

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION
DECEMBER 2002

STAFF REPORT

A SEDIMENT CHEMISTRY SURVEY OF LAKE SAINT CLAIR,
THE REVERE STREET CANAL AND THE LANGE STREET CANAL
SAINT CLAIR SHORES, MACOMB COUNTY
SEPTEMBER 17 AND 18, 2002

Staff of the Surface Water Quality Assessment Section, together with staff from the United States Environmental Protection Agency (USEPA), Great Lakes National Program Office (GLNPO), conducted a sediment chemistry survey in Lake St Clair, the Revere Street Canal, and the Lange Street Canal. The primary goal of this sampling event was to determine if contaminated sediments discharged to the Revere and Lange Street Canals have migrated into Lake St. Clair. The secondary goal was to estimate the lateral and vertical extent of chemical sediment contamination in the Revere and Lange Street Canals downstream of the USEPA sediment clean-up site.

METHODS

Sediment samples were collected at selected locations from the USEPA research vessel, "Mudpuppy," using either a ponar dredge sampler or the Vibro-core sampler (standard operating procedure available upon request). All sediment samples were transported to the Michigan Department of Environmental Quality's (MDEQ's) Environmental Laboratory for chemical analysis.

SUMMARY

- 1) Sediment sampling locations and site descriptions for Lake St. Clair, the Revere Street Canal, and the Lange Street Canal are given in Figure 1 and Table 1. Results of the sediment chemistry analysis are given in Table 2. For purposes of evaluation, sediment analysis results were compared to the probable effect concentrations (PEC) described in "Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems" (MacDonald et. al, 2000) for screening for potential aquatic life effects. For the bioaccumulative chemical of concern (BCC), polychlorinated biphenyl (PCB), results are compared to 330 micrograms per kilogram (ug/kg).
- 2) The sediment analyses of the four Lake St. Clair stations (stations 01-04) showed all parameters below their respective PEC where a PEC has been developed and PCB were below 330 ug/kg.
- 3) The sediment analyses of the Revere Street Canal stations showed concentrations of PCB at stations 05, 06, and 07 above 330 ug/kg. Concentrations of PCB within the Revere Street Canal ranged up to 25,000 ug/kg within the 0-5-inch interval at station 05.
- 4) The sediment analysis of the Lange Street Canal stations showed concentrations of PCB at stations 08 and 09 above 330 ug/kg. Concentrations of PCB within the Lange Street Canal ranged up to 17,000 ug/kg within the 0-12-inch interval at station 08.

- 5) Lead concentrations were found to exceed its PEC of 128 mg/kg at stations 05, 06, 07, and 08. Detectable concentrations ranged from 15 mg/kg within the 66-94-inch interval of station 07 to 288 mg/kg within the 12-39-inch interval of station 07. All other parameters analyzed within the Revere Street and Lange Street Canals were below their respective PEC where a PEC has been developed.

LITERATURE CITED

MacDonald, D. D., C. G. Ingersoll, T. A. Berger. 2000. Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems. Arch. Environ. Contam. Toxicol. 39, 20-31.

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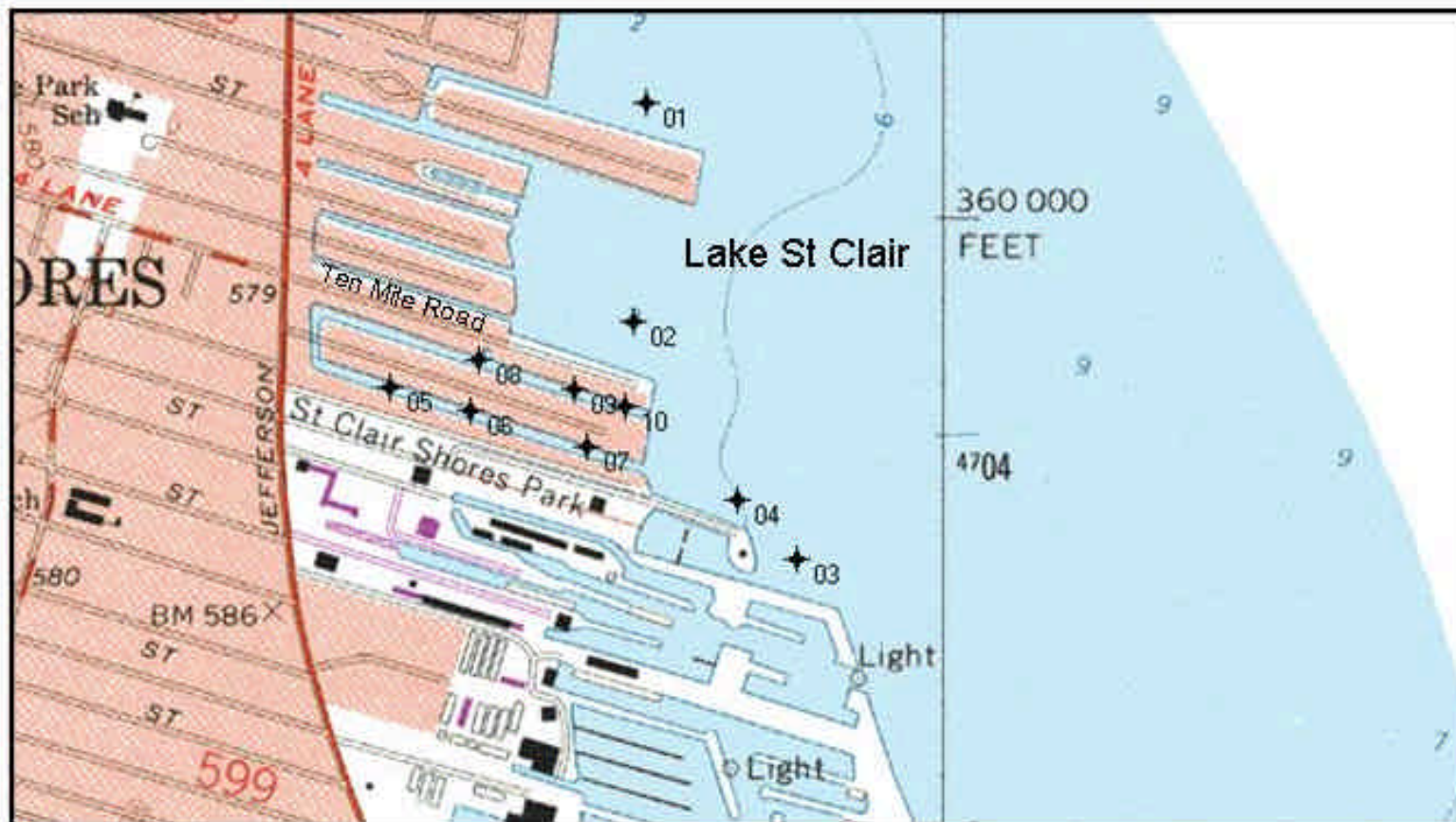


Figure 1. Sediment chemistry sampling locations in Lake St Clair, the Revere Street Canal, and the Lange Street Canal St. Clair Shores, Macomb County, Michigan, September 17 and 18 2002.

Table 1. Sediment chemistry sampling locations, latitude/longitude, water depth, sample type, sampling intervals, and substrate descriptions for samples collected in Lake St Clair, the Revere Street Canal, and the Lange Street Canal, St Clair Shores, Macomb County, Michigan, September 17 and 18, 2002.

Station #	Location	Latitude/Longitude	Water Depth	Sample Type	Interval/Substrate
01	Lake St. Clair	042.28.816 N 082.52.887 W	4'11"	Vibro-core	0-6"-gray, stiff lake clay
02	Lake St. Clair	042.28.603 N 082.52.904 W	5'5"	Ponar Dredge	0-4"-sand
03	Lake St. Clair	042.28.372 N 082.52.690 W	9'2"	Ponar Dredge	0-4"-silty sand, brownish gray
04	Lake St. Clair	042.28.424 N 082.52.768 W	8'3"	Ponar Dredge	0-4"-silty sand, gray
05	Revere St Canal	042.28.540 N 082.53.223 W	3'8"	Vibro-core	0-6"-soupy, silty gray 6-26"-stiff clay, gray 24-46"-stiffer clay, gray
06	Revere St Canal	042.28.517 N 082.53.119 W	4'5"	Vibro-core	0-6"-soupy, silty gray 6-26"-stiff clay, gray 24-46"-stiffer clay, gray
07	Revere St Canal	042.28.482 N 082.52.965 W	3'10"	Vibro-core	0-12"-soupy, silty, gray 12-39"-stiff clay, gray 39-66"-stiff clay, brown 66-94"-clay, gray, very dry
08	Lange St Canal	042.28.566 N 082.53.107 W	4'5"	Vibro-core	0-12"-soupy, silty, gray 12-38"-stiff clay, gray 38-65"-very stiff clay, gray 65-92"- very stiff clay, gray
09	Lange St Canal	042.28.537 N 082.52.982 W	4'11"	Vibro-core	0-12"-soupy, silty/sand, gray 12-41"-stiff clay, gray 41-70"-very stiff clay, gray 70-90"-very stiff clay, gray
10	Lange St Canal	042.28.521 N 082.52.916 W	3'4"	Vibro-core	0-14"-coarse sand with some silt, dark

Table 2. Sediment chemistry results for Lake St. Clair, the Revere Street Canal, and the Lange Street Canal, St. Clair Shores, Macomb County, Michigan, September 17 and 18, 2002.

Parameter	Station and Interval Depths							
	01 (0-6")	02 (0-4")	03 (0-4")	04 (0-4")	05 (0-6")	05 (6-26")	05 (26-46")	06 (0-12")
Metals (mg/kg)								
Arsenic	3	2.4	1.8	1.7	8.3	7.9	7.1	7
Barium	72	6	12	12	96	122	120	84
Cadmium	K 2.0	K 2.0	K 2.0	K 2.0	4	3	K 2.0	4
Chromium	20	4	10	9	47	43	31	44
Cobalt	10	2	3	3	11	13	15	10
Copper	22	4	11	10	143	84	41	102
Cyanide	K 0.2	K 0.2	K 0.2	K 0.2	K 0.6	K 0.4	K 0.2	K 0.5
Lead	10	K 5	13	12	212	211	54	199
Mercury	K 0.05	K 0.05	K 0.05	K 0.05	0.31	0.29	0.21	0.34
Nickel	26	K 5	8	7	40	41	40	40
Selenium	K 0.5	K 0.5	K 0.5	K 0.5	1	1	K 0.5	K 0.5
Silver	K 0.25	K 0.25	K 0.25	K 0.25	0.6	0.6	K 0.25	0.6
%TS	79.8	75.6	67.9	66.5	34.5	47.7	54.4	39.6
%TVS	2.9	1	1.4	1.8	8.8	7	5.9	6.6
Strontium	40	6	19	23	38	42	43	37
Zinc	56	17	43	48	360	276	159	279
PCB (ug/kg)								
Aroclor 1242	ND	ND	ND	ND	25,000	12,000	ND	9,400
Aroclor 1254	ND	ND	ND	ND	ND	ND	46	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	ND	34	210	200	ND	ND	63	ND
Aroclor 1262	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1268	ND	ND	ND	ND	ND	ND	ND	ND
PNA (ug/kg)								
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	780	290	ND	ND
Anthracene	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ND	ND	240	280	2,800	770	310	710
Pyrene	ND	ND	180	190	2,600	760	220	1,000
Benz(a)anthracene	ND	ND	ND	ND	860	280	ND	260
Chrysene	ND	ND	ND	ND	1,800	510	ND	480
Benzo(b)fluoranthene	ND	ND	ND	ND	2,200	480	ND	530
Benzo(k)fluoranthene	ND	ND	ND	ND	1,500	420	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	1,300	ND	ND	ND
Indeno(1,2,3-cd)anthracene	ND	ND	ND	ND	800	ND	ND	ND
Dibenz(a,h)anthracene					ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	800	ND	ND	ND
Pesticides (ug/kg)								
<i>a</i> -BHC	ND	ND	ND	ND	ND	ND	ND	ND
<i>b</i> -BHC	ND	ND	ND	ND	ND	ND	ND	ND
<i>g</i> -BHC (lindane)	ND	ND	ND	ND	ND	ND	ND	ND
<i>d</i> -BHC	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND
<i>g</i> -Chlordane	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND
<i>a</i> -Chlordane	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND	51	ND	ND

Endrin Aldehyde	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	ND	ND	ND	ND	ND	ND	ND	ND
Hexabromobenzene	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND
Mirex	ND	ND	ND	ND	ND	ND	ND	ND
BP-6(PBB)	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND

Table 2. Continued.

Parameter	Station and Interval Depths							
	06 (0-12")	06 (12-43")	06 (43-75")	07 (0-12")	07 (12-39")	07 (39-66")	07 (66-94")	
Metals (mg/kg)								
Arsenic	7	9.9	6.5	5.7	11.6	11.8	4.9	
Barium	84	162	91	58	226	186	50	
Cadmium	4	3	K 2.0	3	3.5	2.9	K 2.0	
Chromium	44	42	26	29	41	30	15	
Cobalt	10	14	13	7	9	12	8	
Copper	102	73	30	64	102	74	19	
Cyanide	K 0.5	K 0.2	K 0.2	K 0.5	0.4	0.4	K 0.2	
Lead	199	163	33	109	288	186	15	
Mercury	0.34	0.31	0.11	0.31	0.5	0.3	0.08	
Nickel	40	41	34	25	31	30	20	
Selenium	K 0.5	K 0.5	0.7	0.6	1.1	1	K 0.5	
Silver	0.6	0.5	K 0.25	0.4	0.8	0.6	K 0.25	
%TS	39.6	50.8	59.3	40.4	58.8	64.2	74.8	
%TVS	6.6	7	6.1	8.9	7.6	6.8	3.8	
Strontium	37	70	43	42	96	94	42	
Zinc	279	278	122	195	358	277	62	
PCB (ug/kg)								
Aroclor 1242	9,400	ND	ND	ND	ND	ND	ND	
Aroclor 1254	ND	440	ND	ND	900	350	ND	
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	
Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	
Aroclor 1248	ND	410	ND	1,400	2,100	ND	ND	
Aroclor 1262	ND	ND	ND	ND	ND	74	ND	
Aroclor 1268	ND	ND	ND	ND	ND	ND	ND	
PNA (ug/kg)								
Naphthalene	ND	ND	ND	ND	ND	ND	ND	
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	
Fluorene	ND	ND	ND	ND	ND	ND	ND	
Phenanthrene	ND	330	ND	1,100	790	500	ND	
Anthracene	ND	ND	ND	270	240	ND	ND	
Fluoranthene	710	600	220	1,600	1,300	810	140	
Pyrene	1,000	540	170	1,300	1,200	730	ND	
Benz(a)anthracene	260	220	ND	620	570	360	ND	
Chrysene	480	380	ND	760	750	480	ND	
Benzo(b)fluoranthene	530	ND	ND	720	700	400	ND	
Benzo(k)fluoranthene	ND	ND	ND	570	580	340	ND	
Benzo(a)pyrene	ND	ND	ND	620	580	340	ND	
Indeno(1,2,3-cd)anthracene	ND	ND	ND	ND	ND	ND	ND	
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	
Pesticides (ug/kg)								
<i>a</i> -BHC	ND	ND	ND	ND	ND	ND	ND	
<i>b</i> -BHC	ND	ND	ND	ND	ND	ND	ND	
<i>g</i> -BHC (lindane)	ND	ND	ND	ND	ND	ND	ND	
<i>α</i> -BHC	ND	ND	ND	ND	ND	ND	ND	
Heptachlor	ND	ND	ND	ND	ND	ND	ND	
Aldrin	ND	ND	ND	ND	ND	ND	ND	

Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND
<i>g</i> -Chlordane	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND
<i>a</i> -Chlordane	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	ND	ND	ND	ND	ND	ND	ND
Hexabromobenzene	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND
Mirex	ND	ND	ND	ND	ND	ND	ND
BP-6(PBB)	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND

Table 2. Continued

Parameter	Station and Interval Depths						
	08 (0-12")	08 (0-12") DUP	08 (12-38")	08 (12-38") DUP	08 (38-65")	08 (65-92")	09 (0-12")
Metals (mg/kg)							
Arsenic	8.5	8.5	7.2	7.2	7.3	7.6	6.1
Barium	93	100	114	119	107	88	64
Cadmium	3	3.3	2	2	K 2.0	K 2.0	K 2.0
Chromium	36	38	31	32	28	25	22
Cobalt	11	11	12	13	14	13	8
Copper	84	84	50	49	32	25	45
Cyanide	K 0.4	K 0.4	K 0.2	K 0.2	K 0.2	K 0.2	K 0.2
Lead	294	286	114	107	42	19	110
Mercury	0.27	0.27	0.25	0.26	0.12	K 0.5	0.2
Nickel	37	38	34	34	35	34	23
Selenium	0.8	0.9	K 0.5	K 0.5	K 0.5	K 0.5	K 0.5
Silver	0.5	0.5	0.3	0.3	K 0.25	K 0.25	K 0.25
%TS	47.4	46.8	58.1	58	60.1	64.7	63.6
%TVS	6.7	7	7	7.1	6.6	5.1	3.7
Strontium	34	36	48	49	46	56	32
Zinc	285	294	207	214	150	92	156
PCB (ug/kg)							
Aroclor 1242	17,000	18,000	140	140	ND	ND	1,400
Aroclor 1254	ND	ND	180	170	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND
Aroclor 1016	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	ND	ND	ND	ND	ND	ND	ND
Aroclor 1262	ND	ND	53	51	ND	ND	ND
Aroclor 1268	ND	ND	ND	ND	ND	ND	ND
PNA (ug/kg)							
Naphthalene	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	240	220	ND	ND	190
Anthracene	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	330	330	480	480	ND	ND	320
Pyrene	250	300	350	320	ND	ND	290
Benz(a)anthracene	ND	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	220	200	ND	ND	180
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)anthracene	ND	ND	ND	ND	ND	ND	ND

Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND
Pesticides (ug/kg)							
a-BHC	ND	ND	ND	ND	ND	ND	ND
b-BHC	ND	ND	ND	ND	ND	ND	ND
g-BHC (lindane)	ND	ND	ND	ND	ND	ND	ND
α-BHC	ND	ND	ND	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND	ND	ND	ND
Aldrin	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND
g-Chlordane	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND
a-Chlordane	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	36	ND	ND	ND	ND
Endrin Aldehyde	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND
Endrin Ketone	ND	ND	ND	ND	ND	ND	ND
Hexabromobenzene	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND
Mirex	ND	ND	ND	ND	ND	ND	ND
BP-6(PBB)	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND

Table 2. Continued.

Parameter	Station and Interval Depths			
	09 (12-41")	09 (41-70")	09 (70-98")	10 (12-41")
Metals (mg/kg)				
Arsenic	7.9	7.4	7.1	2.9
Barium	104	89	65	17
Cadmium	K 2.0	K 2.0	K 2.0	K 2.0
Chromium	26	22	19	6
Cobalt	11	12	9	3
Copper	48	33	22	8
Cyanide	K 0.2	K 0.2	K 0.2	K 0.2
Lead	97	55	15	35
Mercury	0.21	0.08	K 0.5	K 0.05
Nickel	27	27	25	6
Selenium	K 0.5	K 0.5	K 0.5	K 0.5
Silver	0.4	K 0.25	K 0.25	K 0.25
%TS	61.1	67	68.9	77.7
%TVS	5.3	4.5	4.5	1.8
Strontium	60	60	55	12
Zinc	185	134	64	42
PCB (ug/kg)				
Aroclor 1242	ND	ND	ND	ND
Aroclor 1254	140	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND
Aroclor 1016	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND
Aroclor 1248	ND	ND	ND	460
Aroclor 1262	ND	ND	ND	ND
Aroclor 1268	ND	ND	ND	ND
PNA (ug/kg)				
Naphthalene	ND	ND	ND	ND
2-Methylnapthalene	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND
Phenanthrene	400	ND	ND	ND

Anthracene	ND	ND	ND	ND
Fluoranthene	650	190	ND	ND
Pyrene	500	ND	ND	ND
Benz(a)anthracene	230	ND	ND	ND
Chrysene	310	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Indeno(1,2,3-cd)anthracene	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND
Pesticides (ug/kg)				
<i>a</i> -BHC	ND	ND	ND	ND
<i>b</i> -BHC	ND	ND	ND	ND
<i>γ</i> -BHC (lindane)	ND	ND	ND	ND
<i>α</i> -BHC	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND
Aldrin	ND	ND	ND	ND
Heptachlor epoxide	ND	ND	ND	ND
<i>γ</i> -Chlordane	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND
<i>a</i> -Chlordane	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND
Endrin	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND
Endrin Aldehyde	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND
Endrin Ketone	ND	ND	ND	ND
Hexabromobenzene	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND
Mirex	ND	ND	ND	ND
BP-6(PBB)	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND