABLE 2  
ANALYTICAL PROGRAM PARAMETERS

PAH and Heterocycles

benzo(a)anthracene	anthracene
dibenzo(ah)anthracene	fluoranthene
benzo(b)fluoranthene*	pyrene
benzo(a)pyrene	benzo(k)fluoranthene*
quinoline	benzo(e)pyrene
indeno(1,2,3-dc)pyrene	perylene
chrysene*	acridine
benzo(ghi)perylene	carbazole
indene	2,3-benzofuran
2,3-dihydroindene	dibenzofuran
naphthalene	benzo(b)thiophene
1-methylnaphthalene	dibenzothiophene
2-methylnaphthalene	indole
biphenyl	3-methylcholanthrene
acenaphthylene	triphenylene*
acenaphthene	phenanthridine
fluorene	isoquinoline
phenanthrene	

Phenols

phenol	4-nitrophenol
o-cresol	2,4-dinitrophenol
m-cresol and p-cresol*	4,6-dinitro-o-cresol
2-nitrophenol	2,4-dimethylphenol

Metals

chromium (total)  
lead  
nickel  
zinc  
arsenic

General Parameters

sulfate  
ammonia  
cyanide  
thiocyanate  
total organic carbon

\*These compounds coelute and are structural isomers (benzo(b)fluoranthene with benzo(k)fluoranthene; chrysene with triphenylene; and m-cresol with p-cresol) and therefore cannot be individually quantified.

TABLE 3  
ANNUAL MONITORING PARAMETERS

Metals

Calcium  
Magnesium  
Potassium  
Sodium

General Parameters

Alkalinity  
Chloride

TABLE 4  
WATER QUALITY MONITORING DATA  
PAH AND PHENOLIC COMPOUNDS

(concentrations in ug/L)

	CP-1				CP-2			
	12/09/86	03/04/87	06/03/87	09/09/87	12/09/86	03/04/87	06/03/87	09/09/87
Quinoline	<0.0010	<0.0025	0.0014	<0.0025	1.1	<0.6	0.0086	0.016
Benzo(a)anthracene	<0.0010	<0.0025	<0.0010	0.0027	0.062	<0.6	0.026	0.0099
Chrysene	<0.0010	0.0038 c	0.0012 c	0.0045 c	0.039 c	<0.6	0.0099 c	0.0087 c
Benzo(b)fluoranthene	<0.0010	<0.0025	<0.0010	0.0034 c	<0.0010	<0.6	0.012 c	0.016 c
Benzo(a)pyrene	<0.0010	<0.0025	<0.0010	<0.0025	<0.0010	<0.6	0.0041	0.0033
Indeno(1,2,3,cd)pyrene	<0.0017	<0.0043	<0.0017	<0.0043	<0.0017	<0.6	<0.0017	<0.0043
Dibenzo(ah)anthracene	<0.0014	<0.0035	<0.0014	<0.0035	<0.0014	<0.6	<0.0014	<0.0035
Benzo(ghi)perylene	<0.0010	<0.0025	<0.0010	<0.0025	<0.0010	<0.6	<0.0010	<0.0025
Sum List 1	ND	0.0038	0.0026	0.011	1.2	ND	0.060	0.054
2,3-Benzofuran	ND	ND	ND	0.0022	ND	<0.6	ND	0.0074
2,3-Dihydroindene	0.086	0.087	0.013	<0.0035	0.059	<0.6	0.0027	<0.0035
Indene	0.039	0.039	0.0051	0.0028	0.034	<0.6	0.029	0.034
Naphthalene	0.024	0.014	0.0062	0.0066 s	<0.0019	<0.6	0.0035	<0.0048
Benzo(b)thiophene	0.0084	0.0061	0.0043	0.0038 s	1.4	<0.6	0.056	0.058 s
Isoquinoline	ND	0.0035	0.0011	ND	1.1	0.7	0.30	0.11
Indole	<0.0029	<0.0073	<0.0029	<0.0073	<0.0029	<0.6	0.010	<0.0073
2-Methylnaphthalene	0.0052	<0.0050	<0.0020	<0.005	<0.0020	<0.6	<0.0020	<0.005
1-Methylnaphthalene	0.0063	0.0040	0.0014	<0.0025	0.23	<0.6	<0.0010	0.024
Biphenyl	0.0029	<0.0025	0.0011	<0.0025	0.36	<0.6	<0.0010	<0.0025
Acenaphthylene	0.0068	0.0025	<0.0010	<0.0025	2.8	<0.6	0.0099	0.015
Acenaphthene	0.011	0.0069	<0.0013	<0.0033	0.72	<0.6	0.031	0.060
Dibenzofuran	0.0072	0.0062	<0.0020	0.018	1.4	<0.6	0.038	0.066
Fluorene	0.0076	0.0036	<0.0014	<0.0035	1.3	<0.6	0.025	0.018
Dibenzothiophene	ND	0.0064	0.0023	0.0057	0.083	<0.6	0.047	0.035
Phenanthrene	0.0061	0.010	0.0040	0.0037	0.013	<0.6	<0.0010	<0.0025
Anthracene	0.0016	<0.0025	<0.0010	<0.0025	0.28	<0.6	<0.0010	0.065
Acridine	<0.0018	<0.0045	<0.0018	<0.0045	1.2	0.7	0.26	0.19
Phenanthridine	<0.0014	<0.0035	<0.0014	<0.0035	0.48	<0.6	0.23	0.31
Carbazole	0.0081	0.010	0.0027	<0.0028	0.033	<0.6	<0.0011	0.0053
Fluoranthene	0.0039	0.021	0.0072	0.0084	1.2	0.8	0.74	0.29
Pyrene	0.0028	0.021	0.0078	0.011	0.74	<0.6	0.36	0.14
Triphenylene	<0.0010	0.0038 c	0.0012 c	0.0045 c	0.039 c	<0.6	0.0099 c	0.0087 c
Benzo(k)fluoranthene	<0.0010	<0.0025	<0.0010	0.0034 c	<0.0010	<0.6	0.012 c	0.016 c
7,12-Dimethylbenz(a)anthracene	ND	ND	ND	ND	ND	<0.6	ND	ND
Benzo(e)pyrene	<0.0010	<0.0025	<0.0010	<0.0025	<0.0010	<0.6	0.0046	0.0036
Perylene	<0.0010	<0.0025	<0.0010	<0.0025	<0.0010	<0.6	<0.0010	<0.0025
3-Methylcholanthrene	ND	ND	ND	ND	ND	<0.6	ND	ND
Sum List 2	0.23	0.24	0.056	0.051	13	2.2	2.2	1.4
Phenol	<5	<6	--	--	<5	<6	--	--
2-Chlorophenol	<5	<6	--	--	<5	<6	--	--
2-Nitrophenol	<5	<6	--	--	<5	<6	--	--
2,4-Dimethylphenol	<5	<6	--	--	<5	<6	--	--
2,4-Dichlorophenol	<5	<6	--	--	<5	<6	--	--
4-Chloro-3-methylphenol	<5	<6	--	--	<5	<6	--	--
2,4,6-Trichlorophenol	<5	<6	--	--	<5	<6	--	--
2,4-Dinitrophenol	<25	<29	--	--	<25	<29	--	--
4-Nitrophenol	<5	<29	--	--	<5	<29	--	--
2-Methyl-4,6-dinitrophenol	<25	<29	--	--	<25	<29	--	--
Pentachlorophenol	<5	<6	--	--	<5	<6	--	--
O-Cresol	<5	<6	--	--	<5	<6	--	--
M-Cresol	<5	<6	--	--	<5	<6	--	--
P-Cresol	<5	<6	--	--	<5	<6	--	--

c Coeluting isomer. Concentration reported is the total concentration of the coeluting compound.  
s Possible false positive value based on review of quality control data.  
ND None detected. Detection limit not determined.  
-- Not analyzed.

TABLE 4 (cont.)  
WATER QUALITY MONITORING DATA  
PAH AND PHENOLIC COMPOUNDS

(concentrations in ug/L)

	CP-3				WM-1			
	12/09/86	03/03/87	06/03/87	09/09/87	12/09/86	03/03/87	06/03/87	09/09/87
Quinoline	0.11	0.050	<0.0010	<0.0025	0.0045	<0.025	0.0070	<0.005
Benzo(a)anthracene	0.028	0.057	0.017	0.010	0.0038	<0.025	<0.0050	0.041
Chrysene	0.018 c	0.044 c	0.0060 c	0.012 c	0.0067 c	<0.025	0.0086 c	0.076 c
Benzo(b)fluoranthene	<0.0040	0.028 c	0.0059 c	0.011 c	<0.0020	<0.025	<0.0050	0.085 c
Benzo(a)pyrene	<0.0040	0.023	<0.0010	<0.0025	<0.0020	<0.025	<0.0050	0.013
Indeno(1,2,3,cd)pyrene	<0.0068	0.010	<0.0017	<0.0043	<0.0034	<0.0425	<0.0085	0.013
Dibenzo(ah)anthracene	<0.0056	<0.0070	<0.0014	<0.0035	<0.0028	<0.035	<0.0070	<0.007
Benzo(ghi)perylene	<0.0040	0.011	0.0015	<0.0025	<0.0020	<0.025	<0.0050	0.014
Sum List 1	0.16	0.22	0.030	0.033	0.015	ND	0.016	0.24
2,3-Benzofuran	ND	ND	ND	0.0087	ND	ND	ND	0.042
2,3-Dihydroindene	0.014	0.045	0.0021	0.0049	0.14	0.45	0.21	0.090
Indene	0.033	0.048	0.040	0.040	0.041	0.10	0.12	0.19
Naphthalene	0.0029 s	<0.0095	0.0048	<0.0048	0.20	0.39	0.17	0.032 s
Benzo(b)thiophene	0.62	0.48	0.087	0.040	0.039	0.033	0.038	0.012 s
Isoquinoline	0.40	0.73	0.010	0.073	ND	ND	0.015	ND
Indole	<0.011	<0.0145	0.0082	<0.0073	<0.0058	<0.0725	<0.0145	<0.015
2-Methylnaphthalene	0.036	<0.010	<0.0020	<0.005	<0.0040	<0.050	<0.010	<0.010
1-Methylnaphthalene	0.0088	<0.0060	<0.0010	0.013	0.057	0.068	0.035	<0.005
Biphenyl	0.022	0.019	<0.0010	0.013	0.023	0.029	0.019	0.0079
Acenaphthylene	0.53	0.26	0.0062	0.042	<0.0020	0.034	0.018	0.014
Acenaphthene	0.24	0.23	<0.0013	0.055	0.54	0.89	0.36	0.38
Dibenzofuran	0.50	0.31	0.0081	0.11	0.16	0.13	0.16	0.12
Fluorene	0.34	0.50	0.0055	0.15	0.26	0.69	0.39	0.24
Dibenzothiophene	0.043	0.040	0.042	0.049	0.026	0.064	0.033	0.027
Phenanthrene	0.0094	0.028	<0.0010	0.14	0.15	0.22	0.13	0.11
Anthracene	0.098	0.12	<0.0010	0.069	0.030	0.047	0.014	0.011
Acridine	0.74	0.54	<0.0018	0.13	<0.0036	<0.045	0.011	<0.009
Phenanthridine	0.27	0.39	0.30	0.18	<0.0028	<0.035	<0.0070	<0.007
Carbazole	0.030	0.036	0.0028	0.0061	0.26	0.35	<0.0055	<0.0055
Fluoranthene	0.82	0.97	0.42	0.28	0.062	0.12	0.16	0.38
Pyrene	0.45	0.57	0.22	0.13	0.040	0.075	0.054	0.25
Triphenylene	0.018 c	0.044 c	0.0060 c	0.012 c	0.0067 c	<0.025	0.0086 c	0.076 c
Benzo(k)fluoranthene	<0.0040	0.028 c	0.0059 c	0.011 c	<0.0020	<0.025	<0.0050	0.085 c
7,12-Dimethylbenz(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(e)pyrene	<0.0040	0.013	<0.0010	0.003	<0.0020	<0.025	<0.0050	0.030
Perylene	<0.0040	<0.0050	<0.0010	<0.0025	<0.0020	<0.025	<0.0050	0.0058
3-Methylcholanthrene	ND	ND	ND	ND	ND	ND	ND	ND
Sum List 2	5.2	5.3	1.2	1.5	2.0	3.7	1.9	1.9
Phenol	<5	<6	--	<6	<5	<6	--	--
2-Chlorophenol	<5	<6	--	<6	<5	<6	--	--
2-Nitrophenol	<5	<6	--	<6	<5	<6	--	--
2,4-Dimethylphenol	<5	<6	--	<6	<5	<6	--	--
2,4-Dichlorophenol	<5	<6	--	<6	<5	<6	--	--
4-Chloro-3-methylphenol	<5	<6	--	<6	<5	<6	--	--
2,4,6-Trichlorophenol	<5	<6	--	<6	<5	<6	--	--
2,4-Dinitrophenol	<25	<29	--	<30	<25	<29	--	--
4-Nitrophenol	<5	<29	--	<30	<5	<29	--	--
2-Methyl-4,6-dinitrophenol	<25	<29	--	<30	<25	<29	--	--
Pentachlorophenol	<5	<6	--	<6	<5	<6	--	--
O-Cresol	<5	<6	--	<6	<5	<6	--	--
M-Cresol	<5	<6	--	<6	<5	<6	--	--
P-Cresol	<5	<6	--	<6	<5	<6	--	--

c Coeluting isomer. Concentration reported is the total concentration of the coeluting compound.  
s Possible false positive value based on review of quality control data.  
ND None detected. Detection limit not determined.  
-- Not analyzed.



TABLE 4 (cont.)  
WATER QUALITY MONITORING DATA  
PAH AND PHENOLIC COMPOUNDS

(concentrations in ug/L)

	SEEP-1				SEEP-2		
	12/09/86	03/04/87	06/03/87	09/09/87	12/09/86	03/04/87	06/03/87
Quinoline	<0.0080	<0.6	<0.0025	<0.010	0.0035	<0.0010	<0.0010
Benzo(a)anthracene	<0.0080	<0.6	<0.0025	0.56	<0.0020	<0.0010	<0.0010
Chrysene	<0.0080	<0.6	<0.0025	0.33 c	<0.0020	<0.0010	<0.0010
Benzo(b)fluoranthene	<0.0080	<0.6	<0.0025	0.19 c	<0.0020	<0.0010	<0.0010
Benzo(a)pyrene	<0.0080	<0.6	<0.0025	0.16	<0.0020	<0.0010	<0.0010
Indeno(1,2,3,cd)pyrene	<0.0136	<0.6	<0.0043	<0.017	<0.0034	<0.0017	<0.0017
Dibenzo(ah)anthracene	<0.0112	<0.6	<0.0035	<0.014	<0.0028	<0.0014	<0.0014
Benzo(ghi)perylene	<0.0080	<0.6	<0.0025	<0.010	<0.0020	<0.0010	<0.0010
Sum List 1	ND	ND	ND	1.2	0.0035	ND	ND
2,3-Benzofuran	ND	<0.6	ND	ND	ND	ND	ND
2,3-Dihydroindene	0.14	<0.6	<0.0035	<0.014	0.0052	0.0082	0.0070
Indene	0.0071	<0.6	<0.0025	<0.010	0.0037	0.0053	0.0043
Naphthalene	<0.0152	<0.6	<0.0048	<0.019	0.0049	0.0040	0.0059
Benzo(b)thiophene	0.33	<0.6	1.3	<0.010	0.040	0.0020	0.023
Isoquinoline	ND	<0.6	ND	ND	0.015	ND	0.0042
Indole	<0.023	<0.6	<0.0073	<0.029	<0.0058	<0.0029	<0.0029
2-Methylnaphthalene	<0.016	<0.6	<0.0050	<0.020	<0.0040	<0.0020	0.0022
1-Methylnaphthalene	<0.0096	<0.6	<0.0025	<0.010	<0.0024	0.0014	<0.0010
Biphenyl	<0.0080	<0.6	<0.0025	<0.010	<0.0020	<0.0010	0.0025
Acenaphthylene	0.089	<0.6	1.5	<0.010	<0.0020	<0.0010	<0.0010
Acenaphthene	0.53	<0.6	<0.0033	0.11	0.0061	0.027	0.0045
Dibenzofuran	0.37	<0.6	<0.0050	<0.020	<0.0040	0.0025	<0.0020
Fluorene	0.22	<0.6	<0.0035	<0.014	<0.0028	<0.0014	<0.0014
Dibenzothiophene	0.16	<0.6	ND	0.13	ND	ND	ND
Phenanthrene	<0.0080	<0.6	<0.0025	0.096	<0.0020	<0.0010	0.0015
Anthracene	0.071	<0.6	<0.0025	<0.010	<0.0020	<0.0010	<0.0010
Acridine	<0.014	<0.6	<0.0045	<0.018	<0.0036	<0.0018	<0.0018
Phenanthridine	0.11	<0.6	<0.0035	<0.014	<0.0028	<0.0014	<0.0014
Carbazole	<0.0088	<0.6	<0.0028	<0.011	<0.0022	<0.0011	<0.0011
Fluoranthene	0.091	<0.6	1.9	0.24	<0.0020	0.0023	<0.0010
Pyrene	0.22	<0.6	0.55	0.56	<0.0020	0.0020	<0.0010
Triphenylene	<0.0080	<0.6	<0.0025	0.33 c	<0.0020	<0.0010	<0.0010
Benzo(k)fluoranthene	<0.0080	<0.6	<0.0025	0.19 c	<0.0020	<0.0010	<0.0010
7,12-Dimethylbenz(a)anthracene	ND	<0.6	ND	ND	ND	ND	ND
Benzo(e)pyrene	<0.0080	<0.6	<0.0025	0.18	<0.0020	<0.0010	<0.0010
Perylene	<0.0080	<0.6	<0.0025	0.049	<0.0020	<0.0010	<0.0010
3-Methylcholanthrene	ND	<0.6	ND	ND	ND	ND	ND
Sum List 2	2.3	ND	0.70	1.4	0.074	0.073	0.055
Phenol	5	6	--	6	5	6	--
2-Chlorophenol	5	6	--	6	5	6	--
2-Nitrophenol	5	6	--	6	5	6	--
2,4-Dimethylphenol	5	6	--	6	5	6	--
2,4-Dichlorophenol	5	6	--	6	5	6	--
4-Chloro-3-methylphenol	5	6	--	6	5	6	--
2,4,6-Trichlorophenol	5	6	--	6	5	6	--
2,4-Dinitrophenol	25	29	--	30	25	29	--
4-Nitrophenol	5	29	--	30	5	29	--
2-Methyl-4,6-dinitrophenol	25	29	--	30	25	29	--
Pentachlorophenol	5	6	--	6	5	6	--
O-Cresol	5	6	--	6	5	6	--
M-Cresol	5	6	--	6	5	6	--
P-Cresol	5	6	--	6	5	6	--

c Coeluting isomer. Concentration reported is the total concentration of the coeluting compound.  
 ND None detected. Detection limit not determined.  
 -- Not analyzed.

TABLE 4 (cont.)

WATER QUALITY MONITORING DATA  
PAH AND PHENOLIC COMPOUNDS

(concentrations in ug/L)

	W-6	W-7	W-8	W-9	W-10	W-11		
	06/04/87	06/04/87	06/04/87	06/05/87	06/05/87	12/09/86	03/03/87	06/05/87
Quinoline	<0.0050	<0.0010	0.015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Benzo(a)anthracene	0.063	<0.0010	0.0045	0.0039	<0.0010	<0.0010	<0.0010	<0.0010
Chrysene	0.030 c	<0.0010	0.0032 c	0.0027 c	<0.0010	<0.0010	<0.0010	<0.0010
Benzo(b)fluoranthene	0.029 c	<0.0010	0.0067 c	0.0041 c	<0.0010	<0.0010	<0.0010	<0.0010
Benzo(a)pyrene	0.015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Indeno(1,2,3,cd)pyrene	<0.0085	<0.0017	0.0036	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017
Dibenzo(ah)anthracene	<0.0070	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
Benzo(ghi)perylene	0.0674	<0.0010	0.0048	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Sum List 1	0.14	ND	0.038	0.011	ND	ND	ND	ND
2,3-Benzofuran	ND	ND	ND	ND	ND	0.0011	0.0033	ND
2,3-Dihydroindene	<0.0070	0.0023	0.052	0.0022	0.0027	0.0023	0.0046	0.0032
Indene	0.016	0.0018	0.0052	0.0024	0.0024	0.0015	0.0027	0.0016
Naphthalene	0.069	0.0034	0.081	0.0040	<0.0019	0.0054	0.0064	0.0043
Benzo(b)thiophene	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	0.0031	0.012	0.0026
Isoquinoline	0.0025	ND	ND	ND	ND	ND	ND	ND
Indole	<0.0145	<0.0029	0.27	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029
2-Methylnaphthalene	<0.010	<0.0020	0.14	<0.0020	<0.0020	0.003	<0.0020	<0.0020
1-Methylnaphthalene	<0.0050	<0.0010	0.13	<0.0010	<0.0010	0.014	0.0056	<0.0010
Biphenyl	0.0083	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013
Acenaphthylene	0.034	<0.0010	0.080	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Acenaphthene	0.024	<0.0013	0.017	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
Dibenzofuran	0.016	<0.0020	0.050	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Fluorene	0.038	<0.0014	0.083	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
Dibenzothiophene	0.0089	ND	0.011	ND	ND	ND	ND	ND
Phenanthrene	0.037	<0.0010	0.12	0.0070	0.0016	0.0013	0.0022	0.0026
Anthracene	0.051	<0.0010	0.031	0.0022	<0.0010	<0.0010	<0.0010	0.0024
Acridine	<0.0090	<0.0018	0.0047	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018
Phenanthridine	0.013	<0.0014	0.0039	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
Carbazole	0.015	<0.0011	0.088	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
Fluoranthene	0.75	<0.0010	0.052	0.014	<0.0010	<0.0010	<0.0010	<0.0010
Pyrene	0.65	0.0012	0.032	0.013	<0.0010	<0.0010	0.0011	<0.0010
Triphenylene	0.030 c	<0.0010	0.0032 c	0.0027 c	<0.0010	<0.0010	<0.0010	<0.0010
Benzo(k)fluoranthene	0.029 c	<0.0010	0.0067 c	0.0041 c	<0.0010	<0.0010	<0.0010	<0.0010
7,12-Dimethylbenz(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(e)pyrene	0.014	<0.0010	0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Perylene	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
3-Methylcholanthrene	ND	ND	ND	ND	ND	ND	ND	ND
Sum List 2	1.7	0.0087	1.3	0.045	0.0067	0.031	0.039	0.018
Phenol	--	--	--	--	--	5	6	--
2-Chlorophenol	--	--	--	--	--	5	6	--
2-Nitrophenol	--	--	--	--	--	5	6	--
2,4-Dimethylphenol	--	--	--	--	--	5	6	--
2,4-Dichlorophenol	--	--	--	--	--	5	6	--
4-Chloro-3-methylphenol	--	--	--	--	--	5	6	--
2,4,6-Trichlorophenol	--	--	--	--	--	5	6	--
2,4-Dinitrophenol	--	--	--	--	--	5	6	--
4-Nitrophenol	--	--	--	--	--	25	29	--
2-Methyl-4,6-dinitrophenol	--	--	--	--	--	5	29	--
Pentachlorophenol	--	--	--	--	--	5	29	--
O-Cresol	--	--	--	--	--	5	6	--
M-Cresol	--	--	--	--	--	5	6	--
P-Cresol	--	--	--	--	--	5	6	--

c Coeluting isomer. Concentration reported is the total concentration of the coeluting compound.  
 ND None detected. Detection limit not determined.  
 -- Not analyzed.

TABLE 4 (cont.)

WATER QUALITY MONITORING DATA  
PAH AND PHENOLIC COMPOUNDS

(concentrations in ug/L)

	W-12			W-13		
	12/09/86	03/03/87	06/05/87	12/09/86	03/03/87	06/04/87
Quinoline	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Benzo(a)anthracene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Chrysene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Benzo(b)fluoranthene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Benzo(a)pyrene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Indeno(1,2,3,cd)pyrene	<0.0017	<0.0043	<0.0017	<0.0017	<0.0043	<0.0017
Dibenzo(ah)anthracene	<0.0014	<0.0035	<0.0014	<0.0014	<0.0035	<0.0014
Benzo(ghi)perylene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Sum List 1	ND	ND	ND	ND	ND	ND
2,3-Benzofuran	0.0019	ND	0.0026	ND	ND	ND
2,3-Dihydroindene	0.0023	0.0038	0.0028	0.0024	0.0043	0.0029
Indene	0.0034	0.0056	0.0057	0.0018	<0.0025	<0.0010
Naphthalene	0.0059	0.0051	0.0048	0.0068	0.0061	0.0043
Benzo(b)thiophene	0.031	0.047	0.058	<0.0010	<0.0025	<0.0010
Isoquinoline	ND	ND	ND	ND	ND	ND
Indole	<0.0029	<0.0073	<0.0029	<0.0029	<0.0073	<0.0029
2-Methylnaphthalene	0.0032	<0.0050	<0.0020	0.0045	<0.0050	<0.0020
1-Methylnaphthalene	0.0037	0.0035	0.0031	<0.0012	0.0034	<0.0010
Biphenyl	<0.0010	0.0046	<0.0010	<0.0010	<0.0025	<0.0010
Acenaphthylene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Acenaphthene	<0.0013	<0.0033	<0.0013	<0.0013	<0.0033	<0.0013
Dibenzofuran	<0.0020	<0.0050	<0.0020	<0.0020	<0.0050	<0.0020
Fluorene	<0.0014	<0.0035	<0.0014	<0.0014	<0.0035	<0.0014
Dibenzothiophene	ND	ND	ND	ND	ND	ND
Phenanthrene	<0.0010	<0.0025	<0.0010	0.0023	<0.0025	0.0016
Anthracene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Acridine	<0.0018	<0.0045	<0.0018	<0.0018	<0.0045	<0.0018
Phenanthridine	<0.0014	<0.0035	<0.0014	<0.0014	<0.0035	<0.0014
Carbazole	<0.0011	<0.0028	<0.0011	<0.0011	<0.0028	<0.0011
Fluoranthene	<0.0010	<0.0025	<0.0010	0.0013	<0.0025	<0.0010
Pyrene	<0.0010	<0.0025	<0.0010	0.0016	<0.0025	<0.0010
Triphenylene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Benzo(k)fluoranthene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
7,12-Dimethylbenz(a)anthracene	ND	ND	ND	ND	ND	ND
Benzo(e)pyrene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
Perylene	<0.0010	<0.0025	<0.0010	<0.0010	<0.0025	<0.0010
3-Methylcholanthrene	ND	ND	ND	ND	ND	ND
Sum List 2	0.051	0.070	0.077	0.020	0.014	0.0088
Phenol	<5	<6	--	<5	<6	--
2-Chlorophenol	<5	<6	--	<5	<6	--
2-Nitrophenol	<5	<6	--	<5	<6	--
2,4-Dimethylphenol	<5	<6	--	<5	<6	--
2,4-Dichlorophenol	<5	<6	--	<5	<6	--
4-Chloro-3-methylphenol	<5	<6	--	<5	<6	--
2,4,6-Trichlorophenol	<5	<6	--	<5	<6	--
2,4-Dinitrophenol	<25	<29	--	<25	<29	--
4-Nitrophenol	<5	<29	--	<5	<29	--
2-Methyl-4,6-dinitrophenol	<25	<29	--	<25	<29	--
Pentachlorophenol	<5	<6	--	<5	<6	--
O-Cresol	<5	<6	--	<5	<6	--
M-Cresol	<5	<6	--	<5	<6	--
P-Cresol	<5	<6	--	<5	<6	--

ND None detected. Detection limit not determined.  
 -- Not analyzed.

TABLE 5

WATER QUALITY MONITORING DATA  
GENERAL PARAMETERS

(concentrations in mg/L)

	CP-1				CP-2			
	12/09/86	03/03/87	06/03/87	09/08/87	12/09/86	03/03/87	06/03/87	09/08/87
Ammonia Nitrogen	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	0.2
Chloride	--	--	6	--	--	--	28	--
Cyanide, total	<0.02	0.02	<0.02	<0.02	0.04	0.02	<0.02	<0.02
Sulfate	34	36	16	39	56	54	46	72
Thiocyanate	3.6	2.6	2.6	1.3	4.7	4.9	2.4	3.6
Total Alkalinity	--	--	150	--	--	--	120	--
Chemical Oxygen Demand	--	--	--	--	--	--	--	--
Total Dissolved Solids	--	--	--	--	--	--	--	--
Total Organic Carbon	4.6	4.0	5.8	21	5.7	5.0	6.5	13

	CP-3				WM-1			
	12/09/86	03/03/87	06/03/87	09/08/87	12/09/86	03/03/87	06/03/87	09/08/87
Ammonia Nitrogen	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	--	--	22	--	--	18	13	--
Cyanide, total	0.04	0.04	<0.02	0.04	<0.02	<0.02	<0.02	<0.02
Sulfate	65	66	32	83	85	360	220	240
Thiocyanate	3.9	3.8	2.6	1.6	5.0	3.8	2.8	1.4
Total Alkalinity	--	--	130	--	--	--	300	--
Chemical Oxygen Demand	--	--	--	--	--	12	--	--
Total Dissolved Solids	--	--	--	--	--	790	--	--
Total Organic Carbon	5.1	4.6	6.6	51	14	4.4	7.6	17

	SEEP-1				SEEP-2			
	12/09/86	03/03/87	06/03/87	09/08/87	12/09/86	03/03/87	06/03/87	09/08/87
Ammonia Nitrogen	<0.1	<0.1	<0.1	0.9	11	17	11	--
Chloride	27	18	15	--	8	5	5	--
Cyanide, total	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	--
Sulfate	200	76	110	110	1900	800	1300	--
Thiocyanate	3.8	6.0	1.8	2.0	2.0	2.8	1.4	--
Total Alkalinity	--	--	380	--	--	--	370	--
Chemical Oxygen Demand	<5	55	--	--	<5	16	--	9
Total Dissolved Solids	670	660	--	--	2900	2700	--	1700
Total Organic Carbon	5.2	18	6.1	13	6.4	4.0	3.9	--

-- Not analyzed.

TABLE 5 (cont.)

WATER QUALITY MONITORING DATA  
GENERAL PARAMETERS

(concentrations in mg/L)

	W-6	W-7	W-8	W-9	W-10
	06/03/87	06/03/87	06/03/87	06/03/87	06/03/87
Ammonia Nitrogen	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	34	12	6	23	17
Cyanide, total	0.07	0.02	<0.02	<0.02	<0.02
Sulfate	90	13	<1	280	95
Thiocyanate	2.2	2.0	2.6	1.6	2.2
Total Alkalinity	50	470	460	300	330
Chemical Oxygen Demand	--	--	--	--	--
Total Dissolved Solids	--	--	--	--	--
Total Organic Carbon	7.4	3.6	14	6.5	4.8

	W-11			
	12/09/86	03/03/87	06/03/87	09/08/87
Ammonia Nitrogen	<0.1	<0.1	<0.1	--
Chloride	5	5	5	--
Cyanide, total	<0.02	<0.02	<0.02	--
Sulfate	75	92	48	--
Thiocyanate	6.0	6.3	1.8	--
Total Alkalinity	--	--	440	--
Chemical Oxygen Demand	<5	9	--	5
Total Dissolved Solids	590	620	--	590
Total Organic Carbon	5.5	3.5	4.4	--

	W-12			
	12/09/86	03/03/87	06/03/87	09/08/87
Ammonia Nitrogen	<0.1	<0.1	<0.1	--
Chloride	7	9	7	--
Cyanide, total	0.02	0.02	0.03	--
Sulfate	400	680	870	--
Thiocyanate	3.9	4.2	1.8	--
Total Alkalinity	--	--	310	--
Chemical Oxygen Demand	<5	20	--	12
Total Dissolved Solids	1100	1400	--	1500
Total Organic Carbon	12	7.9	21	--

	W-13			
	12/09/86	03/03/87	06/03/87	09/08/87
Ammonia Nitrogen	<0.1	<0.1	<0.1	--
Chloride	4	6	2	--
Cyanide, total	<0.02	<0.02	<0.02	--
Sulfate	150	140	130	--
Thiocyanate	4.5	5.3	2.0	--
Total Alkalinity	--	--	280	--
Chemical Oxygen Demand	<5	<5	--	<5
Total Dissolved Solids	710	650	--	660
Total Organic Carbon	9.3	3.7	3.6	--

-- Not analyzed.



TABLE 6 (cont.)

WATER QUALITY MONITORING DATA  
METALS  
(concentrations in ug/L, unless noted otherwise)

	W-6	W-7	W-8	W-9	W-10	W-11		
	06/03/87	06/03/87	06/03/87	06/03/87	06/03/87	12/09/86	03/03/87	06/03/87
Arsenic, filtered	3	<1	2	2	<1	<1	<1	<1
Cadmium, filtered	--	--	--	--	--	0.6	--	<1
Calcium, filtered, mg/L	57	130	64	170	100	--	--	130
Chromium, filtered	4	2	<1	6	1	2	1	1
Lead, filtered	<1	<1	<1	<1	2	<1	<1	<1
Magnesium, filtered, mg/L	4.1	56	35	28	47	--	--	42
Nickel, filtered	<1	<1	<1	<1	<1	<50	<50	<1
Potassium, filtered, mg/L	17	12	88	22	2.5	--	--	2.8
Sodium, filtered, mg/L	24	36	49	32	42	--	--	12
Zinc, filtered, mg/L	<0.01	<0.01	<0.01	0.07	0.05	0.04	0.06	0.01
Arsenic	--	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--	0.2
Calcium, mg/L	--	--	--	--	--	--	--	--
Chromium, total	--	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--	--
Magnesium, mg/L	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--
Potassium, mg/L	--	--	--	--	--	--	--	--
Sodium, mg/L	--	--	--	--	--	--	--	--
Zinc, mg/L	--	--	--	--	--	--	--	--

	W-12			W-13		
	12/09/86	03/03/87	06/03/87	12/09/86	03/03/87	06/03/87
Arsenic, filtered	<1	<1	<1	<1	<1	<1
Cadmium, filtered	0.8	--	--	0.7	--	--
Calcium, filtered, mg/L	--	--	48	--	--	94
Chromium, filtered	2	4	2	7	4	5
Lead, filtered	<1	<1	<1	1	<1	<1
Magnesium, filtered, mg/L	--	--	140	--	--	74
Nickel, filtered	<50	<50	<1	<50	<50	<1
Potassium, filtered, mg/L	--	--	2.5	--	--	2.1
Sodium, filtered, mg/L	--	--	14	--	--	15
Zinc, filtered, mg/L	0.03	0.06	0.03	0.02	0.08	0.06
Arsenic	--	--	--	--	--	--
Cadmium	--	--	0.2	--	--	0.1
Calcium, mg/L	--	--	--	--	--	--
Chromium, total	--	--	--	--	--	--
Lead	--	--	--	--	--	--
Magnesium, mg/L	--	--	--	--	--	--
Nickel	--	--	--	--	--	--
Potassium, mg/L	--	--	--	--	--	--
Sodium, mg/L	--	--	--	--	--	--
Zinc, mg/L	--	--	--	--	--	--

.....  
-- Not analyzed.

TABLE 6 (cont.)

WATER QUALITY MONITORING DATA  
METALS  
(concentrations in ug/L, unless noted otherwise)

	SEEP-1				SEEP-2		
	12/09/86	03/03/87	06/03/87	09/08/87	12/09/86	03/03/87	06/03/87
Arsenic, filtered	<1	<1	<1	<1	<1	<1	<1
Cadmium, filtered	0.9	--	--	--	2.1	--	--
Calcium, filtered, mg/L	--	--	110	--	--	--	380
Chromium, filtered	<1	1	<1	2	2	5	2
Lead, filtered	2	<1	<1	<1	2 s	<1	<1
Magnesium, filtered, mg/L	--	--	49	--	--	--	160
Nickel, filtered	<50	<50	<1	<1	<50	100	14
Potassium, filtered, mg/L	--	--	13	--	--	--	6.1
Sodium, filtered, mg/L	--	--	44	--	--	--	14
Zinc, filtered, mg/L	0.02	0.06	0.08	<0.01	0.16	0.10	0.06
-----							
Arsenic	<1	2	<1	1	<1	<1	<1
Cadmium	--	0.3	--	--	--	<0.1	0.3
Calcium, mg/L	--	--	110	--	--	--	420
Chromium, total	<1	1	<1	2	2	2	3
Lead	1 s	<1	<1	<1	2 s	<1	<1
Magnesium, mg/L	--	--	49	--	--	--	18
Nickel	<50	<50	<1	<1	110	100	80
Potassium, mg/L	--	--	13	--	--	--	6.3
Sodium, mg/L	--	--	42	--	--	--	15
Zinc, mg/L	<0.01	0.05	<0.01	0.01	0.09	0.05	0.04

s Possible false positive value based on review of quality control data.  
-- Not analyzed.

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TABLE 7

HISTORICAL WATER QUALITY DATA  
FILTERED AND UNFILTERED METALS

(concentrations in ug/L, unless noted otherwise)

## CP-1

	09/25/85	12/10/85	03/13/86	06/11/86	09/29/86	12/09/86	03/03/87	06/03/87	09/08/87
Arsenic, filtered	<1	<1	<1	<5	<5	<1	<1	<1	1
Arsenic	--	<1	1	<5	<5	<1	<1	<1	1
Chromium, filtered	<1	<1	<1	<1	<1	<1	<1	<1	2
Chromium, total	2	<1	<1	1	<1	<1	<1	<1	2
Lead, filtered	<1	<1	<1	<1	<1	4	<1	<1	<1
Lead	<1	<1	4	1	3	<1	<1	<1	<1
Nickel, filtered	<50	<50	<50	<50	<50	<50	<50	<1	<1
Nickel	<50	<50	<50	<50	<50	<50	<50	<1	<1
Zinc, filtered, mg/L	0.02	0.05	0.03	0.03	0.04	0.02	0.06	0.05	<0.01
Zinc, mg/L	0.03	0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Calcium, filtered, mg/L	--	--	--	35	--	--	--	47	--
Calcium, mg/L	--	--	--	35	--	--	--	44	--
Magnesium, filtered, mg/L	--	--	--	--	--	--	--	15	--
Magnesium, mg/L	--	--	--	--	--	--	--	14	--
Potassium, filtered, mg/L	--	--	--	2.2	--	--	--	3.2	--
Potassium, mg/L	--	--	--	2.3	--	--	--	3.0	--
Sodium, filtered, mg/L	--	--	--	3.9	--	--	--	7.7	--
Sodium, mg/L	--	--	--	3.9	--	--	--	7.1	--

## CP-2

	09/25/85	12/10/85	03/13/86	06/11/86	09/29/86	12/09/86	03/03/87	06/03/87	09/08/87
Arsenic, filtered	<1	<1	<1	<5	<5	<1	<1	<1	2
Arsenic	<1	<1	<1	<5	<5	<1	<1	<1	2
Chromium, filtered	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium, total	3	<1	<1	1	<1	1	<1	<1	2
Lead, filtered	<1	<1	<1	<1	2	2	<1	<1	<1
Lead	<1	<1	8	15	5	4	1	7	<1
Nickel, filtered	<50	<50	<50	<50	<50	<50	<50	<1	<1
Nickel	<50	<50	<50	<50	<50	<50	<50	<1	<1
Zinc, filtered, mg/L	<0.01	0.01	0.07	0.01	0.04	0.02	0.06	0.02	<0.01
Zinc, mg/L	0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Calcium, filtered, mg/L	--	--	--	37	--	--	--	48	--
Calcium, mg/L	--	--	--	37	--	--	--	48	--
Magnesium, filtered, mg/L	--	--	--	--	--	--	--	13	--
Magnesium, mg/L	--	--	--	--	--	--	--	13	--
Potassium, filtered, mg/L	--	--	--	3.0	--	--	--	6.2	--
Potassium, mg/L	--	--	--	3.1	--	--	--	5.8	--
Sodium, filtered, mg/L	--	--	--	9.4	--	--	--	22	--
Sodium, mg/L	--	--	--	9.3	--	--	--	20	--

-- Not analyzed.

TABLE 7 (cont.)

HISTORICAL WATER QUALITY DATA  
FILTERED AND UNFILTERED METALS

(concentrations in ug/L, unless noted otherwise)

CP-3

	09/25/85	12/10/85	03/12/86	06/11/86	09/29/86	12/09/86	03/03/87	06/03/87	09/08/87
Arsenic, filtered	<1	<1	<1	<5	<5	<1	<1	<1	2
Arsenic	<1	<1	<1	<5	<5	<1	<1	<1	2
Chromium, filtered	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium, total	4	<1	<1	1	<1	<1	<1	<1	<1
Lead, filtered	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lead	<1	<1	2	2	<1	<1	<1	<1	<1
Nickel, filtered	<50	<50	<50	<50	<50	<50	<50	18	<1
Nickel	<50	<50	<50	<50	<50	<50	<50	<1	<1
Zinc, filtered, mg/L	0.01	0.24	0.06	<0.01	0.04	0.03	0.08	0.07	<0.01
Zinc, mg/L	0.01	0.71	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Calcium, filtered, mg/L	..	..	..	39	..	..	..	49	..
Calcium, mg/L	..	..	..	39	..	..	..	49	..
Magnesium, filtered, mg/L	..	..	..	..	..	..	..	13	..
Magnesium, mg/L	..	..	..	..	..	..	..	12	..
Potassium, filtered, mg/L	..	..	..	3.1	..	..	..	7.1	..
Potassium, mg/L	..	..	..	3.2	..	..	..	6.1	..
Sodium, filtered, mg/L	..	..	..	9.3	..	..	..	22	..
Sodium, mg/L	..	..	..	9.3	..	..	..	20	..

WM-1

	09/25/85	12/10/85	03/12/86	06/10/86	09/29/86	12/09/86	03/03/87	06/03/87	09/08/87
Arsenic, filtered	<1	<1	<1	<5	<5	<1	<1	<1	<1
Arsenic	<1	<1	<1	<5	<5	<1	<1	<1	<1
Chromium, filtered	<1	<1	<1	<1	<1	1	1	<1	<1
Chromium, total	3	<1	<1	2	1	<1	<1	<1	<1
Lead, filtered	<1	<1	13	1	<1	1	<1	<1	<1
Lead	<1	<1	<1	13	2	<1	<1	<1	<1
Nickel, filtered	<50	<50	<50	<50	<50	<50	<50	<1	<1
Nickel	<50	<50	<50	<50	70	<50	<50	<1	<1
Zinc, filtered, mg/L	0.07	0.01	0.03	0.11	0.06	0.08	0.17	0.02	<0.01
Zinc, mg/L	0.17	0.01	0.01	0.08	0.12	0.06	0.12	0.03	0.02
Calcium, filtered, mg/L	..	..	..	63	..	..	..	130	..
Calcium, mg/L	..	..	..	59	..	..	..	130	..
Magnesium, filtered, mg/L	..	..	..	..	..	..	..	55	..
Magnesium, mg/L	..	..	..	..	..	..	..	54	..
Potassium, filtered, mg/L	..	..	..	3.1	..	..	..	4.7	..
Potassium, mg/L	..	..	..	3.0	..	..	..	4.7	..
Sodium, filtered, mg/L	..	..	..	10	..	..	..	18	..
Sodium, mg/L	..	..	..	9.7	..	..	..	17	..

.. Not analyzed.

TABLE 7 (cont.)

HISTORICAL WATER QUALITY DATA  
 FILTERED AND UNFILTERED METALS

(concentrations in ug/L, unless noted otherwise)

	SEEP-1							
	09/25/85	12/10/85	03/12/86	06/11/86	09/29/86	12/09/86	03/03/87	06/03/87
Arsenic, filtered	<1	<1	<1	<5	<5	<1	<1	<1
Arsenic	<1	<1	<1	<5	<5	<1	2	<1
Chromium, filtered	<1	1	<1	<1	<1	<1	1	<1
Chromium, total	4	1	<1	2	1	<1	1	<1
Lead, filtered	<1	<1	<1	<1	<1	2	<1	<1
Lead	<1	1	2	3	<1	1 s	<1	<1
Nickel, filtered	<50	<50	<50	<50	50	<50	<50	<1
Nickel	<50	<50	<50	<50	60	<50	<50	<1
Zinc, filtered, mg/L	0.02	<0.01	0.03	0.04	0.06	0.02	0.06	0.08
Zinc, mg/L	--	<0.01	<0.01	0.01	0.17	<0.01	0.05	<0.01
Calcium, filtered, mg/L	--	--	--	110	--	--	--	110
Calcium, mg/L	--	--	--	110	--	--	--	110
Magnesium, filtered, mg/L	--	--	--	--	--	--	--	49
Magnesium, mg/L	--	--	--	--	--	--	--	49
Potassium, filtered, mg/L	--	--	--	13	--	--	--	13
Potassium, mg/L	--	--	--	13	--	--	--	13
Sodium, filtered, mg/L	--	--	--	46	--	--	--	44
Sodium, mg/L	--	--	--	44	--	--	--	42

	SEEP-2					
	09/25/85	12/10/85	03/12/86	12/09/86	03/03/87	06/03/87
Arsenic, filtered	<1	<1	<1	<1	<1	<1
Arsenic	<1	<1	<1	<1	<1	<1
Chromium, filtered	<1	<1	<1	2	5	2
Chromium, total	3	<1	<1	2	2	3
Lead, filtered	<1	<1	<1	2 s	<1	<1
Lead	<1	<1	<1	2 s	<1	<1
Nickel, filtered	90	80	120	<50	100	14
Nickel	100	80	120	110	100	80
Zinc, filtered, mg/L	0.04	0.05	0.11	0.16	0.10	0.06
Zinc, mg/L	0.08	0.11	0.07	0.09	0.05	0.04
Calcium, filtered, mg/L	--	--	--	--	--	380
Calcium, mg/L	--	--	--	--	--	420
Magnesium, filtered, mg/L	--	--	--	--	--	160
Magnesium, mg/L	--	--	--	--	--	18
Potassium, filtered, mg/L	--	--	--	--	--	6.1
Potassium, mg/L	--	--	--	--	--	6.3
Sodium, filtered, mg/L	--	--	--	--	--	14
Sodium, mg/L	--	--	--	--	--	15

s Possible false positive value based on review of quality control data.  
 -- Not analyzed.

TABLE 8

WATER QUALITY MONITORING DATA  
FIELD PARAMETERS

	CP-1				CP-2			
	12/09/86	03/03/87	06/03/87	09/09/87	12/09/86	03/03/87	06/03/87	09/09/87
pH, standard units	8.2	8.0	8.1	8.1	8.0	8.5	8.2	8.1
Specific Conductance umhos/cm @25oC	90	420	290	450	280	480	360	510
Temperature, oC	0	2.0	12.0	16.0	0	1.0	15.0	18.0
	CP-3				WM-1			
	12/09/86	03/03/87	06/03/87	09/09/87	12/09/86	03/03/87	06/03/87	09/09/87
pH, standard units	7.6	8.4	8.3	8.6	7.7	7.5	8.2	7.5
Specific Conductance umhos/cm @25oC	330	630	380	500	3000	780	800	1000
Temperature, oC	0	2.0	17.0	19.0	0	3.0	17.0	20.0
	SEEP-1				SEEP-2			
	12/09/86	03/03/87	06/03/87	09/09/87	12/09/86	03/03/87	06/03/87	09/09/87
pH, standard units	7.4	7.7	7.9	7.9	6.9	6.9	7.5	6.6
Specific Conductance umhos/cm @25oC	700	480	750	850	1800	640	2000	2000
Temperature, oC	4.0	7.5	13.0	15.0	2.0	7.0	14.0	15.0
	W-6	W-7	W-8	W-9	W-10			
	06/03/87	06/03/87	06/03/87	06/03/87	06/03/87			
pH, standard units	9.2	7.5	7.3	7.3	7.2			
Specific Conductance umhos/cm @25oC	360	900	1100	1000	750			
Temperature, oC	13.0	13.0	12.0	11.0	10.5			
	W-11				W-12			
	12/09/86	03/03/87	06/03/87	09/08/87	12/09/86	03/03/87	06/03/87	09/08/87
pH, standard units	7.2	7.0	7.4	7.2	7.4	7.2	7.3	7.2
Specific Conductance umhos/cm @25oC	750	560	800	950	440	1200	1600	1800
Temperature, oC	7.0	6.0	11.0	10.0	0	8.0	11.0	11.0
	W-13							
	12/09/86	03/03/87	06/03/87	09/08/87				
pH, standard units	7.3	7.2	7.5	7.4				
Specific Conductance umhos/cm @25oC	800	850	800	950				
Temperature, oC	2.0	8.0	12.0	10.0				

TABLE 9  
 QUALITY CONTROL DATA  
 FIELD BLANK SAMPLES  
 PAH AND PHENOLIC COMPOUNDS

(concentrations in ug/L)

	FIELD BLANKS			
	12/09/86	03/04/87	06/05/87	09/09/87
Quinoline	<0.0010	<0.0010	<0.0010	<0.001
Benzo(a)anthracene	<0.0010	<0.0010	<0.0010	<0.001
Chrysene	<0.0010	<0.0010	<0.0010	<0.001
Benzo(b)fluoranthene	<0.0010	<0.0010	<0.0010	<0.001
Benzo(a)pyrene	<0.0010	<0.0010	<0.0010	<0.001
Indeno(1,2,3,cd)pyrene	<0.0017	<0.0017	<0.0017	<0.0017
Dibenzo(ah)anthracene	<0.0014	<0.0014	<0.0014	<0.0014
Benzo(ghi)perylene	<0.0010	<0.0010	<0.0010	<0.001
Sum List 1	ND	ND	ND	ND
2,3-Benzofuran	ND	ND	ND	ND
2,3-Dihydroindene	0.0015	0.0017	<0.0014	0.0015
Indene	0.0013	<0.0010	<0.0010	<0.001
Naphthalene	0.0047	0.0024	<0.0019	0.24
Benzo(b)thiophene	<0.0010	0.0016	<0.0010	0.22
Isoquinoline	ND	ND	ND	ND
Indole	<0.0029	<0.0029	<0.0029	<0.0029
2-Methylnaphthalene	<0.0020	<0.0020	<0.0020	<0.002
1-Methylnaphthalene	<0.0012	<0.0012	<0.0010	<0.001
Biphenyl	<0.0010	<0.0010	<0.0010	<0.001
Acenaphthylene	<0.0010	<0.0010	<0.0010	<0.001
Acenaphthene	<0.0013	<0.0013	<0.0013	<0.0013
Dibenzofuran	<0.0020	<0.0020	<0.0020	<0.002
Fluorene	<0.0014	<0.0014	<0.0014	<0.0014
Dibenzothiophene	ND	ND	ND	ND
Phenanthrene	<0.0010	<0.0010	<0.0010	<0.001
Anthracene	<0.0010	<0.0010	<0.0010	<0.001
Acridine	<0.0018	<0.0018	<0.0018	<0.0018
Phenanthridine	<0.0014	<0.0014	<0.0014	<0.0014
Carbazole	<0.0011	<0.0011	<0.0011	<0.0011
Fluoranthene	<0.0010	<0.0010	<0.0010	<0.001
Pyrene	<0.0010	<0.0010	<0.0010	<0.001
Triphenylene	<0.0010	<0.0010	<0.0010	<0.001
Benzo(k)fluoranthene	<0.0010	<0.0010	<0.0010	<0.001
7,12-Dimethylbenzo(a)anthracene	ND	ND	ND	ND
Benzo(e)pyrene	<0.0010	<0.0010	<0.0010	<0.001
Perylene	<0.0010	<0.0010	<0.0010	<0.001
3-Methylcholanthrene	ND	ND	ND	ND
Sum List 2	0.0075	0.0057	ND	0.46
Phenol	<5	--	--	--
2-Chlorophenol	<5	--	--	--
2-Nitrophenol	<5	--	--	--
2,4-Dimethylphenol	<5	--	--	--
2,4-Dichlorophenol	<5	--	--	--
4-Chloro-3-methylphenol	<5	--	--	--
2,4,6-Trichlorophenol	<5	--	--	--
2,4-Dinitrophenol	<25	--	--	--
4-Nitrophenol	<5	--	--	--
2-Methyl-4,6-dinitrophenol	<25	--	--	--
Pentachlorophenol	<5	--	--	--
O-Cresol	<5	--	--	--
M-Cresol	<5	--	--	--
P-Cresol	<5	--	--	--

ND None detected. Detection limit not determined.

-- Not analyzed.

TABLE 10

QUALITY CONTROL DATA  
FIELD BLANK SAMPLES  
METALS

(concentrations in ug/L, unless noted otherwise)

	FIELD BLANK WITH ACID			FIELD BLANK WITHOUT ACID	
	12/09/86	03/03/87	06/03/87	03/03/87	06/03/87
Arsenic, filtered	--	<1	<1	<1	<1
Cadmium, filtered	--	--	--	--	--
Calcium, filtered, mg/L	--	--	0.5	--	<0.10
Chromium, filtered	--	<1	<1	<1	<1
Lead, filtered	--	<1	2	<1	<1
Magnesium, filtered, mg/L	--	--	<0.10	--	<0.10
Nickel, filtered	--	<50	<1	<50	<1
Potassium, filtered, mg/L	--	--	<0.02	--	<0.02
Sodium, filtered, mg/L	--	--	<0.01	--	<0.10
Zinc, filtered, mg/L	--	0.03	<0.01	0.03	<0.01
Arsenic	<1	--	--	--	--
Cadmium	0.4	--	--	--	--
Calcium, mg/L	--	--	--	--	--
Chromium, total	<1	--	--	--	--
Lead	2	--	--	--	--
Magnesium, mg/L	--	--	--	--	--
Nickel	<50	--	--	--	--
Potassium, mg/L	--	--	--	--	--
Sodium, mg/L	--	--	--	--	--
Zinc, mg/L	0.01	--	--	--	--

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-- Not analyzed.

.008

TABLE 11

QUALITY CONTROL DATA  
BLIND DUPLICATE SAMPLES  
PAH AND PHENOLIC COMPOUNDS

(concentrations in ug/L)

	CP-1		W-13		WM-1		CP-2	
	12/09/86 Sample	12/09/86 Duplicate	03/03/87 Sample	03/03/87 Duplicate	06/03/87 Sample	06/03/87 Duplicate	09/09/87 Sample	09/09/87 Duplicate
Quinoline	<0.0010	0.0012	<0.0025	<0.0025	0.0070	0.011	0.016	<0.0025
Benzo(a)anthracene	<0.0010	<0.0010	<0.0025	<0.0025	<0.0050	<0.0050	0.0099	0.017
Chrysene	<0.0010	<0.0010	<0.0025	<0.0025	0.0086 c	0.013 c	0.0087 c	0.015 c
Benzo(b)fluoranthene	<0.0010	<0.0010	<0.0025	<0.0025	<0.0050	<0.0050	0.016 c	0.018 c
Benzo(a)pyrene	<0.0010	<0.0010	<0.0025	<0.0025	<0.0050	<0.0050	0.0033	0.0036
Indeno(1,2,3,cd)pyrene	<0.0017	<0.0017	<0.0043	<0.0043	<0.0085	<0.0085	<0.0043	<0.0043
Dibenzo(ah)anthracene	<0.0014	<0.0014	<0.0035	<0.0035	<0.0070	<0.0070	<0.0035	<0.0035
Benzo(ghi)perylene	<0.0010	<0.0010	<0.0025	<0.0025	<0.0050	<0.0050	<0.0025	<0.0025
Sum List 1	ND	0.0012	ND	ND	0.016	0.024	0.054	0.054
2,3-Benzofuran	ND	ND	ND	ND	ND	ND	0.0074	0.010
2,3-Dihydroindene	0.086	0.088	0.0043	0.0049	0.21	0.20	<0.0035	0.0058
Indene	0.039	0.035	<0.0025	0.0029	0.12	0.17	0.034	0.016
Naphthalene	0.024	0.026	0.0061	0.0072	0.17	0.18	<0.0048	<0.0048
Benzo(b)thiophene	0.0084	0.0093	<0.0025	<0.0025	0.038	0.041	0.058 s	0.076 s
Isoquinoline	ND	ND	ND	ND	0.015	0.021	0.11	0.19
Indole	<0.0029	<0.0029	<0.0073	<0.0073	<0.0145	<0.0145	<0.0073	<0.0073
2-Methylnaphthalene	0.0052	0.0053	<0.0050	<0.0050	<0.010	<0.010	<0.005	<0.005
1-Methylnaphthalene	0.0063	0.0068	0.0034	0.013	0.035	0.035	0.024	0.043
Biphenyl	0.0029	0.0031	<0.0025	<0.0025	0.019	0.019	<0.0025	<0.0025
Acenaphthylene	0.0068	0.0065	<0.0025	<0.0025	0.018	0.041	0.015	0.0078
Acenaphthene	0.011	0.010	<0.0033	<0.0033	0.36	0.45	0.060	0.087
Dibenzofuran	0.0072	0.0072	<0.0050	<0.0050	0.16	0.18	0.066	0.11
Fluorene	0.0076	0.0083	<0.0035	<0.0035	0.39	0.39	0.018	0.032
Dibenzothiophene	ND	0.0019	ND	ND	0.033	0.029	0.035	0.057
Phenanthrene	0.0061	0.0062	<0.0025	<0.0025	0.13	0.13	<0.0025	<0.0025
Anthracene	0.0016	0.0017	<0.0025	<0.0025	0.014	0.018	0.065	0.089
Acridine	<0.0018	0.0034	<0.0045	<0.0045	0.011	<0.0090	0.19	<0.0045
Phenanthridine	<0.0014	0.0026	<0.0035	<0.0035	<0.0070	<0.0070	0.31	<0.0035
Carbazole	0.0081	0.0087	<0.0028	<0.0028	<0.0055	<0.0055	0.0053	<0.0028
Fluoranthene	0.0039	0.0068	<0.0025	<0.0025	0.16	0.13	0.29	<0.0025
Pyrene	0.0028	0.0056	<0.0025	<0.0025	0.054	0.040	0.14	<0.0025
Triphenylene	<0.0010	<0.0010	<0.0025	<0.0025	0.0086 c	0.013 c	0.0087 c	0.015 c
Benzo(k)fluoranthene	<0.0010	<0.0010	<0.0025	<0.0025	<0.0050	<0.0050	0.016 c	0.018 c
7,12-Dimethyl(benz(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(e)pyrene	<0.0010	<0.0010	<0.0025	<0.0025	<0.0050	<0.0050	0.0036	0.0039
Perylene	<0.0010	<0.0010	<0.0025	<0.0025	<0.0050	<0.0050	<0.0025	<0.0025
3-Methylcholanthrene	ND	ND	ND	ND	ND	ND	ND	ND
Sum List 2	0.23	0.24	0.014	0.028	1.9	1.8	1.4	0.76
Phenol	<5	<5	<6	<6	**	**	**	**
2-Chlorophenol	<5	<5	<6	<6	**	**	**	**
2-Nitrophenol	<5	<5	<6	<6	**	**	**	**
2,4-Dimethylphenol	<5	<5	<6	<6	**	**	**	**
2,4-Dichlorophenol	<5	<5	<6	<6	**	**	**	**
4-Chloro-3-methylphenol	<5	<5	<6	<6	**	**	**	**
2,4,6-Trichlorophenol	<5	<5	<6	<6	**	**	**	**
2,4-Dinitrophenol	<25	<25	<29	<29	**	**	**	**
4-Nitrophenol	<5	<5	<29	<29	**	**	**	**
2-Methyl-4,6-dinitrophenol	<25	<25	<29	<29	**	**	**	**
Pentachlorophenol	<5	<5	<6	<6	**	**	**	**
O-Cresol	<5	<5	<6	<6	**	**	**	**
M-Cresol	<5	<5	<6	<6	**	**	**	**
P-Cresol	<5	<5	<6	<6	**	**	**	**

c Coeluting isomer. Concentration reported is the total concentration of the coeluting compound.

s Possible false positive value based on review of quality control data.

ND None detected. Detection limit not determined.

\*\* Not analyzed.

TABLE 12  
STATISTICAL ANALYSIS  
BLIND DUPLICATE SAMPLES  
PAH COMPOUNDS

<u>Station No.</u>	<u>Sampling Date</u>	<u>Coefficient of Variation</u>
CP-1	12/09/86	0.16
W-13	03/03/87	0.15
WM-1	06/03/87	0.16
CP-2	09/09/87	0.56



## Figures



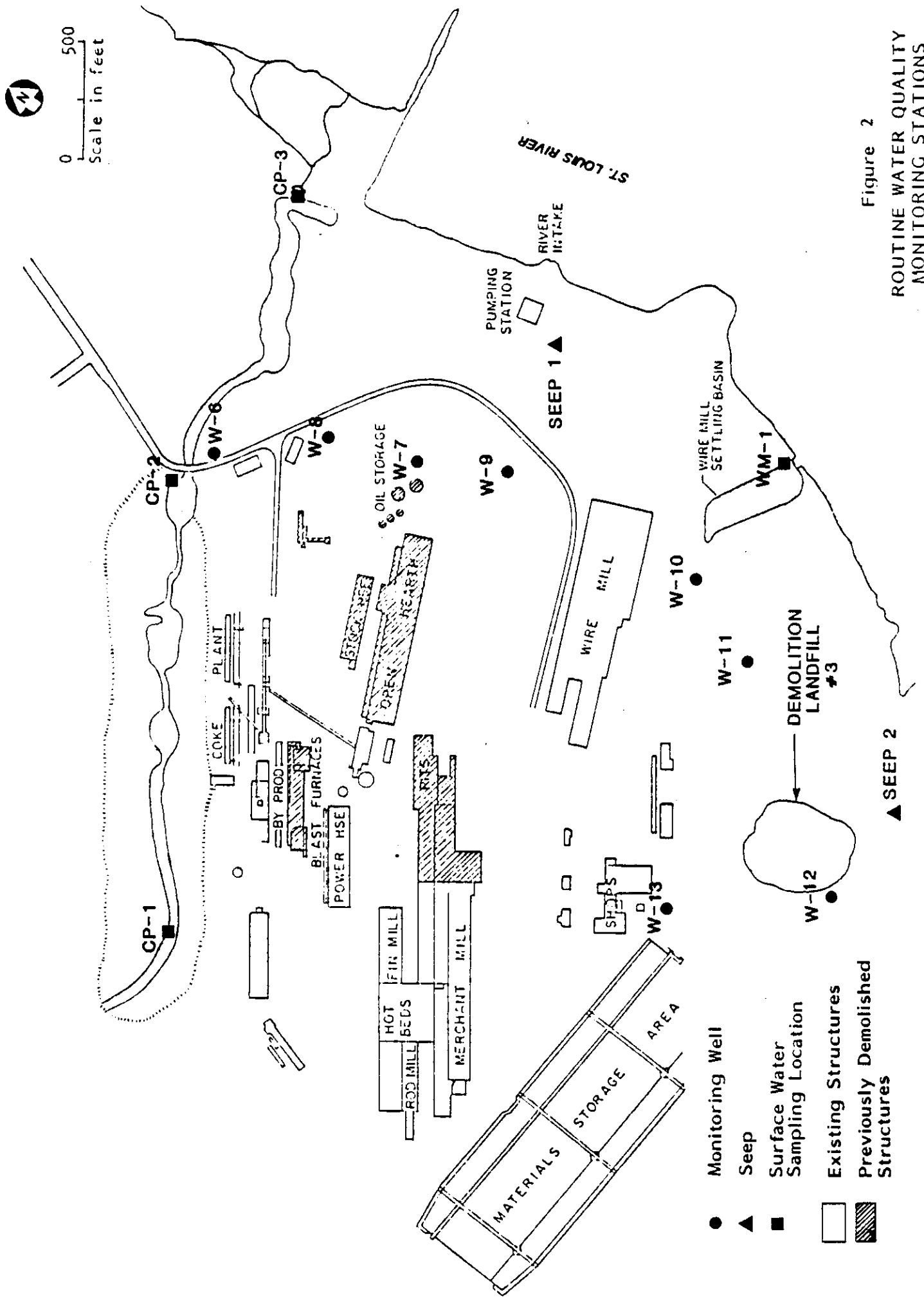
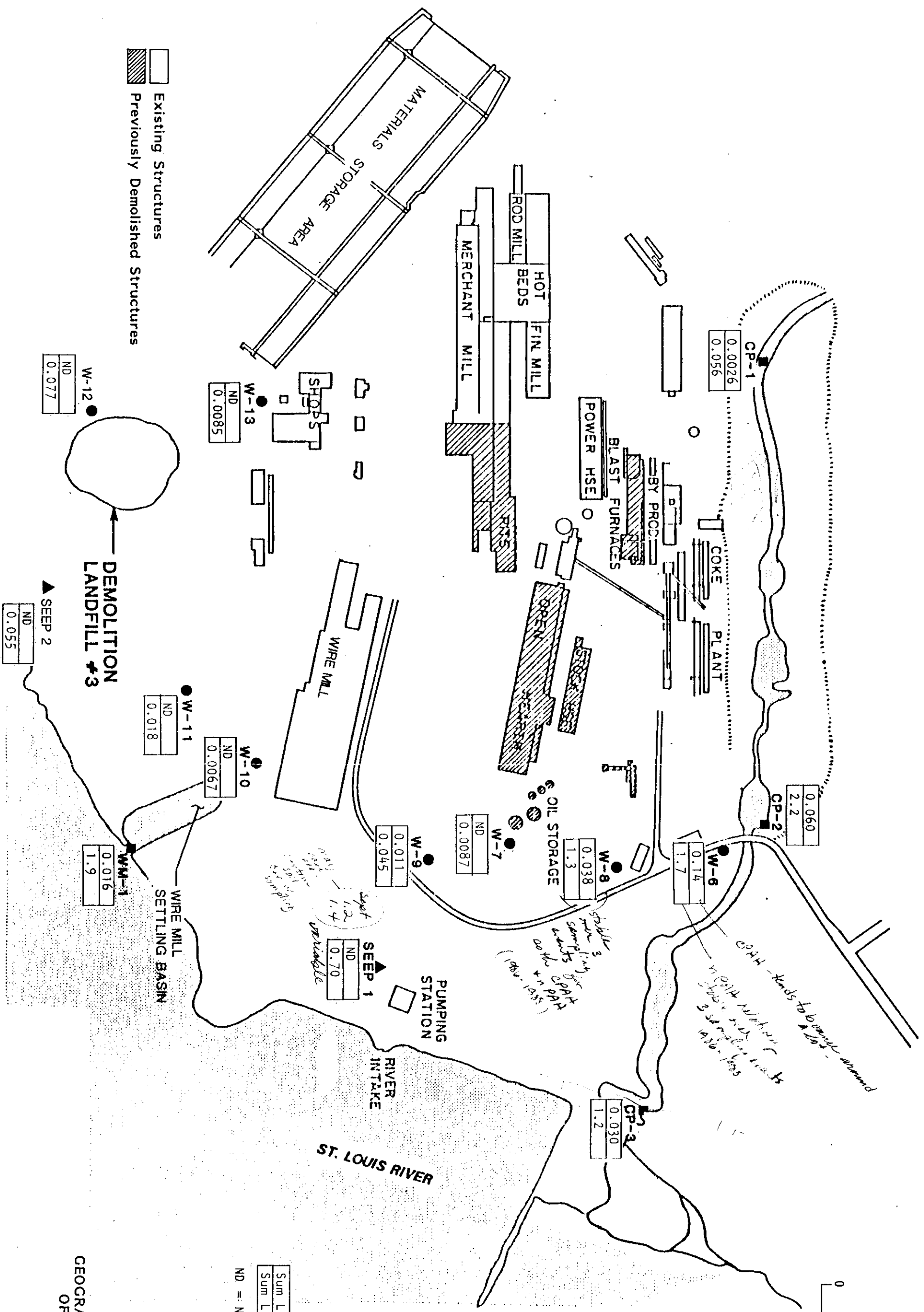


Figure 2  
ROUTINE WATER QUALITY  
MONITORING STATIONS



Sum List 1 Compounds (ug/L)	Sum List 2 Compounds (ug/L)
ND	ND
0.0026	0.056
0.060	2.2
0.14	1.7
0.038	1.3
ND	0.0087
0.011	0.045
ND	0.018
0.0067	0.016
ND	1.9
0.077	0.055

ND = Not Detected

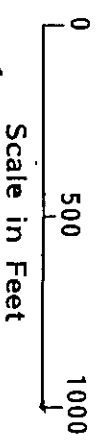
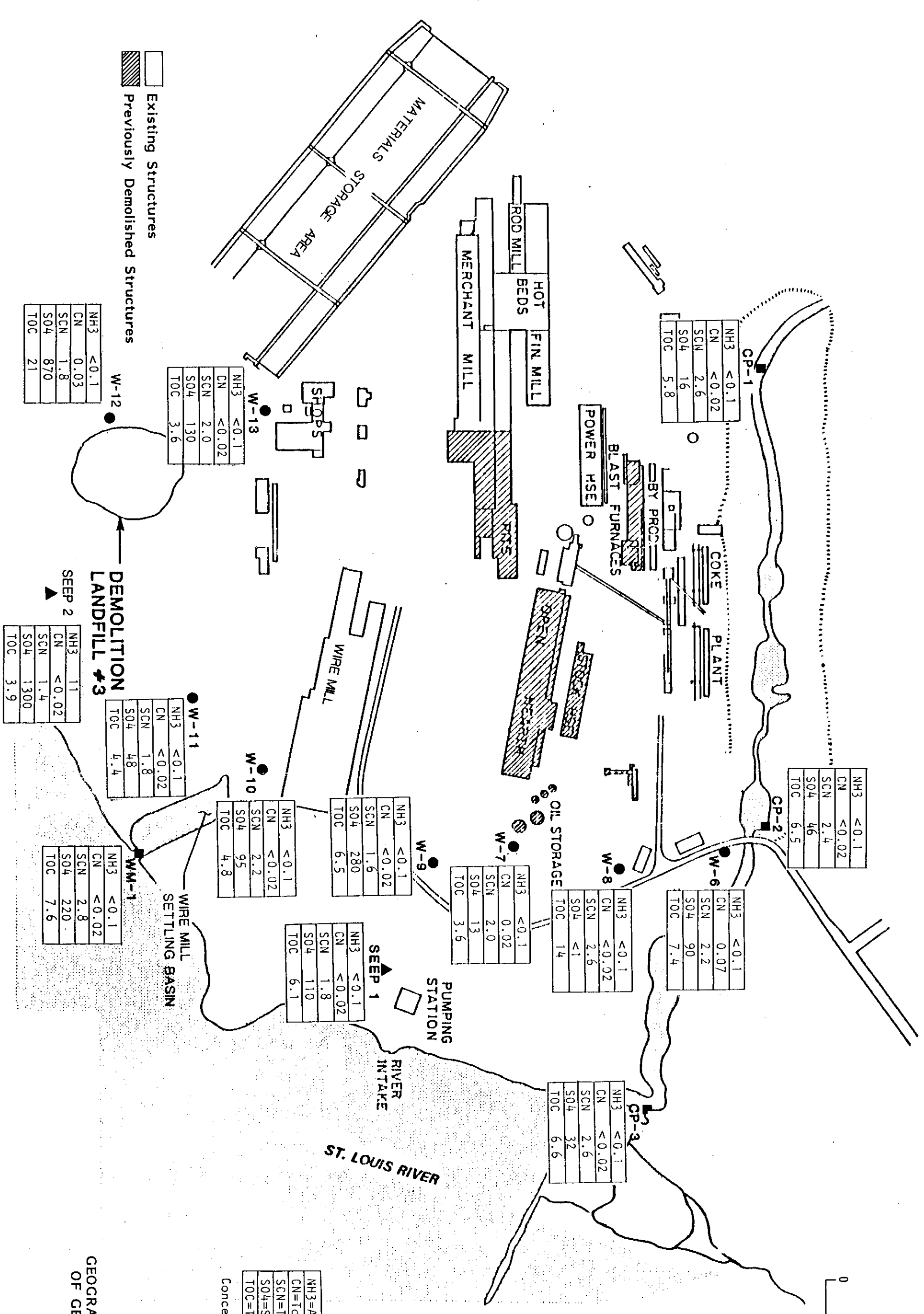


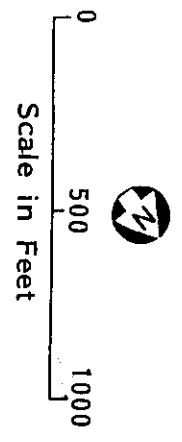
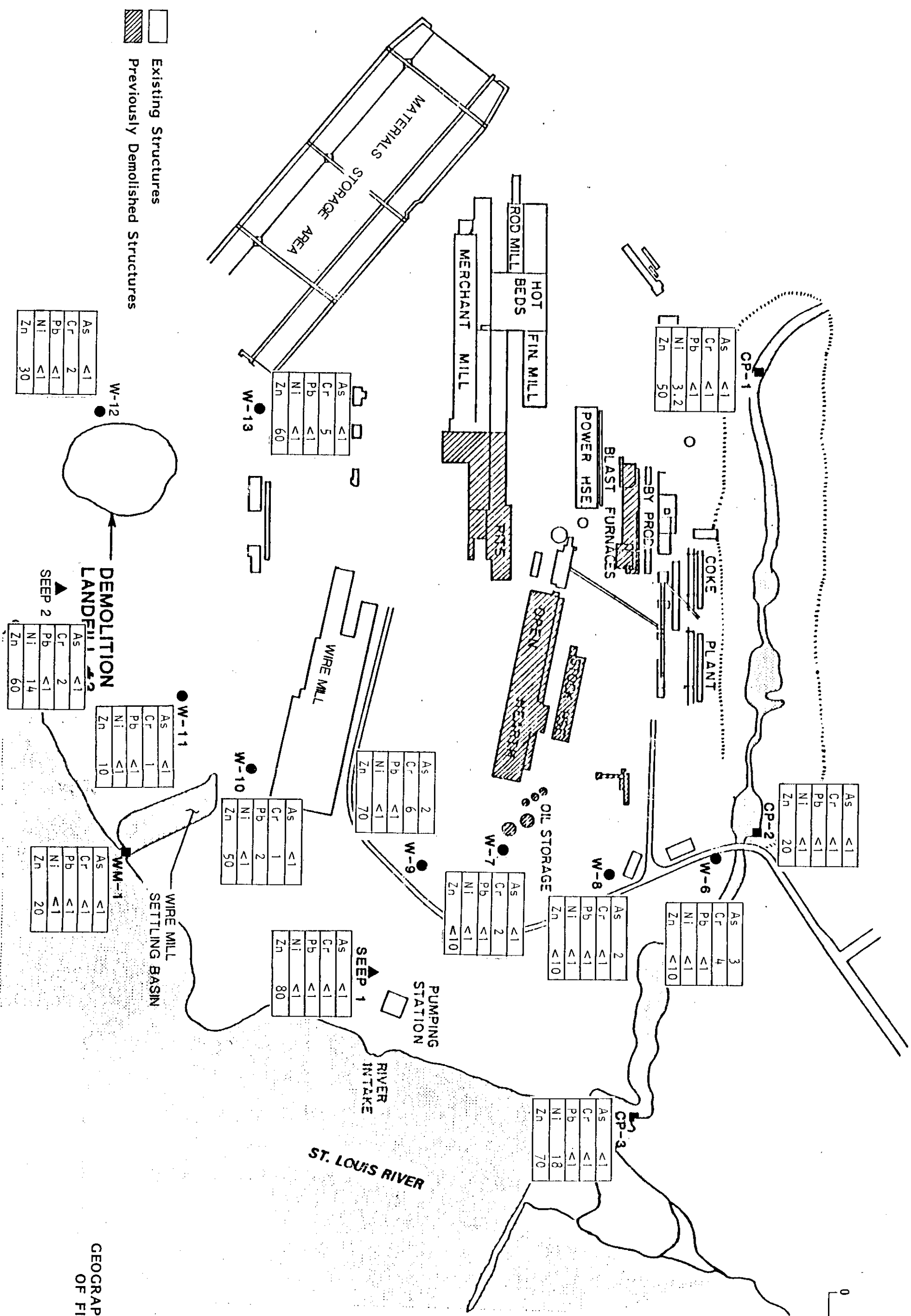
Figure 3  
GEOGRAPHICAL DISTRIBUTION  
OF PAH COMPOUNDS  
June, 1987



0 500 1000  
Scale in Feet

NH3=Ammonia-Nitrogen  
CN=Total Cyanide  
SCN=Thiocyanate  
SO4=Sulfate  
TOC=Total Organic Carbon  
Concentration in mg/L

Figure 4  
GEOGRAPHICAL DISTRIBUTION  
OF GENERAL PARAMETERS  
June, 1987



As=Arsenic	50
Cr=Chromium	120
Pb=Lead	20
Ni=Nickel	150
Zn=Zinc	N/A

Concentrations in ug/L

As	<1
Cr	2
Pb	<1
Ni	<1
Zn	30

As	<1
Cr	2
Pb	<1
Ni	14
Zn	60

As	<1
Cr	1
Pb	<1
Ni	<1
Zn	10

As	<1
Cr	<1
Pb	<1
Ni	<1
Zn	20

As	<1
Cr	5
Pb	<1
Ni	<1
Zn	60

As	2
Cr	6
Pb	<1
Ni	<1
Zn	70

As	<1
Cr	1
Pb	2
Ni	<1
Zn	50

As	<1
Cr	<1
Pb	<1
Ni	<1
Zn	80

As	<1
Cr	2
Pb	<1
Ni	<1
Zn	<10

As	2
Cr	<1
Pb	<1
Ni	<1
Zn	<10

As	3
Cr	4
Pb	<1
Ni	<1
Zn	<10

As	<1
Cr	<1
Pb	<1
Ni	<1
Zn	20

As	<1
Cr	<1
Pb	<1
Ni	3.2
Zn	50

As	<1
Cr	<1
Pb	<1
Ni	18
Zn	70

Figure 5  
GEOGRAPHICAL DISTRIBUTION  
OF FILTERED METALS  
June, 1987