A CHEMICAL SURVEY OF THE DETROIT RIVER, 1983

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Environmental Contaminants Division

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MANAGEMENT PERSPECTIVE

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This report is the compilation of experimental and analytical data. It is a backup document to the scientific papers published in the J. Great Lakes Research, Volume 11, Issue 3, on the St. Clair and Detroit River pollution problem.

EXECUTIVE SUMMARY

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This report is the backup document to several of the papers published in the J. Great Lakes Research, Volume 11, Issue 3, on the St. Clair and Detroit River pollution problem. The report provides sampling and experimental details, 9 Tables of descriptive and analytical data on the samples examined, plus an Appendix with cross-references to previous years' samplings.

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ABSTRACT

Concentrations of chlorinated benzenes. chlorinated biphenyls, 35 other chlorinated compounds and 25 polynuclear aromatic hydrocarbons measured in the microlayer, bulk water, pore water, suspended solids and surficial sediment compartments at 22 sites in the Detroit River in 1983, are reported. Concentrations of 15 volatile halocarbons in surface water samples taken in 1982 and 1983 as well as some values for chlorinated phenol residues in 1983 water samples are reported. Sampling locations and analytical procedures are described together with a brief geographical description of the area.

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NATIONAL WATER RESEARCH INSTITUTE

ENVIRONMENTAL CONTAMINANTS DIVISION

This National Water Research Institute contribution is a compilation of research data reflecting the activities of the Environmental Contaminants Division. Material in this report will eventually appear in published form, and prior right to publication is reserved. Enquiries concerning the contents of this report should be addressed to the contributing author(s).

ACKNOWLEDGEMENTS

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INTRODUCTION

The fate of contaminants in a specific aquatic ecosystem requires a detailed knowledge of the chemistry of each chemical in the context of the limnology and biology of that specific ecosystem. In aquatic systems, this fate is controlled by a variety of complex and interactive biogeochemical processes. In accordance with the Great Lakes Water Quality Agreements, determination of these processes is essential for the management of the resource and for its conservation for all uses.

The Detroit River, as one of the interconnecting channels of the Great Lakes system, presents an area of extensive commercial, industrial and human density. Inherently, the dependence on water for electrical power generation, drinking supplies, navigation, recreation and manufacturing requires a detailed knowledge of the water system. The introduction of contaminants to this system has an effect not just on local aquatic communities, but also on those downstream in the depositional areas of the central and eastern basins of Lake Erie which are the recipients of much of the sediment transported by the Detroit River. The fate of contaminants in any limnological medium controls their availability and consequently the exposure of aquatic organisms and human populations.

The results reported here are in part the effort of a multi-disciplinary programme conducted by the Environmental Contaminants Division, National Water Research Institute in Burlington, Ontario, to

examine contaminant sources, distribution and partitioning of certain compounds with regard to local conditions and their implications for the Detroit River and eastern basin of Lake Erie. The conclusions of this research are expressed in a special issue of the Journal of Great Lakes Research to be published in 1985. The research data here are a supplement to that issue since they could not in whole be included in the published articles because of the physical volume of information.

AREA DESCRIPTION

The Detroit River is a 68 km long connecting waterway between Lake St. Clair and Lake Erie, and forms part of the international boundary between the U.S. and Canada. The river enters western Lake Erie at the lake's northwest corner, and supplies 90 to 95 percent of its inflow at an average velocity of 5 to 9 kmph. The lower section of the Detroit River is broad, being formed of many islands and shallow expanses over a distance of about 37 km. The section of river extending upstream to Belle Isle from Fighting Island, through the Windsor/Detroit area, is a single open-river area for more than 17 km.

The terrain through which the Detroit River flows is fairly level, broken only by the valley of the Rouge River (on the Michigan shore) and the shallow valleys of lesser tributaries. Low morainic deposits and beach ridges of former lakes also exist. In its lower

half, the Detroit River has gently sloping banks, is generally quite shallow, and varies in width between 4 and 9 km. The bottom consists mainly of soil and boulders from a point below Grosse Ile to a point near the lower end of Fighting Island. Aquatic vegetation is abundant in the shallows of the lower Detroit River. The upper half of the river has steep banks, a cross section less than 1 km in width and depths ranging from 8 to 16 m, and an earth bottom.

The discharge of the Detroit River during the 75-year period 1900 to 1974 has averaged 445 million cubic meters per day (U.S. Army, 1976). Also, high easterly or westerly winds can occasionally cause the raising or lowering of the water level in Lake Erie and significantly affect the level in the lower reaches of the Detroit River where such changes have been observed to be as great as 1.8 m (6 feet) within 8 hours.

Because of its strategic geographical location, the Detroit River is an important artery for commercial shipping between the upper and lower Great Lakes. Commercial shipping in the river include the Ports of River Rouge, Ecorse, Wyandotte, Riverview, Trenton, Amherstburg and the cities of Detroit and Windsor. Numerous commercial installations used for handling coal. iron ore, limestone, steel products, petroleum products, and other items including overseas general cargo are found along the waterfront. Along both sides of the river from Lake St. Clair to about the mouth of the Rouge River, the river banks are lined with residential and commercial developments and

recreational facilities. On the U.S. side from Zug Island downstream through the Trenton Channel, as far south as the mouth of the river, areas of heavy industry as found, interspersed with residential and commercial areas.

Manufacturing in the Detroit River area is characterized by a heavy concentration in durable goods production and is further characterized by heavy concentration in a single industry, namely, motor vehicle production. In recent decades, however, the role of the automobile industry as principal employer has been decreasing in favour of other manufacturing plants. New industries some of which are heavy users of water play a larger role in the area's economy. These are: food and foodstuffs processing; paper and allied products manufacturing; chemicals manufacturing; petroleum and coal processing; power generation and primary metals manufacturing. Industrial operations along the river use water at an average rate of 22 million cubic meters per day (Table 1) of which two thirds is primarily for electrical power generation, and the remainder for municipal and industrial applications.

CONTAMINANT SOURCES

As mentioned the Detroit River is an important source of recreational, municipal and industrial water, serves as a major seaway transport route for many industrial commodities and provides

recreation for over five million people. This magnitude of industrial and urban activity is also a cause for contamination of the river water with many organic and inorganic compounds. Contaminants in the drainage basin can arise from a number of sources, for example as direct outfalls of effluents to the river or outfalls of effluents to major tributaries, from indirect inputs to combined storm sewers, and through industrial or municipal inputs to sewage treatment plants. Contaminant sources can occur as leachates from landfill and dredge spoil areas or from more diffuse sources through atmospheric deposition of exhaust and stack emissions, and from urban runoff after periods of heavy rain that result in purging of the storm sewer networks. Areas which may contribute to these source points are detailed in Figures 1 and 2.

TABLE 1. INDUSTRIAL AND MUNICIPAL WATER USEAGE IN THE DETROIT RIVER

	10^6 cubic metres/day	10^9 gals/day	cfs
Detroit Edison Facilities	15	3.5	6310
Sewage Treatment Plants (Canada-United States)	3	0.7	1230
Industrial Water Useage (Canada-United States)	3.7	0.90	1510
TOTAL	21.7	5.1	8870
Detroit River	445	98	185,000

* Average Flow Data, IJC, 1979.

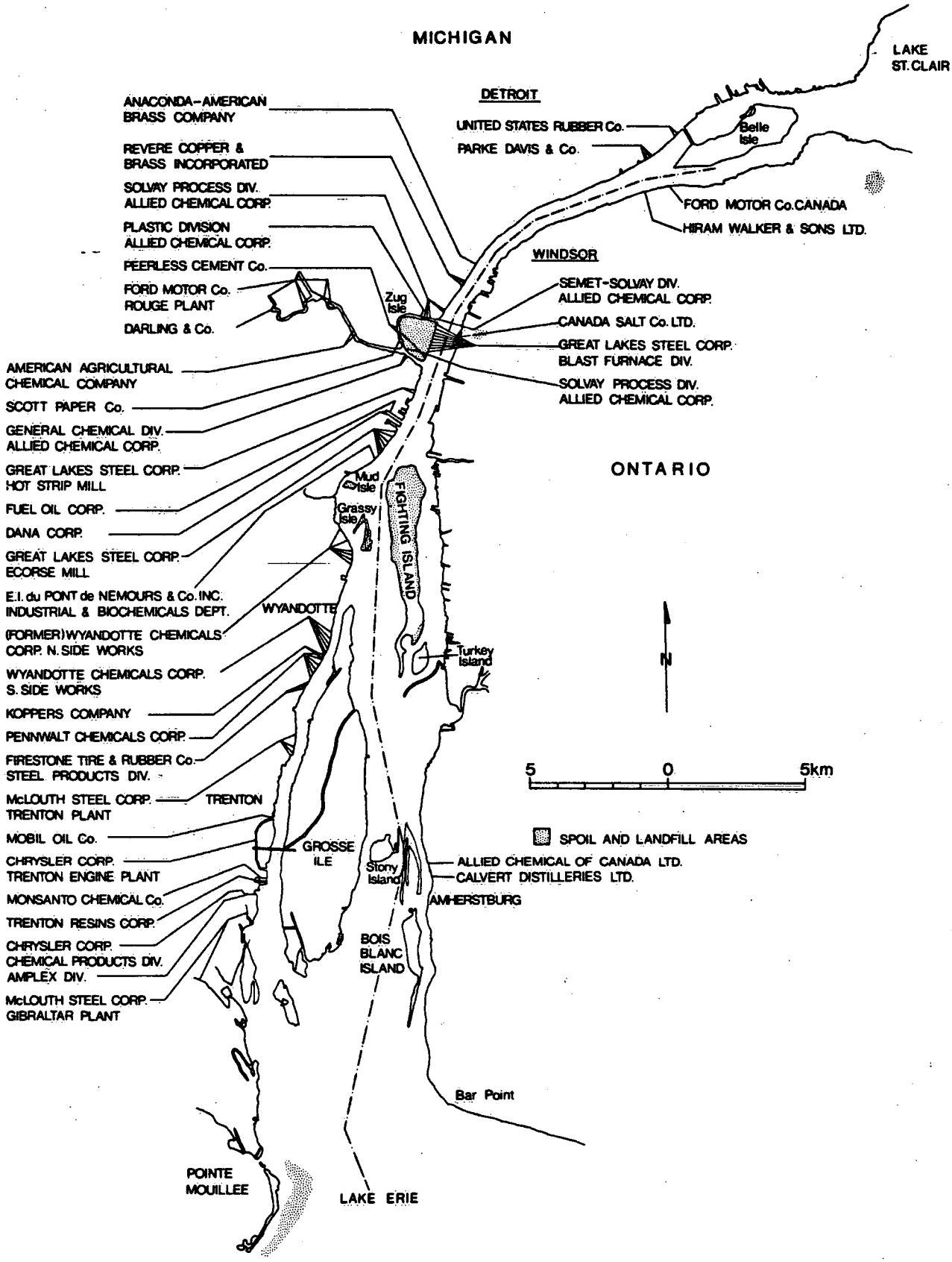

Figure 1. Industrial outfalls and landfill spoil areas in the Detroit river.

(from Vaughn and Harlow 1965, IJC 1968).

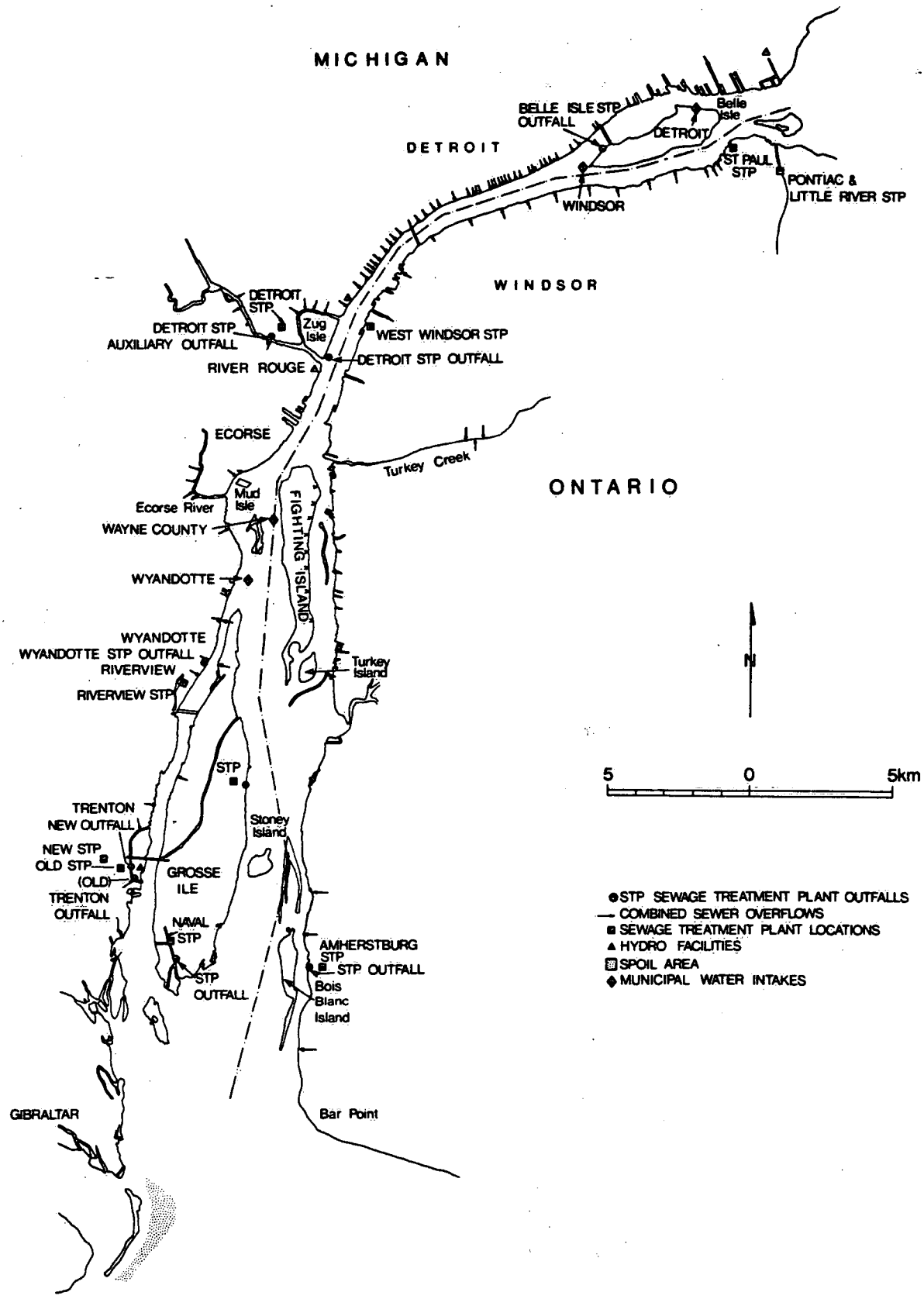

Figure 2. Municipal, hydro and combined storm sewer facilities in the Detroit river area (from Vaughn and Harlow 1965, IJC 1968 and personal communications – City of Windsor, Town of Amherstburg).

Volatile Halocarbons

Volatile halocarbon concentrations in surface waters were used as tracers to determine current areas of active contaminant discharges. The analytical procedure and interpretation of volatile halocarbons data provides delineation of various confluences, sources and loadings, including leachates of landfills and dredge spoil disposal areas. Distinctions between municipal and industrial loadings were also made from these data. Statistical relationships of a number of individual halocarbons with other contaminant parameters were sought to extend the usefulness of these determinations.

Trace Organics

Concentrations for 35 organochlorine compounds, polychlorinated biphenyls, chlorinated benzenes, toxaphene, chlorinated phenols, and polynuclear aromatic hydrocarbons as studied in the Detroit River are reported. The sources of these compounds and their implication with respect to current biota levels in the Detroit River and Lake Erie as well as distribution between the surface discussed in a special issue of the Journal of Great Lakes Research, 1985. Mineralogical composition, particle size distribution, concentration of major elements, organic matter and metals were used to characterize the bottom sediments (Figure 3) and to investigate the distribution of sediment-associated contaminants. Correlations between particle size

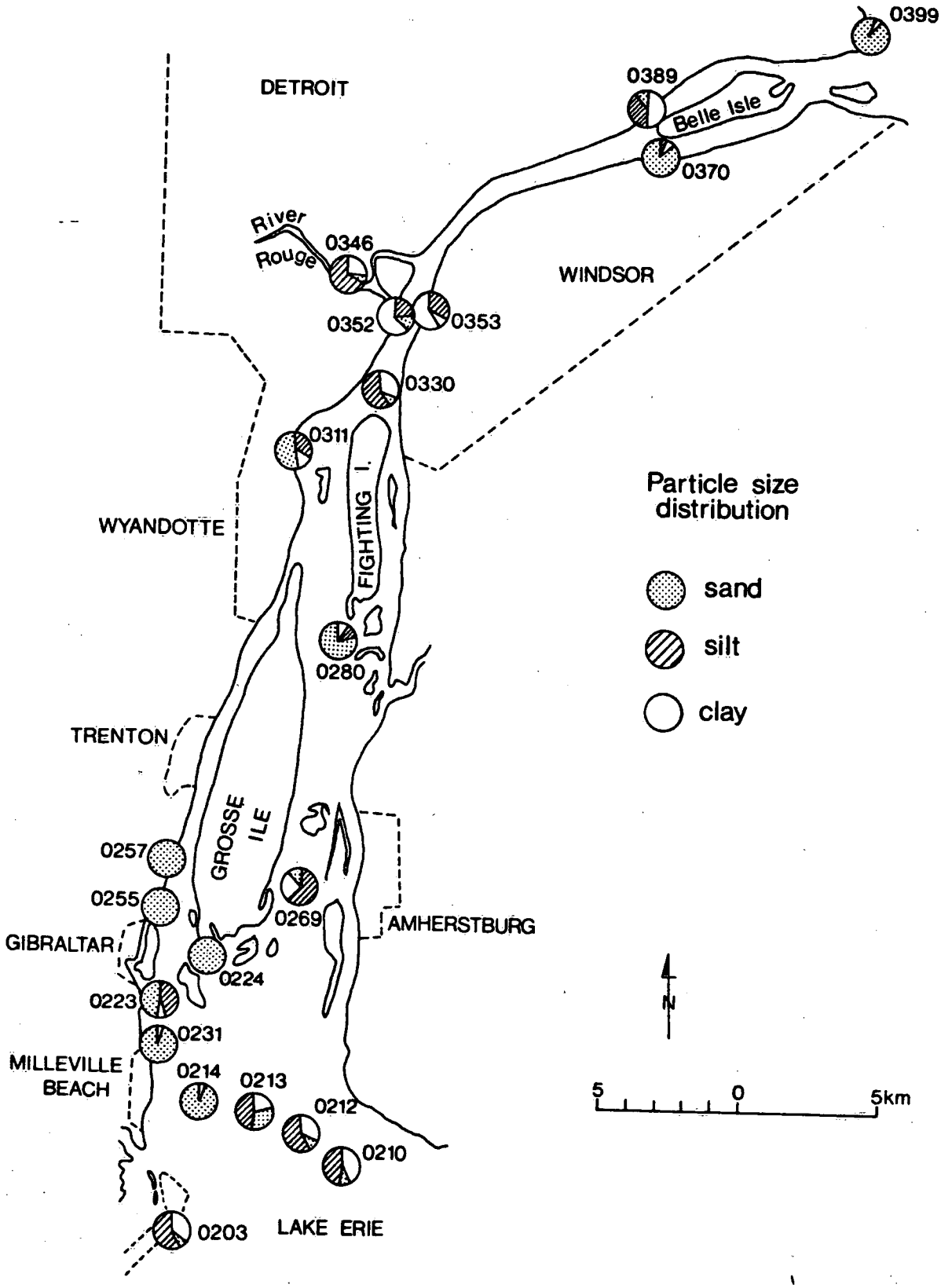

Figure 3. Particle size distribution of surficial sediment samples collected in the Detroit river (data from A. Mudroch, National Water Research Institute, Burlington, Ontario.

distribution, metal concentrations, and trace organics were calculated to determine the processes involved in contaminant transport and bioavailability.

EXPERIMENTAL

Sample Collection

Samples were collected from September 28 to October 1, 1982 and from May 30 to June 4, 1983 for various phases of this study. Support vessels from Fisheries and Oceans Canada, including the research vessel CSS Advent with technical support from the Technical Operations Division, National Water Research Insitute, Environment Canada, were employed to do the sampling. Samples were collected throughout the Detroit River at the stations given in Figure 4. A description of these collection points, with sample type and analyses are given in the Appendix. Each station has been assigned a four-digit identification code for future reference in the Toxic Substance Data Base (TSD), currently under development at NWRI. The initial digit has not been designated and is intended to identify the sample type (i.e., effluent, tributary, pond, etc.).

Sediments and suspended solids

Surficial sediment samples (SSed) of approximately 5 cm were taken by mini Shipek or Eckman dredge and stored in prewashed glass

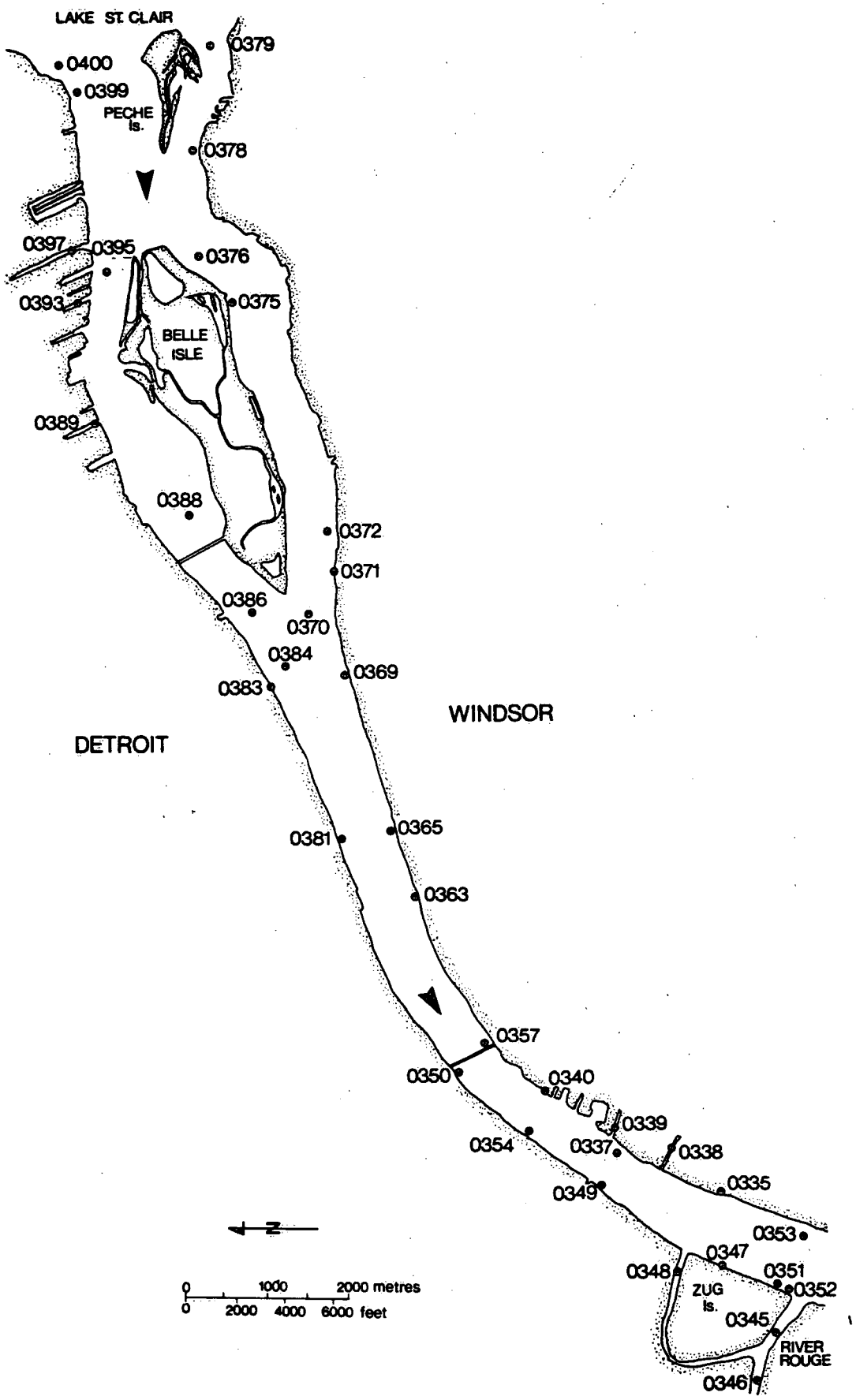

Figure 4a Sampling locations in the Detroit river.

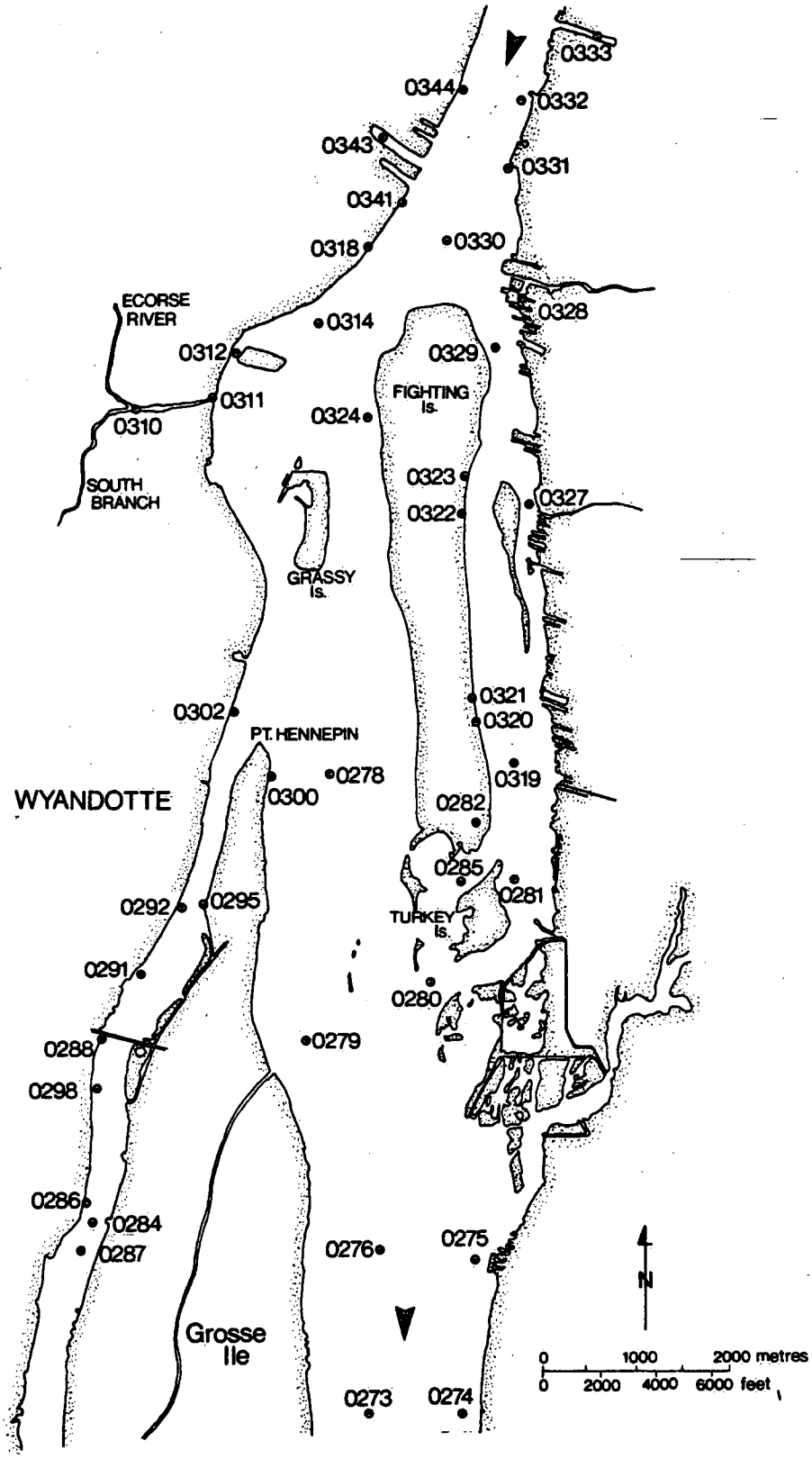

Figure 4b Sampling locations in the Detroit river.

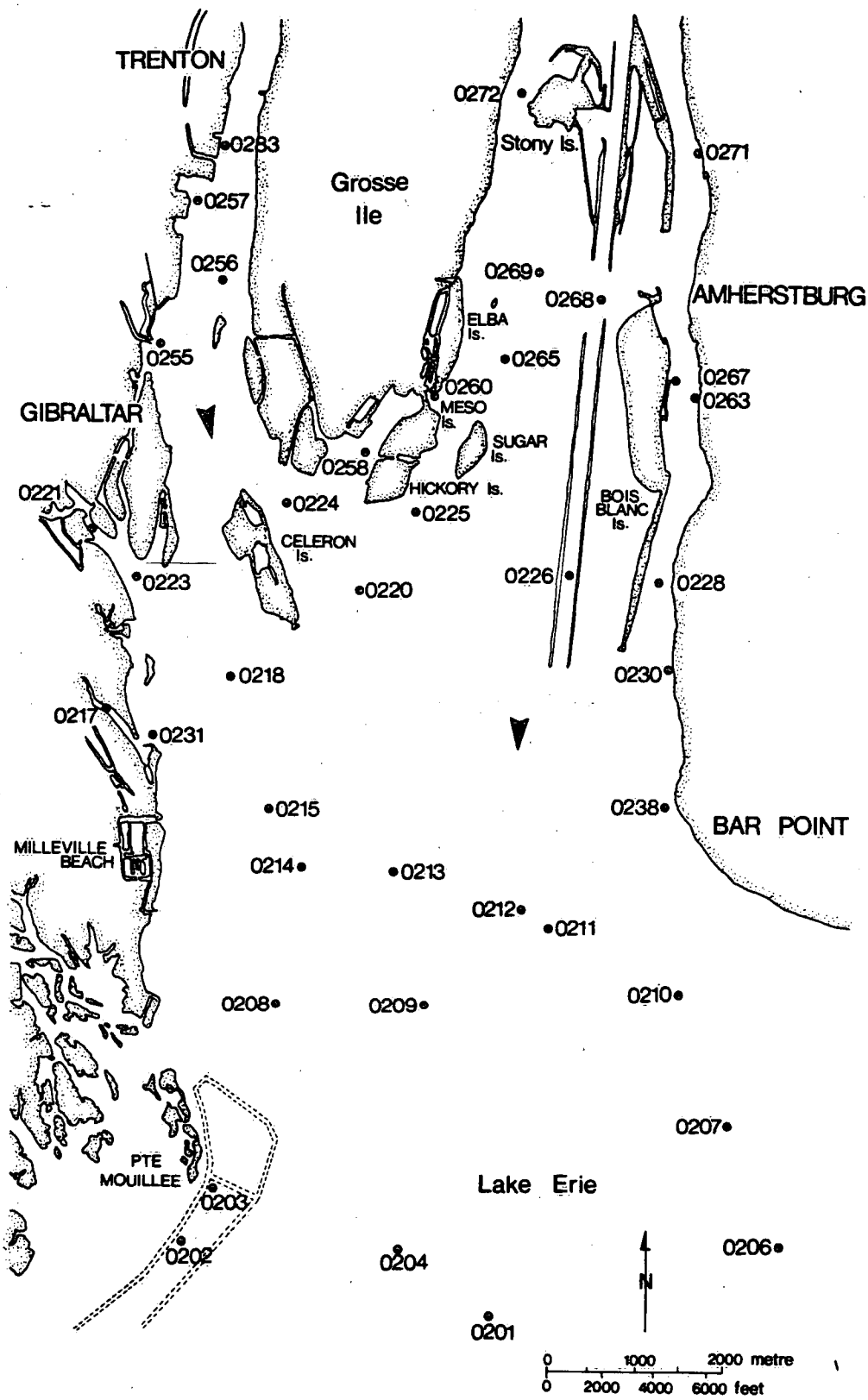

Figure 4c Sampling locations in the Detroit river.

jars sealed with a clean aluminum foil liner beneath the cap. Suspended solids were collected from bulk water samples (200-300 L) from the separation bowls of a Westphalia centrifuge. The centrifuge was operated at 9800 rpm and the water sample was passed through at a rate of 6 L/min and collected in the aquatic phase liquid extractor (APLE). Material greater than 2 µm is generally removed under these operating conditions (unpublished data, Alena Mudroch, ECD, NWRI, Burlington, Ontario) with the quantities collected given in Table 2. Both sediment and suspended sediment samples were stored at 4°C until analyzed.

Pore water

Sediment samples were placed in a precleaned stainless steel cylinder and the pore water squeezed from the sample by pressure filtration through a 5 µm Teflon filter (Millipore ISWP-142-50) at a head pressure of 345 kPa (50 psi) with compressed U.H.P. nitrogen gas (Matheson). The effluent was collected in prewashed glass jars and stored at 4°C until analyzed. Collected pore water fractions were weighed to calculate the water content in the samples. These values are given in Table 3 for the samples processed.

Water samples

Twenty-two bulk water samples of 200 L each were extracted on site with an aquatic phase liquid extractor (APLE) from May 30 to June 4, 1983. The APLE (McCrea and Fisher, 1984) is used in

TABLE 2. WEIGHTS OF SUSPENDED SOLIDS COLLECTED FROM CENTRIFUGED DETROIT RIVER WATER, 1983

TSD Station No.	(Dry) Sample Weight (g)	Volume of Water Used (L)
0210	0.76	300
0212	2.19	300
0231	5.32	200
0224	1.68	200
0280	1.19	200
0352	3.01	300
0353	12.82	300
0314	1.35	300
0379	0.87	200
0381	0.81	200
0399	1.92	200

TABLE 3. VOLUME OF PORE WATER OBTAINED IN SURFICIAL SEDIMENT SAMPLES OF THE DETROIT RIVER, 1983

TSD Station No.	Sample Volume (mL)	Sediment Weight (g)		
		(a) Wet	(b) Squeezed	(c) Dry
0203	121	612	490	256
0210	260	604	344	180
0212	133	489	357	176
0214	245	924	679	492
0223	157	1577	1420	930
0224	63	668	605	425
0231	56	748	692	600
0255	195	1055	860	650
0257	159	2292	2132	1165
0269	363	936	573	193
0280	172	1572	1400	932
0311	279	971	692	545
0330	252	1086	834	236
0346	146	633	488	246
0370	98	640	542	463
0399	103	776	673	542

(a) Weight of sediment without pore water.
(b) Weight of sediment with pore water.
(c) Weight of sediment after freeze-drying.

conjunction with a Westfalia continuous flow centrifuge and is designed to extract contaminants from centrifuged water. The solvent, dichloromethane, is continuously pumped from the bottom of the extraction drum to the spray bar, where it is dispersed over the entire surface of the water sample.

Eight litres of pesticide grade dichloromethane are added to the extraction drum and the extraction drum is filled with 200 litres of centrifuged water. To initiate extraction, the pump is turned on giving an effective recirculating rate of approximately 12 L/min for 90 minutes. After 90 minutes, the pump is turned off to allow the solvent to settle out of the sample water; 120 minutes later, the solvent is drained back into the original amber solvent bottles. About 3 litres of sample water is included during the draining process to minimize the volatilization of the solvent. Since the dichloromethane is slightly soluble in water (1.5% v/v), approximately 3 of the original 8 litres of solvent are not recovered.

Surface microlayer

Surface microlayer samples (ML) of 100 mL were collected during May 1983, by immersing glass plates in the water column and removing the adhering film with a wiper blade into a precleaned glass jar (Harvey, 1966). A typical 100 mL sample of microlayer water requires 20-25 immersions of a 400 cm^2 plate with collections from both sides. Samples were collected only in relatively calm surface

waters and not within an hour of any substantial precipitation. The samples were stored at 4°C until analyzed.

Chlorinated phenols

Water samples of 1 L size were collected in May 1983 in clean glass bottles, preserved with sodium hydroxide and stored at 4°C until analyzed.

Volatile halocarbons

Subsurface water samples (depth 0.5 m) of the Detroit River were collected in 200 mL glass bottles in the periods September 28 to October 1, 1982 and May 30 to June 3, 1983. Forty-one stations were sampled in 1982 and 81 stations in 1983. The samples bottles were filled completely so as to avoid any headspace. They were stored in the dark until processing at the field station at shore, usually within two hours of collection. For the processing, a 100 mL aliquot of each sample was transferred to a 125 mL cylindrical separatory funnel, the funnel evacuated and placed in a water bath at 95°C for three minutes. The volatile contaminants, so purged into the funnel headspace, were transferred to an evacuated septum-equipped 15 mL vial held in liquid nitrogen. After completion of the transfer, the vials were stored at room temperature until gas chromatographic analysis in the laboratory.

The processing apparatus was purged with hot air after each sample to avoid cross contamination between samples. The system can

be operated with or without exposure of the headspace samples to the atmosphere. The samples reported on here were exposed to air after the time of sample transfer and cryogenic collection. Atmospheric samples taken at regular intervals indicate background levels of volatile halocarbons in the air at less than 0.1 μg m^{-3}. Consequently, secondary contamination of the samples is excluded.

Details of the procedure to isolate the headspace samples, recoveries and subsequent analyses have been described by Comba and Kaiser (1983).

Sample Extractions and Fractionation

General

The bulk, pore and microlayer water samples were base/acid extracted and partitioned as discussed later on 3% deactivated silica gel. The suspended solids and pressed sediment samples were freeze-dried and extracted under sonification with methylene chloride, then fractionated on 3% silica gel. The pore water samples were treated and processed as noted above for the bulk water samples. A generalized extraction scheme (Figure 5) is presented for the 22 samples that had organochlorine and hydrocarbon determinations.

Microlayer and pore water

Microlayer and pore water samples were adjusted to pH greater than 10 with potassium hydroxide pellets. Each sample was

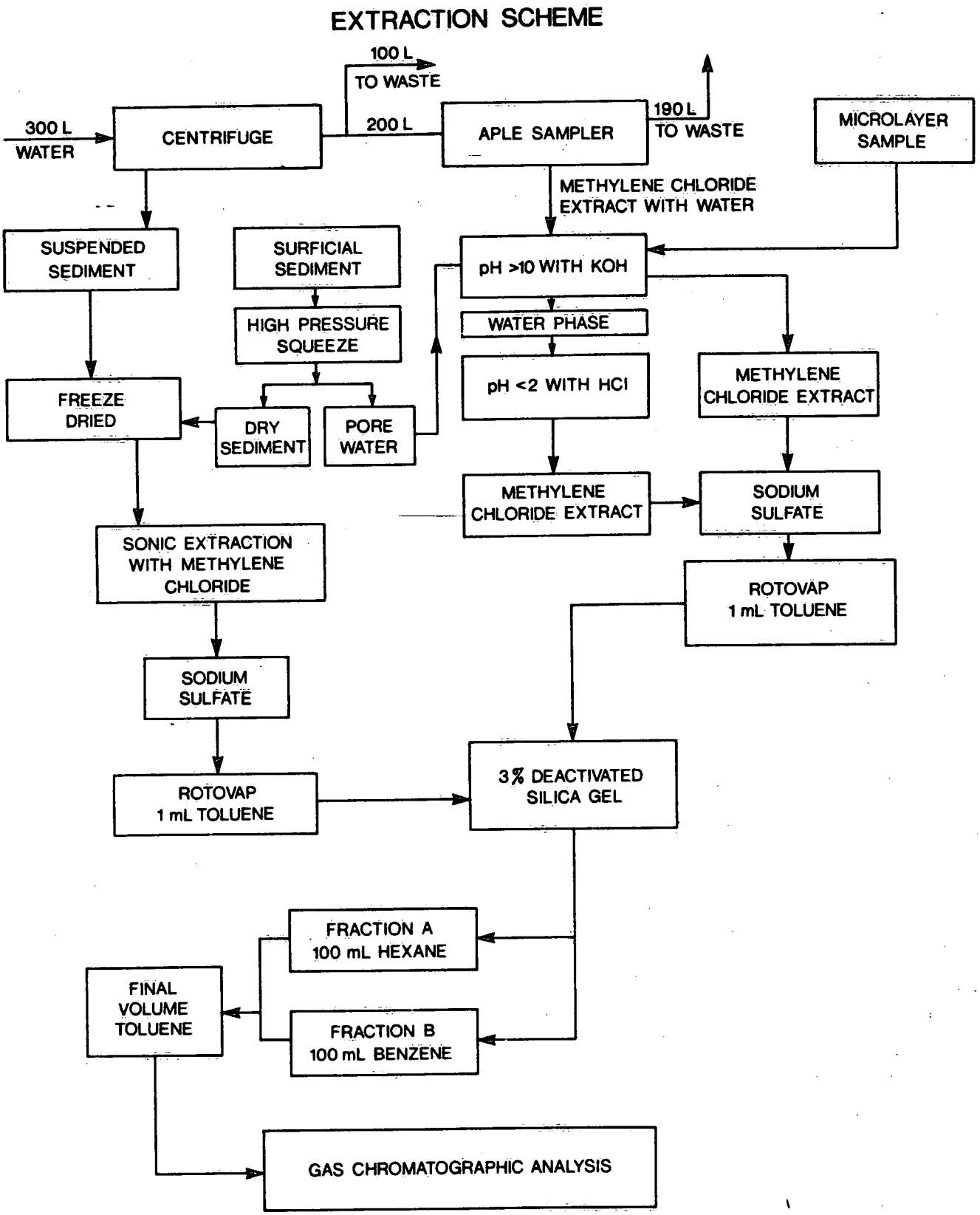

Figure 5. Extraction scheme for organochlorine and hydrocarbon components in sediment and water.

then extracted with three separate 25 mL portions of methylene chloride which were combined and dried by passing through sodium sulfate. The aqueous portion was retained and the pH readjusted to less than 2 with concentrated hydrochloric acid. The aqueous sample was extracted again with three separate 25 mL portion of methylene chloride; combined and dried through sodium sulfate. The samples were reduced to a volume of 10 mL using rotary evaporation and further reduced to a volume of 1 mL under a stream of nitrogen with 1 mL of tolune as a "keeper". The two functions thus obtained were each partitioned into two fractions (A and B) on 3% deactivated silica gel. Fraction A contained those components that elute with 100 mL of hexane and fraction B, components eluted with 100 mL of benzene. Each fraction was again reduced in volume to 1 mL by rotary evaporation and nitrogen as previously described and analyzed by gas chromatography using electron capture detection. Samples were further reduced to 0.1 mL volume when analyzed by flame ionization.

A.P.L.E. samples

Bulk water extracts collected in the original amber solvent bottles were combined in a 10 litre glass reservoir having a stopcock at the base. Each sample was adjusted to pH > 10 with potassium hydroxide pellets and agitated with a magnetic stirrer for 1.5 hours. The solvent water mixture was allowed to separate and the methylene chloride portion collected. The remaining aqueous portion was

adjusted to pH < 2 with concentrated hydrochloric acid. The aqueous phase was extracted twice with 200 mL aliquots of dichloromethane by stirring for 40 minute intervals in each case. The combined acid extractable aliquots and the above base extractable aliquots were dried over sodium sulphate and reduced to a volume of 1 mL in volume by the procedures previously described for pore and microlayer water samples. Similarly, the APLE extracts were also partitioned into A and B fractions on 3% acid silica gel. For gas chromatography analyses using electron capture detection, the samples volumes were kept at 10 mL. Volumes were reduced to 1 mL (toluene) by evaporation with nitrogen for analyses using the flame ionization detector.

Surficial sediments and suspended solids

The pressed sediment samples and suspended solids were freeze-dried and pulverized with a mortar and pestle. A 25 gm portion of sediment and the total suspended solid samples were extracted using sonification, three separate times with 50 mL of methylene chloride. The extracts were combined, passed through sodium sulphate and reduced to a volume of 1 mL in toluene. Each sample was then partitioned on 3% activated silica gel onto Fractions A and B as described above and adjusted to a final volume of 10 mL for sediment samples and 1 mL for gas chromatographic analyses by electron capture for suspended solids. These volumes were reduced by a factor of 10, where possible, and for analyzed by flame ionization.

Chlorinated phenols

The preserved water samples were acidified with concentrated hydrochloric acid to a pH of 1 to 2 just prior to analysis. The acidified water samples were extracted with 40 mL pesticide grade toluene by shaking in a separatory funnel. The toluene layer was removed and the aqueous layer was extracted twice with 2x30 mL toluene. The combined toluene extracts were then back extracted three times with 40, 30 and 30 mL of 0.1 M K_2CO_3 made up with organic free water. The combined K_2CO_3 extracts were placed in a 125 mL erlenmeyer flask with a teflon lined screw cap. Ten mL of pesticide grade hexane and 1 mL of redistilled acetic anhydride were added and the tightly capped flask was shaken mechanically for one hour. The hexane layer was removed using a pasteur pipet and evaporated to an appropriate final volume in a graduated centrifuge tube with a stream of dry nitrogen after the addition of 4 mL of pesticide grade iso octane as a keeper.

Gas Chromatography

Volatile halocarbons

Five hundred microlitre injections of the headspace samples were analyzed on a Hewlett Packard 5700 gas chromatograph using an electron capture detector. Split/splitless conditions were employed

with a splitless delay time of 10 seconds. Temperatures from -20°C for 2 min to 80°C at 4°C/min were used for chromatographic separation on a 30 m x .25 mm OV-101 fused silica capillary column.

Chlorinated phenols

Acetylated extracts of the chlorophenols were analyzed on a Hewlett Packard 5880-A instrument with an electron capture detector. Injections of one microlitre were made with an autosampler onto a 25 m x .25 mm OV-1 fused silica capillary column. The temperature conditions were typically 90°C for 2 min, then programmed at 4°C/min to a final temperature of 160°C. Hydrogen was used as the carrier gas at a flow of 1 mL/min.

Organochlorines

All extracts were analyzed by gas chromatography with an electron capture detector on a HP 5880-A instrument. Quality assurance was maintained by using three different stationary phases with narrow bore (0.25 μm) fused silica columns. The following column types were used: (i) a 30 m, DB-5 (SE-54 equivalent from Chromatographic Specialties Ltd., Brockville, Ontario); (ii) a 30 m OV-1 (Hewlett-Packard) and a 30 m, OV-17 experimental column (courtesy of Hewlett-Packard Canada Ltd.). Aliquots of 1 μl volume were injected with an autosampler and an acceptance window of ±0.03 seconds was used for component identification by retention time comparison.

Typical chromatographic conditions were: injection port: 250°C, detector: 350°C, carrier gas: hydrogen at 1 mL/min. The temperature regime was typically 90°C for 2 min, then programmed at 4°C/min to a final temperature of 280°C.

Polynuclear Aromatic Hydrocarbons

All extracts for polynuclear aromatic hydrocarbons were analyzed on a Varian 3700 gas chromatograph using a flame ionization detector. Injections were made manually onto a 30 m, SE-54 fused silica capillary column (Chromatographic Specialties) at 90°C. After a two minute isothermal period, temperature programming was initiated at 4°C/min to a final ten minute isothermal period at 310°C. The carrier gas was hydrogen with a 10:1 injector split.

Quality Control and Assurance

Water

Volatile halocarbons

The performance of the sample processing and analytical procedure was verified each day by comparing halocarbon values for three Amherstburg tap water samples with values obtained for similar samples (1 litre) extracted with 40 mL pentane. Standards for gas chromatography determinations were prepared from stock solutions and checked for deterioration by comparison of individual response ratios of each compound against carbon tetrachloride and chloroform.

Chlorinated phenols

Recoveries of pentachlorophenol from raw water by toluene extraction and subsequent acetylation are between 90-96% (Fox and Joshi, 1984). Similar extraction efficiencies were obtained for the other chlorophenol isomers determined (Cl_2 - Cl_4) with 88-95% recoveries (Michael E. Fox, Environmental Contaminants Division, unpublished data).

Organochlorine and polynuclear aromatic hydrocarbons

The extraction of water samples with methylene chloride has given good recoveries for the compound types studied here. Recoveries of a range of PCB mixtures, toxaphene and chlordane gave values of >81%, >89% and >78% respectively from wastewaters (Millar and Thomas, 1982); nitrotoluenes and nitrobenzenes are readily extractable from waters at pH 7 with methylene chloride (Shafer, 1982) and 16 polynuclear aromatic hydrocarbons had better than 85% recoveries from wastewaters using this solvent (Strup, 1982). Extraction of 18 organochlorine contaminants at spiked concentrations of .05 ppb with an APLE system gave recoveries from 65-128% under the operating conditions used here (McCrea and Fisher, 1984). Recoveries of chlorobenzenes were greater than 80% using the APLE system (Oliver and Bothen, 1985, unpublished results, NWRI, ECD, Burlington, Ontario).

Surficial sediments and suspended solids

The ultrasonic extraction of PCB, organochlorine pesticides, polynuclear aromatic hydrocarbons and phthalates are described in the Environment Canada Methods Manual (Environment Canada, 1974). The procedure was modified by replacing the hexane/acetone extraction solvent with methylene chloride. Five samples chosen at random and extracted by both methods gave no significant differences in extraction efficiencies for the compounds studied. Methylene chloride extracts provide a cleaner gas chromatography background by reducing the green-black colour in extracts obtained using acetone/hexane. The lower levels of extracted plant materials reduces spiking and baseline rising in the analysis. Previous results of sediment extracts on Welland River samples by comparison of soxhlet and ultrasonic extraction procedures using both solvent systems gave identical recoveries for PCB and 26 organochlorine pesticides (Comba, 1983, unpublished results).

Quantitation

Method blanks were run for all solvents and procedures used. The solvent blank for the methylene chloride (APLE procedure) was obtained prior to the field study (Caledon Laboratories, Georgetown, Ontario) from freshly distilled solvent and a suitable lot was reserved for this study. No interferences were encountered from procedure blanks. Partitioning and fractionation of the compounds

studied was checked by running sample spikes on 3% deactivated silica gel before each group of samples.

Quantitation of PCB was determined by relative response to a 1:1:1 mixture of Aroclors 1242:1254:1260 from which 42 identifiable resolved PCB isomers are calibrated to specific response factions. Peaks which exceeded the peak ratios within the calibration mixture by a factor of three were omitted in the calculations. The least value result on the basis of three column analyses was used as the most probable concentration. Toxaphene, although not detected in these samples, was quantitatively identified and quantitated on the basis of 22 gas chromatographic peaks, resolved from the PCB and organochlorine residues studied and their respective ratios with a commercial mixture.

Individual organochlorine contaminants were qualitatively identified and quantitated to standard response factors by retention time matches on three separate capillary column phases. Detection limits for the procedures discussed are listed in Table 4.

TABLE 4. MINIMUM DETECTION LIMITS* FOR DETROIT RIVER SAMPLES, 1983

Parameter		APLE (Bulk Water)	Pore Water	Surficial Sediment	Suspended Sediment	Microlayer
	Sample Size	200 L	100 mL	10 gm	1 gm	100 mL
	Extract Volume	10 mL	1 mL	10 mL	1 mL	1 mL
	Units	ng/L	ng/L	ng/Kg	ng/Kg	ng/L
Di-to-tetra Chlorobenzenes		10-0.80	$2x10^3$ -160	$200x10^3$-$16x10^3$	$200x10^3$-$16x10^3$	100-2000
Organochlorine compounds		0.25	50	$5x10^3$	$5x10^3$	50
Polychlorinated biphenyls		0.25	50	$5x10^3$	$5x10^3$	50
Toxaphene		1.0	$2x10^3$	$200x10^3$	$200x10^3$	
Polynuclear aromatic hydrocarbons+		1.0	$1x10^3$	$50x10^3$	$500x10^3$	200

* Conservative for many compounds (Factor 5), based on least sensitive compounds. For some samples, volumes were reduced further to achieve greater sensitivity.

\+ PNA volumes reduced by a factor of 10 for analyses.

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TABLE 5.
VOLATILE HALOCARBON CONCENTRATIONS
IN SURFACE WATERS OF THE
DETROIT RIVER, 1982

TABLE 5. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1982

Parameter	Concentration as $ng.L^{-1}$ (ppt)								
	TSD Station No.								
	0201	0203	0208	0209	0210	0211	0220	0226	0228
Freon 11	7.6	8.2	33	4.2	41	29	9.7	4.9	9.3
Methylene Chloride	ND	ND	2000	330	2400	120	820	85	120
Chloroform	1.6	15	190	1.6	114	1.1	25	1.8	2.8
1,1,1-Trichloroethane	2.4	18	265	6.4	240	7.0	270	7.7	4.8
Carbon Tetrachloride	1.6	1.8	130	1.3	3.3	4.1	0.7	1.2	0.8
Trichloroethylene	T	7.3	350	1.6	250	1.5	150	2.6	1.2
Dichlorobromomethane	T	2.3	18	0.9	13	T	6.6	T	2.2
Dibromochloromethane	ND	0.8	6.0	0.3	3.2	ND	1.8	T	0.8
1,1,2-Trichloroethane	ND	T	2.8	T	4.1	T	4.5	ND	ND
Tetrachloroethylene	5.7	36	560	4.5	410	5.2	260	8.2	5.6
Freon 12	12	ND	ND	12	260	ND	4.1	ND	ND
Carbon Disulfide	ND	ND	T	T	T	ND	77	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane	ND	ND	ND	ND	3.2	ND	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	1.2	ND	ND	ND	ND
Total Industrial	17	71	3555	348	3613	158	1515	109	142
Total Municipal	2	18	217	2	130	10	35	1.8	6
Sum	19	89	3772	350	3743	168	1550	111	148

ND - Not detected
T - Trace

TABLE 5. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1982

Parameter	Concentration as $ng.L^{-1}$ (ppt)										
	TSD Station No.										
	0256	0265	0267	0268	0271	0272	0274	0279	0283	0285	0287
Freon 11	10	1.1	34	5.8	130	9.6	25	6.2	13	10	10
Methylene Chloride	T	140	T	60	T	180	190	320	270	680	ND
Chloroform	6.1	ND	64	0.8	150	13	4.3	7.1	125	7.0	20
1,1,1-Trichloroethane	43	ND	9.5	3.9	4.2	17	6.1	6.3	130	5.3	33
Carbon Tetrachloride	2.1	T	4.9	4.9	9.0	0.7	0.7	2.2	25	8.6	0.7
Trichloroethylene	38	ND	1.8	T	T	16	2.4	T	160	1.4	30
Dichlorobromomethane	0.9	1.8	2.1	0.4	1.8	ND	1.6	T	9.9	0.9	2.5
Dibromochloromethane	0.3	ND	1.4	0.3	0.8	T	0.3	ND	2.7	0.4	0.9
1,1,2-Trichloroethane	ND	ND	T	T	ND	ND	T	ND	ND	T	ND
Tetrachloroethylene	45	ND	12	6.6	1.4	21	8.2	7.0	160	8.3	51
Freon 12	48	48	ND	ND	28	ND	ND	T	190	18	150
Carbon Disulfide		ND	T	ND	T	T	ND	T	ND	ND	ND
1,2-Dichloropropane		ND	ND	ND	ND	ND	ND	ND	100	ND	ND
1,2-Dichloroethylene		ND	ND	ND	ND	ND	ND	ND	T	ND	ND
Tetrachloroethane		ND	ND	ND	ND	ND	3.2	ND	ND	ND	ND
Dibromomethane		ND	ND	ND	ND	ND	1.2	ND	ND	ND	ND
Total Industrial	188	141	62	81	172	244	232	342	1048	732	274
Total Municipal	7	1.8	68	2	153	13	6	7	138	9	24
Sum	193	143	130	83	325	257	238	349	1186	740	298

ND - Not detected
T - Trace

TABLE 5. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1982

Parameter	Concentration as $ng.L^{-1}$ (ppt)												
	TSD Station No.												
	0291	0302	0311	0318	0320	0322	0330	0332	0337	0341	0344	0346	0349
Freon 11	1.7	380	3.1	8.2	3.0	17	7.8	10	6.4	11	5.1	12	3.0
Methylene Chloride	T	330	ND	ND	20	ND	T	80	1600	150	ND	60	ND
Chloroform	16	110	6.0	7.0	ND	T	1.0	25	2.4	14	2.2	70	0.6
1,1,1-Trichloroethane	26	150	24	18	T	T	1.9	98	4.9	340	30	480	0.4
Carbon Tetrachloride	1.5	90	0.6	0.4	T	T	1.6	2.5	2.3	1.1	1.1	14	0.1
Trichloroethylene	21	170	17	3.2	ND	T	T	11	T	15	15	110	T
Dichlorobromomethane	1.9	68	2.0	1.4	ND	ND	T	6.6	1.6	6.5	4.9	17	T
Dibromochloromethane	1.0	8.3	0.8	0.6	ND	ND	ND	5.0	0.9	1.3	7.0	7.9	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	T	ND	T	4.0	ND
Tetrachloroethylene	38	200	60	16	0.7	2.1	1.8	230	5.1	52	56	270	1.4
Freon 12	11	5.6	Freon	Freon			CS_2=T	Freon 12=48	1,2 dichloro		Freon 12=15		
Carbon Disulfide	ND	55	12=12	12=15				CH_2BrCl=1.4	ethylene=120		1,2 dichloro		
1,2-Dichloropropane	ND	580						$CBrCl_3$=5.8			ethylene=300		
1,2-Dichloroethylene	ND	70						CH_2Br_2=7.7			CH_2Br_2=40		
Tetrachloroethane	ND	ND											
Dibromomethane	ND	29											
		See note											
Total Industrial	99	2629	117	61	24	19	13	494	1619	689	463	942	5.0
Total Municipal	19	186	9	9	0	0	1	37	5	22	13	106	1
Sum	118	2815	126	70	24	19	14	531	1624	711	476	1048	6.0

ND - Not detected
T - Trace
Note: Sample 0302, Other Compounds. CHBrCl=13, vinyldene chloride=290, 1,1 and 1,2 dichlorethane=260, $CBrCl_3$=11.

TABLE 5. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1982

Parameter	Concentration as $ng.L^{-1}$ (ppt)							
	TSD Station No.							
	0365	0372	0376	0379	0381	0388	0389	0395
Freon 11	7.3	5.1	0.9	3.1	6.7	2.2	11	9.1
Methylene Chloride	60	430	ND	2300	420	580	450	2200
Chloroform	1.6	5.6	ND	1.3	5.5	4.2	0.8	6.2
1,1,1-Trichloroethane	3.1	4.8	1.1	3.9	5.7	4.8	4.4	73
Carbon Tetrachloride	0.3	4.0	T	0.6	1.6	1.8	1.6	0.8
Trichloroethylene	T	T	ND	T	T	T	ND	2.4
Dichlorobromomethane	T	ND	ND	1.2	4.6	0.8	ND	7.8
Dibromochloromethane	T	T	ND	0.9	4.3	0.6	ND	4.4
1,1,2-Trichloroethane	ND	ND	ND	ND	6.3	T	ND	T
Tetrachloroethylene	4.9	4.2	0.4	48	4.6	4.1	2.2	14
Freon 12	ND	6	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	T	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethylene	ND	120	ND	ND	ND	ND	ND	ND
Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Dibromotmethane	ND	ND	ND	ND	ND	ND	ND	4.5
Total Industrial	75	574	2.4	2357	444	593	469	2304
Total Municipal	2	6	0	3	15	6	1	18
Sum	77	580	2.4	2360	459	599	470	2322

ND - Not detected
T - Trace

TABLE 6.
VOLATILE HALOCARBON CONCENTRATIONS
IN SURFACE WATERS OF THE
DETROIT RIVER, 1983

TABLE 6. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)										
	TSD Station No.										
	0201	0203	0206	0210a	0210b	0210c	0211	0212	0213	0214	0215
Freon 11	35	19	45	23	150	66	23	30	25	25	29
Methylene Chloride	800	600	260	2800	440	220	850	700	400	600	410
Chloroform	33	32	140	42	12	21	24	19	36	75	68
1,1,1-Trichloroethane	13	15	6.1	6.5	8.5	9.4	3.0	6.2	23	55	17
Carbon Tetrachloride	19	14	7.2	11	12	17	1.5	42	8.6	15	4.6
Trichloroethylene	11	26	5.0	4.5	5.8	7.0	3.3	5.2	15	38	22
Dichlorobromomethane	7.7	7.7	100	21	3.2	7.2	4.5	3.8	9.3	18	12
Dibromochloromethane	1.8	2.1	34	9.1	1.1	2.1	1.0	1.0	2.4	4.0	2.1
1,1,2-Trichloroethane	ND	ND	2.7	3.4	2.5	3.8	ND	0.7	1.7	1.3	0.2
Tetrachloroethylene	30	23	7.3	9.2	11	20	5.0	9.5	64	150	71
Freon 12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	87	T	T	ND	ND	T	ND	T
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethylene	ND	ND	ND	ND	ND	T	ND	ND	ND	ND	ND
Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Industrial	908	697	333	2860	630	343	886	795	537	884	554
Total Municipal	43	58	274	70	16	31	29	23	48	96	82
Sum	951	739	607	2930	646	374	915	818	585	980	636

ND - Not detected
T - Trace
a)
b) Sampled on three consecutive days
c)

TABLE 6. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)							
	TSD Station No.							
	0217	0218	0221	0223	0225	0230	0255	0257
Freon 11	15	9.6	29	280	31	560	54	190
Methylene Chloride	1800	1100	380	1150	350	780	800	550
Chloroform	57	72	80	160	21	3.1	180	180
1,1,1-Trichloroethane	31	18	40	94	8.8	5.7	88	120
Carbon Tetrachloride	7.3	2.8	16	60	3.6	1.6	45	32
Trichloroethylene	54	23	92	220	7.5	2.7	240	370
Dichlorobromomethane	13	14	13	36	3.8	2.7	50	51
Dibromochloromethane	3.6	2.6	2.9	6.0	1.3	T	10	11
1,1,2-Trichloroethane	ND	1.1	1.5	ND	ND	ND	0.8	0.9
Tetrachloroethylene	54	78	84	230	18	1.3	410	360
Freon 12	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	T	ND	ND	ND	ND	ND	55	73
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	ND
Total Industrial	1961	1232	643	2184	419	1349	1693	1576
Total Municipal	66	89	85	202	34	5	240	242
Sum	2035	1321	738	2386	445	1354	1933	1818

ND - Not detected
T - Trace

TABLE 6. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)						
	TSD Station No.						
	0258	0260	0269	0271	0275	0276	0279
Freon 11	21	17	60	1300	32	52	55
Methylene Chloride	280	800	390	950	2100	180	580
Chloroform	36	43	20	120	14	21	6.4
1,1,1-Trichloroethane	12	17	7.2	5.6	3.8	13	6.8
Carbon Tetrachloride	3.4	5.0	3.2	81	2.0	9.4	20
Trichloroethylene	11	13	6.4	6.5	2.6	9.4	4.8
Dichlorobromomethane	9.6	11	4.9	25	3.3	6.1	1.7
Dibromochloromethane	2.3	2.8	1.2	6.7	0.9	1.8	0.9
1,1,2-Trichloroethane	ND	1.1	ND	0.2	ND	2.2	3.8
Tetrachloroethylene	38	52	16	11	6.8	30	14
Freon 12	ND	ND	ND	ND		ND	ND
Carbon Disulfide	ND	ND	ND	510		ND	ND
1,2-Dichloropropane	ND	ND	ND	ND		ND	ND
1,2-Dichloroethylene	ND	ND	ND	ND		47	ND
Tetrachloroethane	ND	ND	ND	ND		ND	ND
Dibromomethane	ND	ND	ND	ND		ND	ND
							CH_2BrCl=75
Total Industrial	409	905	484	3844	2147	297	677
Total Municipal	48	57	25	148	18	29	10
Sum	457	962	509	4096	2165	326	687

ND - Not detected
T - Trace

TABLE 6. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)										
	TSD Station No.										
	0281	0282	0283	0284	0286	0288	0292	0295	0297	0300	0311
Freon 11	180	30	23	32	23	16	84	220	3.8	38	72
Methylene Chloride	410	400	310	420	310	800	850	210	90	150	500
Chloroform	110	16	130	240	200	200	790	1.9	0.6	7.0	220
1,1,1-Trichloroethane	5.9	2.2	49	140	150	170	640	1.9	1.0	2.9	820
Carbon Tetrachloride	4.0	1.3	4.1	49	70	48	67	1.6	0.6	18	2.3
Trichloroethylene	9.0	1.7	68	99	130	400	74	2.0	0.9	3.4	73
Dichlorobromomethane	69	2.0	45	47	61	63	84	2.2	T	1.1	82
Dibromochloromethane	19	0.6	12	6.7	22	0.9	12	ND	ND	0.4	21
1,1,2-Trichloroethane	0.8	ND	ND	ND	1.2	15	1.7	ND	ND	T	ND
Tetrachloroethylene	12	2.4	210	170	280	500	130	0.7	0.6	2.5	1300
Freon 12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	T	T	T	ND	110	300	ND	T	ND	180
1,2-Dichloropropane	ND	ND	ND	400	610	ND	ND	ND	390	ND	ND
1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Industrial	622	437	664	1310	1574	2059	2147	436	487	215	2948
Total Municipal	202	19	186	294	283	264	886	4	1	8	338
Sum	820	456	850	1604	1857	2323	3034	440	488	223	3270

ND - Not detected
T - Trace

TABLE 6. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)										
	TSD Station No.										
	0312	0314	0318	0319	0321	0322	0323	0324	0327	0328	0330
Freon 11	150	39	18	84	66	33	23	32	16	180	54
Methylene Chloride	600	1500	600	370	430	270	230	170	140	450	750
Chloroform	79	8.0	150	20	17	21	330	16	23	65	114
1,1,1-Trichloroethane	33	4.2	98	4.7	5.1	4.3	5.2	7.4	17	55	21
tarbon Tetrachloride	2.1	3.7	56	3.8	3.4	4.0	4.8	34	3.2	138	2.7
Trichloroethylene	27	2.3	40	5.3	3.7	3.2	4.9	3.2	9.7	136	23
Dichlorobromomethane	19	1.0	31	4.4	5.7	7.0	11	5.0	5.0	40	23
Dibromochloromethane	3.9	0.3	5.5	1.1	1.4	1.7	2.7	2.0	1.2	15	3.7
1,1,2-Trichloroethane	ND	ND	ND	ND	T	T	0.8	0.6	ND	35	ND
Tetrachloroethylene	92	3.6	190	9.2	9.4	7.2	9.8	12	12	300	84
Freon 12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	T	ND	ND	ND	T	ND	ND	T	300	2200	200
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	ND
1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	9	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	7.2	ND	71	ND
									CH_2BrCl = 5	CH_2BrCl = 75	
									$CHBr_3$ =11		
Total Industrial	904	1557	1002	446	518	322	279	292	498	3770	1135
Total Municipal	102	9	187	57	24	29	344	23	29	120	140
Sum	1006	1562	1189	503	542	351	623	315	527	3890	1275

ND - Not detected
T - Trace

TABLE 6. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)								
	TSD Station No.								
	0332	0333	0335	0338	0339	0340	0343	0344	0345
Freon 11	20	19	30	66	21	80	35	43	84
Methylene Chloride	1200	600	280	190	115	220	900	170	650
Chloroform	22	47	170	13	15	8.6	36	38	100
1,1,1-Trichloroethane	4.2	8.9	56	76	3.9	3.2	98	16	89
Carbon Tetrachloride	4.2	3.1	4.2	2.3	3.4	2.5	2.0	2.2	1.9
Trichloroethylene	5.9	16	200	3.9	3.0	2.6	48	12	130
Dichlorobromomethane	5.2	10	52	2.2	2.8	1.5	8.4	6.2	33
Dibromochloromethane	1.2	2.4	10	2.8	0.7	0.2	2.7	0.9	9.3
1,1,2-Trichloroethane	ND	ND	T	ND	ND	ND	4.1	ND	13
Tetrachloroethylene	7.9	33	220	5.5	5.2	2.5	72	55	230
Freon 12	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	100	58	T	T	ND	48	ND	ND
1,2-Dichloropropane	ND	T	ND	ND	T	ND	ND	ND	ND
1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
									CH_2BrCl=T
Total Industrial	1242	780	848	344	152	311	1206	297	1198
Total Municipal	29	59	232	18	18	10	48	46	142
Sum	1271	839	1080	362	170	321	1254	343	1340

ND - Not detected
T - Trace

TABLE 6. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)							
	TSD Station No.							
	0347	0348	0351	0352	0353	0357	0363	0369
Freon 11	31	13	22	10	57	22	72	61
Methylene Chloride	330	250	2400	195	350	95	150	150
Chloroform	85	3.9	360	26	7.3	7.6	27	19
1,1,1-Trichloroethane	9.5	3.2	150	4.1	3.7	8.9	12	7.5
Carbon Tetrachloride	22	1.0	5.1	5.4	17	7.6	8.2	34
Trichloroethylene	5.8	2.7	130	3.2	2.6	4.3	6.8	4.2
Dichlorobromomethane	24	1.8	140	6.2	1.8	5.7	5.5	3.8
Dibromochloromethane	5.0	T	26	1.6	0.4	1.6	1.4	1.1
1,1,2-Trichloroethane	ND	ND	3.1	T	ND	T	T	1.8
Tetrachloroethylene	24	6.8	990	6.9	5.3	12	23	9.7
Freon 12	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	120	ND	ND	90	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	T	T
1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	ND
Total Industrial	422	277	3820	125	436	240	272	268
Total Municipal	114	5	526	33	9	15	34	24
Sum	536	282	4346	158	445	255	306	292

ND - Not detected
T - Trace

TABLE 6. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)							
	TSD Station No.							
	0371	0375	0378	0381	0383	0388	0389	0393
Freon 11	55	51	7.8	42	29	24	50	22
Methylene Chloride	1600	420	340	150	1900	700	700	420
Chloroform	65	5.9	15	13	14	4.3	26	24
1,1,1-Trichloroethane	7.2	4.9	4.5	5.5	7.8	3.4	13	29
Carbon Tetrachloride	19	2.6	2.8	2.4	0.8	1.7	18	2.0
Trichloroethylene	11	4.3	3.9	5.2	6.1	1.9	14	37
Dichlorobromomethane	19	2.3	3.7	3.0	2.8	1.6	7.4	5.3
Dibromochloromethane	5.3	2.0	1.5	1.0	1.1	1.2	3.2	2.0
1,1,2-Trichloroethane	T	ND	T	ND	ND	T	ND	ND
Tetrachloroethylene	84	14	1.8	2.0	46	2.0	85	320
Freon 12	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane	ND	ND	62	ND	ND	ND	18	T
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	ND
Total Industrial	1776	497	423	207	1990	733	898	830
Total Municipal	90	10	20	17	18	7	37	31
Sum	1866	507	443	224	2008	740	934	861

ND - Not detected
T - Trace

TABLE 6. VOLATILE HALOCARBON CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt) TSD Station No. 0397	0400
Freon 11	50	190
Methylene Chloride	700	370
Chloroform	186	9.7
1,1,1-Trichloroethane	370	5.3
Carbon Tetrachloride	8.6	2.6
Trichloroethylene	37	4.2
Dichlorobromomethane	50	5.6
Dibromochloromethane	13	4.1
1,1,2-Trichloroethane	15	ND
Tetrachloroethylene	3800	4.0
Freon 12	ND	ND
Carbon Disulfide	140	77
1,2-Dichloropropane	ND	ND
1,2-Dichloroethylene	ND	ND
Tetrachloroethane	ND	ND
Dibromomethane	ND	ND
Total Industrial	5120	653
Total Municipal	250	20
Sum	5370	673

ND - Not detected
T - Trace

TABLE 7

CHLORINATED PHENOL CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

TABLE 7. CHLORINATED PHENOL CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)															
	TSD Station No.															
	0201	0206	0210	0212	0213	0218	0223	0230	0238	0255	0263	0271	0282	0283	0284	0288
2,6 DCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	32
2,4 DCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	63
3,4 DCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6 TCP	ND	ND	ND	ND	3.5	4.5	ND	4.4	ND	9.0	ND	3.7	7.2	7.3	18	64
2,4,5 TCP	ND	4.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,3,4 TCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	29
3,4,5 TCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	24
2,3,5,6 TTCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4	ND
2,3,4,6 TTCP	ND	3.2	ND	ND	ND	ND	ND	140	ND	ND	6.7	ND	ND	ND	ND	72
Penta CP	ND	ND	ND	ND	ND	2.0	ND	190	ND	1.4	2.2	ND	ND	1.4	4.9	26

ND - Not detected

DCP - dichlorophenol

TCP - trichlorophenol

TTCP - tetrachlorophenol

TABLE 7. CHLORINATED PHENOL CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)												
	TSD Station No.												
	0292	0295	0297	0311	0312	0314	0322	0323	0324	0330	0338	0343	0345
2,6 DCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4 DCP	12	ND	ND	25	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4 DCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6 TCP	13	ND	7.7	6.0	11.5	7.2	ND	ND	ND	ND	ND	4.4	ND
2,4,5 TCP	5.4	4.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,3,4 TCP	5.1	ND	ND	33	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4,5 TCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,3,5,6 TTCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.5	ND	ND
2,3,4,6 TTCP	18	3.2	7.9	37	10.4	ND	ND	58	ND	ND	51	19	20
Penta CP	7.4	ND	ND	10	ND	ND	ND	96	ND	ND	14	5.9	7.6

ND - Not detected.

DCP - dichlorophenol

TCP - trichlorophenol

TTCP - tetrachlorophenol

TABLE 7. CHLORINATED PHENOL CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)													
	TSD Station No.													
	0347	0348	0350	0352	0353	0369	0371	0375	0378	0383	0388	0389	0393	0397
2,6 DCP	ND	ND	ND	ND	ND	ND	180	ND	ND	ND	ND	ND	ND	ND
2,4 DCP	ND	ND	ND	ND	ND	ND	53	ND	ND	ND	ND	ND	ND	33
3,4 DCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6 TCP	9.0	ND	ND	ND	ND	ND	140	ND	ND	ND	ND	ND	ND	4.8
2,4,5 TCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.8
2,3,4 TCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4,5 TCP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,3,5,6 TTCP	ND	ND	ND	ND	ND	ND	42	ND	ND	ND	ND	ND	ND	ND
2,3,4,6 TTCP	ND	19	ND	ND	ND	ND	80	ND	ND	ND	ND	ND	ND	27
Penta CP	1.4	14	ND	ND	ND	ND	94	ND	ND	ND	ND	ND	2.6	8.4

ND - Not detected

DCP - dichlorophenol

TCP - trichlorophenol

TTCP - tetrachlorophenol

TABLE 7. CHLORINATED PHENOL CONCENTRATIONS IN SURFACE WATERS OF THE DETROIT RIVER, 1983

Parameter	Concentration as $ng.L^{-1}$ (ppt)					
	TSD Station No.					
	0400	0401	0403	0405	0406	0407
2,6 DCP	ND	ND	ND	ND	ND	ND
2,4 DCP	ND	ND	ND	ND	ND	ND
3,4 DCP	ND	ND	ND	ND	ND	ND
2,4,6 TCP	ND	ND	ND	ND	ND	ND
2,4,5 TCP	ND	ND	ND	ND	ND	ND
2,3,4 TCP	ND	ND	ND	ND	ND	ND
3,4,5 TCP	ND	ND	ND	ND	ND	ND
2,3,5,6 TTCP	ND	ND	ND	ND	ND	ND
2,3,4,6 TTCP	ND	ND	23	ND	ND	ND
Penta CP	ND	ND	5.2	ND	ND	ND

ND - Not detected.

DCP - dichlorophenol

TCP - trichlorophenol

TTCP - tetrachlorophenol

TABLE 8

ORGANOCHLORINE PESTICIDES IN VARIOUS AQUATIC COMPARTMENTS OF THE DETROIT RIVER, 1983

LEGEND:			CONCENTRATIONS*
ML	=	Micro-layer	$ng.L^{-1}$
APLE	=	Subsurface water sample	$ng.L^{-1}$
SS	=	Suspended solids	$ng.Kg^{-1}$
PW	=	Pore water	$ng.L^{-1}$
SSed	=	Surficial sediment	$ng.Kg^{-1}$

*Concentrations are expressed on a dry weight basis.

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 203					Station No. 210				
	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}
1,2 Dichlorobenzene	1400	N	N	ND	ND	N	1200	320	ND	37
1,3 Dichlorobenzene	ND	O	O			O	ND	650		ND
1,4 Dichlorobenzene					ND			ND		
1,3,5 Trichlorobenzene		S	S		8.9	S		77		
1,2,4 Trichlorobenzene		A	A		ND	A		ND		
1,2,3 Trichlorobenzene		M	M		4.4	M		9.1		ND
1,2,3,5 Tetrachlorobenzene	ND	P	P		13	P		0.9		74
1,2,4,5 Tetrachlorobenzene	T	L	L		120	L		3.0		100
1,2,3,4 Tetrachlorobenzene	ND	E	E	ND	520	E	ND	ND		410
Pentachlorobenzene				130	130		430	ND	19	410
Hexachlorobenzene				ND	49		230	32	ND	680
2,4,5 Trichlorotoluene					ND		ND	ND		ND
alpha,2,4 Trichlorotoluene										
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene	ND									
Hexachloroethane	540				ND					
Hexachlorobutadiene	ND				21					
2,3,4 Trichloroanisole					ND					
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin	ND							ND		ND
Heptachlor	87							19		7.5
Octachlorostyrene	ND							ND		ND
o,p DDE	43			ND	ND					32
p,p DDE	ND			23	50					ND
o,p DDT				ND	ND					
p,p DDT										
Mirex							ND		ND	
alpha Chlordane							120		19	
gamma Chlordane				ND			ND		ND	
alpha BHC				20						
beta BHC				21			ND			
Lindane				ND			320			
Heptachlor Epoxide							ND			
Alpha Endosulfan							750			
beta Endosulfan							ND			
Dieldrin										
o,p DDD										
p,p DDD										
Endrin										
p,p Methoxychlor	ND			ND	ND		ND	ND	ND	ND
Polychlorinated Biphenyls	34			520	120		800	13	460	130
Toxaphene	ND			ND	ND		ND	ND	ND	ND

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 212					Station No. 213				
	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}
1,2 Dichlorobenzene	N	ND	110	ND	ND	N	ND	N	N	530
1,3 Dichlorobenzene	O		260			O		O	O	ND
1,4 Dichlorobenzene										
1,3,5 Trichlorobenzene	S					S		S	S	ND
1,2,4 Trichlorobenzene	A					A		A	A	270
1,2,3 Trichlorobenzene	M		40			M		M	M	ND
1,2,3,5 Tetrachlorobenzene	P		ND		15	P		P	P	80
1,2,4,5 Tetrachlorobenzene	L				24	L		L	L	100
1,2,3,4 Tetrachlorobenzene	E				30	E		E	E	250
Pentachlorobenzene		190		83000	33		460			320
Hexachlorobenzene		160	76	9000	1200		450			74
2,4,5 Trichlorotoluene		ND	ND	ND	ND		ND			ND
alpha,2,4 Trichlorotoluene										
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene										
Hexachloroethane										
Hexachlorobutadiene										60
2,3,4 Trichloroanisole										ND
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin										
Heptachlor			ND		ND					ND
Octachlorostyrene			20		T					T
o,p DDE			ND		ND					ND
p,p DDE										ND
o,p DDT				ND	ND					ND
p,p DDT				1100						
Mirex				ND						
alpha Chlordane				1200			ND			
gamma Chlordane				ND			140			
alpha BHC				ND			ND			
beta BHC				17000						
Lindane				1700						
Heptachlor Epoxide				ND			ND			
alpha Endosulfan		ND					140			
beta Endosulfan		430					140			
Dieldrin		ND					ND			
o,p DDD										
p,p DDD										
Endrin										
p,p Methoxychlor		ND	ND	ND	ND		ND			ND
Polychlorinated Biphenyls		880	47	3300	210		710			130
Toxaphene		ND	ND	ND	ND		ND			ND

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 214					Station No. 223				
	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}
1,2 Dichlorobenzene	N		N	ND	ND	970	ND	N	ND	ND
1,3 Dichlorobenzene	O	270	O		120	830		O		ND
1,4 Dichlorobenzene		ND			ND	ND				
1,3,5 Trichlorobenzene	S		S			170		S		41
1,2,4 Trichlorobenzene	A		A			ND		A		44
1,2,3 Trichlorobenzene	M		M				ND	M		ND
1,2,3,5 Tetrachlorobenzene	P		P			ND	70	P		27
1,2,4,5 Tetrachlorobenzene	L		L			100	150	L		27
1,2,3,4 Tetrachlorobenzene	E		E			360	ND	E	ND	9.5
Pentachlorobenzene		ND				ND	90		43	15
Hexachlorobenzene		800					280		ND	340
2,4,5 Trichlorotoluene		ND					ND			ND
alpha,2,4 Trichlorotoluene										
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene						ND				ND
Hexachloroethane					ND	900				90
Hexachlorobutadiene					260	ND				ND
2,3,4 Trichloroanisole					ND					
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin										
Heptachlor										
Octachlorostyrene						ND				
o,p DDE						75	ND			
p,p DDE						ND	200			
o,p DDT							ND			
p,p DDT										
Mirex										
alpha Chlordane										
gamma Chlordane										
alpha BHC										
beta BHC							ND			
Lindane							1600			
Heptachlor Epoxide							ND			
alpha Endosulfan										
beta Endosulfan		5100					ND			
Dieldrin		2400					230			
o,p DDD		ND					ND			
p,p DDD										
Endrin										
p,p Methoxychlor		ND	ND	ND	ND	ND	ND		ND	ND
Polychlorinated Biphenyls		630	490	120	63	3400			1100	115
Toxaphene		ND	ND	ND	ND	ND				ND

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 224					Station No. 231				
	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}
1,2 Dichlorobenzene	830	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3 Dichlorobenzene	510					620				
1,4 Dichlorobenzene	ND					100				
1,3,5 Trichlorobenzene	150					230				
1,2,4 Trichlorobenzene	ND					ND				
1,2,3 Trichlorobenzene										ND
1,2,3,5 Tetrachlorobenzene										85
1,2,4,5 Tetrachlorobenzene										85
1,2,3,4 Tetrachlorobenzene		ND					ND		ND	31
Pentachlorobenzene		90		ND	240		120		50	46
Hexachlorobenzene		260		120	3900		220		ND	74
2,4,5 Trichlorotoluene		ND		ND	ND		ND			ND
alpha,2,4 Trichlorotoluene										
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene	ND					ND				
Hexachloroethane	420					300				ND
Hexachlorobutadiene	ND					ND				79
2,3,4 Trichloroanisole										ND
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin	ND									
Heptachlor	250									ND
Octachlorostyrene	ND					ND				T
o,p DDE	120					110				ND
p,p DDE	ND					ND				
o,p DDT										
p,p DDT										
Mirex				ND						
alpha Chlordane				35						
gamma Chlordane				ND						
alpha BHC										
beta BHC										
Lindane										
Heptachlor Epoxide		ND		ND						
alpha Endosulfan		300		57						
beta Endosulfan		ND		ND			ND			
Dieldrin		450					130			
o,p DDD		ND					ND			
p,p DDD										
Endrin										
p,p Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Polychlorinated Biphenyls	140	900	32	490	170	13	450	280	780	85
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 255					Station No. 257				
	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}
1,2 Dichlorobenzene	120	ND	N	ND	ND	N	N	N	ND	ND
1,3 Dichlorobenzene	ND		O			O	O	O		ND
1,4 Dichlorobenzene										
1,3,5 Trichlorobenzene		1500	S			S	S	S		1200
1,2,4 Trichlorobenzene		ND	A			A	A	A		ND
1,2,3 Trichlorobenzene			M			M	M	M		28
1,2,3,5 Tetrachlorobenzene			P		62	P	P	P		29
1,2,4,5 Tetrachlorobenzene	ND		L		ND	L	L	L		43
1,2,3,4 Tetrachlorobenzene	750	ND	E	ND	ND	E	E	E	ND	390
Pentachlorobenzene	240	140		22	130				32	ND
Hexachlorobenzene	37	250		45	620				ND	1200
2,4,5 Trichlorotoluene	ND	ND		ND	ND					ND
alpha,2,4 Trichlorotoluene										
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene										
Hexachloroethane										
Hexachlorobutadiene										
2,3,4 Trichloroanisole										
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin	ND									
Heptachlor	220									
Octachlorostyrene	ND									
o,p DDE	100									
p,p DDE	ND									
o,p DDT										
p,p DDT										
Mirex										
alpha Chlordane				ND						
gamma Chlordane				130						
alpha BHC				ND						
beta BHC		ND								
Lindane		1800								
Heptachlor Epoxide		ND								
lpha Endosulfan		ND								
beta Endosulfan		ND								
Dieldrin		1200								
o,p DDD		ND								
p,p DDD		ND								
Endrin		ND								
p,p Methoxychlor	ND	ND		ND	ND				ND	ND
Polychlorinated Biphenyls	96	2100		470	190				200	440
Toxaphene	ND	ND		ND	ND				ND	ND

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 269					Station No. 280				
	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}
1,2 Dichlorobenzene	ND	ND	N	ND	ND	ND	ND	110	ND	ND
1,3 Dichlorobenzene			O					460		
1,4 Dichlorobenzene								ND		
1,3,5 Trichlorobenzene			S					ND		
1,2,4 Trichlorobenzene			A					ND		
1,2,3 Trichlorobenzene			M					140		
1,2,3,5 Tetrachlorobenzene			P				ND	ND		
1,2,4,5 Tetrachlorobenzene			L				120	ND		
1,2,3,4 Tetrachlorobenzene		ND	E		ND		ND	ND	ND	ND
Pentachlorobenzene		90			16		100	ND	19	640
Hexachlorobenzene		220			18		310	70	ND	65
2,4,5 Trichlorotoluene		ND			ND		ND	ND		ND
alpha,2,4 Trichlorotoluene										
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene										
Hexachloroethane								ND		
Hexachlorobutadiene								63		
2,3,4 Trichloroanisole								ND		
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin		ND								
Heptachlor		650						ND		
Octachlorostyrene	ND	ND						40		
o,p DDE	54							ND		
p,p DDE	ND									
o,p DDT										
p,p DDT										
Mirex										
alpha Chlordane		ND					ND			
gamma Chlordane		480					160			
alpha BHC		ND					ND			
beta BHC										
Lindane										
Heptachlor Epoxide										
alpha Endosulfan										
beta Endosulfan		ND								
Dieldrin		500								
o,p DDD		ND								
p,p DDD		ND								
Endrin		ND								
p,p Methoxychlor	ND	ND		ND	ND		ND	ND	ND	ND
Polychlorinated Biphenyls	16	850		120	93	ND	420	39	270	9.1
Toxaphene	ND	ND		ND	ND	ND	ND	ND	ND	ND

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 311					Station No. 314				
	ML	Aple $x10^{-3}$	SS $x10^{3}$	PW	SSed $x10^{3}$	ML	Aple $x10^{-3}$	SS $x10^{3}$	PW	SSed $x10^{3}$
1,2 Dichlorobenzene	ND	ND	N	ND	ND	4300	ND	ND	N	N
1,3 Dichlorobenzene			O	ND	ND	ND	ND	3.2	O	O
1,4 Dichlorobenzene				ND	ND		ND	ND		
1,3,5 Trichlorobenzene			S	ND	ND		600	ND	S	S
1,2,4 Trichlorobenzene			A	49	160		ND	ND	A	A
1,2,3 Trichlorobenzene			M	ND	290			53	M	M
1,2,3,5 Tetrachlorobenzene			P	ND	240			3	P	P
1,2,4,5 Tetrachlorobenzene			L	ND	1000			10	L	L
1,2,3,4 Tetrachlorobenzene			E	ND	390		ND	ND	E	E
Pentachlorobenzene				23	1300		200	ND		
Hexachlorobenzene				ND	110		130	38		
2,4,5 Trichlorotoluene					ND		ND	ND		
alpha,2,4 Trichlorotoluene										
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene										
Hexachloroethane								ND		
Hexachlorobutadiene								27		
2,3,4 Trichloroanisole								ND		
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin						ND				
Heptachlor						150				
Octachlorostyrene	ND				ND	ND		ND		
o,p DDE	26			ND	24	68		32		
p,p DDE	ND			260	38	ND		ND		
o,p DDT				ND	ND					
p,p DDT										
Mirex										
alpha Chlordane					ND					
gamma Chlordane					3.6					
alpha BHC					ND					
beta BHC										
Lindane										
Heptachlor Epoxide							ND			
alpha Endosulfan							600	ND		
beta Endosulfan							ND	20		
Dieldrin							750	ND		
o,p DDD							ND	100		
p,p DDD							ND	13		
Endrin							ND	ND		
p,p Methoxychlor	ND			ND	ND	ND	ND	ND		
Polychlorinated Biphenyls	28	ND		1430	170	40	900	50		
Toxaphene	ND	ND		ND	ND	ND	ND	ND		

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 330					Station No. 346				
	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}
1,2 Dichlorobenzene	ND	ND	400	N	ND	ND	ND	N	ND	ND
1,3 Dichlorobenzene			160	O	T		2300	O		
1,4 Dichlorobenzene			ND		ND		ND			
1,3,5 Trichlorobenzene			91	S	ND		ND	S		
1,2,4 Trichlorobenzene			ND	A	T		21000	A		
1,2,3 Trichlorobenzene			1.9	M	ND		ND	M		ND
1,2,3,5 Tetrachlorobenzene		ND	ND	P	ND		ND	P		130
1,2,4,5 Tetrachlorobenzene		320	12.6	L	17		ND	L	ND	400
1,2,3,4 Tetrachlorobenzene		ND	ND	E	51		ND	E	9.6	230
Pentachlorobenzene	ND	210			68		2000		18	190
Hexachlorobenzene	15	110			310		650		ND	150
2,4,5 Trichlorotoluene	ND	ND			ND		ND			ND
alpha,2,4 Trichlorotoluene										
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene	ND									
Hexachloroethane	370									ND
Hexachlorobutadiene	ND									15
2,3,4 Trichloroanisole										ND
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin	ND						ND			
Heptachlor	14						6700			
Octachlorostyrene	ND						ND			
o,p DDE	20									
p,p DDE	ND									
o,p DDT										ND
p,p DDT										30
Mirex		ND								ND
alpha Chlordane		400								6.0
gamma Chlordane		ND								ND
alpha BHC										
beta BHC							ND			
Lindane						ND	6800			
Heptachlor Epoxide		ND				31	1100			
alpha Endosulfan		240				ND	6300			
beta Endosulfan		260					ND			
Dieldrin		550								ND
o,p DDD		ND								22
p,p DDD		ND								ND
Endrin		ND								ND
p,p Methoxychlor	ND	ND	ND		ND	ND	ND		ND	ND
Polychlorinated Biphenyls	40	890	1.0		160	65	2000		550	220
Toxaphene	ND	ND	ND		ND	ND	ND		ND	ND

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 352					Station No. 353				
	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}
1,2 Dichlorobenzene	ND	ND	2.6	N	N	ND	ND	280	N	N
1,3 Dichlorobenzene			41	O	O			160	O	O
1,4 Dichlorobenzene			ND				ND	ND		
1,3,5 Trichlorobenzene			76	S	S				S	S
1,2,4 Trichlorobenzene			ND	A	A				A	A
1,2,3 Trichlorobenzene			6.9	M	M				M	M
1,2,3,5 Tetrachlorobenzene			ND	P	P				P	P
1,2,4,5 Tetrachlorobenzene			ND	L	L				L	L
1,2,3,4 Tetrachlorobenzene		ND	80	E	E		ND	ND	E	E
Pentachlorobenzene		140	19				150	3.7		
Hexachlorobenzene		ND	ND				160	12		
2,4,5 Trichlorotoluene							ND	ND		
alpha,2,4 Trichlorotoluene										
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene										
Hexachloroethane										
Hexachlorobutadiene										
2,3,4 Trichloroanisole										
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin		ND						ND		
Heptachlor		1100				ND		10		
Octachlorostyrene		ND				28		ND		
o,p DDE						ND		3.7		
p,p DDE								ND		
o,p DDT										
p,p DDT										
Mirex		ND					ND			
alpha Chlordane		390					120			
gamma Chlordane		ND					ND			
alpha BHC		ND						ND		
beta BHC		ND						7.5		
Lindane		650					ND	ND		
Heptachlor Epoxide		390	ND				130	ND		
alpha Endosulfan		180	4.4				110	.90		
beta Endosulfan		550	ND				ND	ND		
Dieldrin		ND								
o,p DDD										
p,p DDD										
Endrin	ND	ND	ND			ND	ND	ND		
p,p Methoxychlor	32	1400	62			18	350	5.4		
Polychlorinated Biphenyls	ND	ND	ND			ND	ND	ND		
Toxaphene										

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 370					Station No. 379				
	ML	Aple $x10^{-3}$	SS $x10^{3}$	PW	SSed $x10^{3}$	ML	Aple $x10^{-3}$	SS $x10^{3}$	PW	SSed $x10^{3}$
1,2 Dichlorobenzene	ND	500	NO SAMPLE	ND	ND	ND	ND	ND	NO SAMPLE	NO SAMPLE
1,3 Dichlorobenzene		ND								
1,4 Dichlorobenzene		ND								
1,3,5 Trichlorobenzene		550								
1,2,4 Trichlorobenzene		ND								
1,2,3 Trichlorobenzene										
1,2,3,5 Tetrachlorobenzene										
1,2,4,5 Tetrachlorobenzene				ND						
1,2,3,4 Tetrachlorobenzene	ND	ND		32						
Pentachlorobenzene	120	40		36				ND		
Hexachlorobenzene	ND	ND		ND	70			78		
2,4,5 Trichlorotoluene		220			ND			ND		
alpha,2,4 Trichlorotoluene		ND								
alpha,3,4 Trichlorotoluene										
alpha,2,6 Trichlorotoluene										
Pentachlorotoluene										
Hexachloroethane										
Hexachlorobutadiene										
2,3,4 Trichloroanisole										
Pentachloroanisole										
2,3,5,6 Tetrachloronitrobenzene										
2,3,4,5 Tetrachloronitrobenzene										
Pentachloronitrobenzene										
2,3,5,6 Tetrachloroxylene										
1,2,3,4 Tetrachloronaphthalene										
Aldrin	ND					ND				
Heptachlor	65					150		ND		
Octachlorostyrene	ND					ND		86		
o,p DDE	41			ND				ND		
p,p DDE	ND			110						
o,p DDT				ND	19					
p,p DDT					ND					
Mirex							ND			
alpha Chlordane							60			
gamma Chlordane							150			
alpha BHC							ND			
beta BHC										
Lindane										
Heptachlor Epoxide										
alpha Endosulfan								ND		
beta Endosulfan								17		
Dieldrin								ND		
o,p DDD										
p,p DDD										
Endrin										
p,p Methoxychlor	ND	ND		ND	ND	ND	ND	ND		
Polychlorinated Biphenyls	17	200		490	210	128	410	49		
Toxaphene	ND	ND		ND	ND	ND	ND	ND		

Table 8. Concentration of Organochlorine Pesticides in the Detroit River, 1983

Parameter	Station No. 399				
	ML	Aple x10^{-3}	SS x10^{3}	PW	SSed x10^{3}
1,2 Dichlorobenzene	ND	ND	3.3	ND	ND
1,3 Dichlorobenzene		ND	890		
1,4 Dichlorobenzene		650	ND		
1,3,5 Trichlorobenzene		ND	ND		
1,2,4 Trichlorobenzene			ND		
1,2,3 Trichlorobenzene			7.4		
1,2,3,5 Tetrachlorobenzene			ND		
1,2,4,5 Tetrachlorobenzene				ND	
,2,3,4 Tetrachlorobenzene		ND		32	
Pentachlorobenzene		40		36	ND
Hexachlorobenzene		60		ND	38
2,4,5 Trichlorotoluene		ND			ND
alpha,2,4 Trichlorotoluene					
alpha,3,4 Trichlorotoluene					
alpha,2,6 Trichlorotoluene					
Pentachlorotoluene					
Hexachloroethane					
Hexachlorobutadiene					
2,3,4 Trichloroanisole					
Pentachloroanisole					
2,3,5,6 Tetrachloronitrobenzene					
2,3,4,5 Tetrachloronitrobenzene					
Pentachloronitrobenzene					
2,3,5,6 Tetrachloroxylene					
1,2,3,4 Tetrachloronaphthalene					
Aldrin					
Heptachlor					
Octachlorostyrene	ND				ND
o,p DDE	33		ND		11
p,p DDE	ND		9.8		ND
o,p DDT			ND		
p,p DDT					
Mirex					
alpha Chlordane		ND			
gamma Chlordane		420			
alpha BHC		ND			
beta BHC				ND	
Lindane				22	
Heptachlor Epoxide				ND	
alpha Endosulfan			ND		
beta Endosulfan			6.6		
Dieldrin			ND		
o,p DDD					
p,p DDD					
Endrin					
p,p Methoxychlor	ND	ND	ND	ND	ND
Polychlorinated Biphenyls	33	620	4.9	40	36
Toxaphene	ND	ND	ND	ND	ND

TABLE 9.

POLYNUCLEAR AROMATIC HYDROCARBONS
IN VARIOUS AQUATIC COMPARTMENTS
OF THE DETROIT RIVER
1983

LEGEND:			CONCENTRATIONS*
ML	=	Micro-layer	$ng.L^{-1}$
APLE	=	Subsurface water sample	$ng.L^{-1}$
SS	=	Suspended solids	$ng.Kg^{-1}$ *
PW	=	Pore water	$ng.L^{-1}$
SSed	=	Surficial sediment	$ng.Kg^{-1}$ *

* Concentrations are expressed on a dry weight basis.

TABLE 9. POLYNUCLEAR AROMATIC HYDROCARBONS, 1983

TSD Station No.	0203					0210					0212				
	ML	Aple	SS	PW	SSed	ML	Aple	SS	PW	SSed	ML	Aple	SS	PW	SSed
Indene	1300	N	N	ND	ND	N	-	16000	6.5×10^3		N	18	61000	13000	-
1,2,3,4-Tetrahydronaphthalene	10000	O	O			O	75	1400	ND		O	120	11000	18000	-
Naphthalene	38000						275	13000				980	29000	42000	-
2-Methylnaphthalene	-	S	S			S	65	1000			S	75	3900	14000	-
Quinoline	-	A	A			A	980	-			A	1300	-	440000	-
1-Methylnaphthalene	-	M	M			M	-	-			M	1300	-	-	-
B-Chloronaphthalene	-	P	P			P	-	-			P	-	-	-	-
Acenaphthylene	-	L	L			L	53	550			L	-	-	11000	-
Acenaphthene	-	E	E			E	13	-			E	28	-	38000	-
Fluorene	-						28	-				55	-	-	-
Phenanthrene	2400						15	-				20	-	10000	-
Anthracene	-						-	-				-	-	11000	-
Fluoranthene	-						-	-				-	-	-	1000
Pyrene	-						-	-				-	-	-	1000
Chrysene/Triphenylene	-						-	-				-	-	-	-
Benzo[j] or [k]fluoranthene	-						-	-				-	-	-	-
Benzo[b]fluoranthene	-						-	-				-	-	-	-
Benzo[a]anthracene	-						-	680				-	-	-	-
Benzo[b]chrysene	-						-	-				-	-	-	-
Benzo[e]pyrene	-						-	-				-	-	-	-
Benzo[a]pyrene	1300						-	40				-	-	-	-
Perylene	-						-	-				-	-	-	-
Indeno[1,2,3,c,d]pyrene	-						-	-				-	-	530	-
Dibenz[a,h]anthracene	2600						-	-				-	-	930	-
Benzo[g,h.i]perylene	-						-	1.3				-	3400	1200	-

TABLE 9. POLYNUCLEAR AROMATIC HYDROCARBONS, 1983

TSD Station No.	0213					0214					0223				
	ML	Aple	SS	PW	SSed	ML	Aple	SS	PW	SSed	ML	Aple	SS	PW	SSed
Indene	N	5.5	N	N	N	N	100	N	-	-	44000	ND	N	4800	-
1,2,3,4-Tetrahydronaphthalene	O	5.5	O	O	O	O	-	O	-	-	13000		O	-	-
Naphthalene		63					-		6100	-	30000			-	-
2-Methylnaphthalene	S	3.3	S	S	S	S	75	S	-	-	-		S	-	-
Quinoline	A	72	A	A	A	A	-	A	-	-	-		A	-	-
1-Methylnaphthalene	M	81	M	M	M	M	120	M	-	-	-		M	-	-
B-Chloronaphthalene	P	-	P	P	P	P	-	P	-	-	-		P	-	-
Acenaphthylene	L	-	L	L	L	L	-	L	-	-	-		L	-	-
Acenaphthene	E	-	E	E	E	E	-	E	-	-	-		E	-	-
Fluorene		8.5					-		-	-	-			-	-
Phenanthrene		6.5					-		-	730	-			-	500
Anthracene		1.5					-		-	400	-			-	1300
Fluoranthene		-					-		-	2100	-			-	1300
Pyrene		11					-		-	2700	-			-	-
Chrysene/Triphenylene		-					-		-	4900	-			-	1800
Benzo[j] or [k]fluoranthene		-					-		-	-	-			-	-
Benzo[b]fluoranthene		-					-		-	2300	-			-	740
Benzo[a]anthracene		-					-		-	2500	-			-	620
Benzo[b]chrysene		-					-		-	-	-			-	-
Benzo[e]pyrene		-					-		-	1700	-			-	370
Benzo[a]pyrene		-					-		-	4400	-			-	1900
Perylene		-					-		-	-	-			-	-
Indeno[1,2,3,c,d]pyrene		-					-		-	930	-			-	310
Dibenz[a,h]anthracene		-					-		-	160	-			-	-
Benzo[g,h.i]perylene		-					-		-	590	-			-	-

TABLE 9. POLYNUCLEAR AROMATIC HYDROCARBONS, 1983

TSD Station No.	0224					0255					0257				
	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSed
Indene	100000	17	12000	1200	-	120000	35	N	3400	-	N	N	N	6300	-
1,2,3,4-Tetrahydronaphthalene	25000	-	650	-	-	23000	-	O	-	-	O	O	O	-	-
Naphthalene	28000	120	11000[3]	-	480	13000	90		-	-				-	-
2-Methylnaphthalene	12000	15	2100	-	-	19000	43	S	-	-	S	S	S	-	-
Quinoline	-	65	1300	-	-	-	-	A	-	-	A	A	A	-	-
1-Methylnaphthalene	-	73	1500	-	-	-	-	M	-	-	M	M	M	-	-
B-Chloronaphthalene	-	-	-	-	-	-	-	P	-	-	P	P	P	-	-
Acenaphthylene	-	-	-	-	-	-	-	L	-	-	L	L	L	-	-
Acenaphthene	40000	-	-	-	-	-	-	E	-	-	E	E	E	-	-
Fluorene	-	-	540	-	-	-	-		-	-				-	-
Phenanthrene	-	17	1300	-	1800	-	17	-	-	1800				-	1100
Anthracene	-	-	770	-	750	-	-	-	-	870				-	370
Fluoranthene	-	-	-	-	3700	-	-	-	-	4000				-	2400
Pyrene	12000	-	-	-	2900	-	-	-	-	4000				-	2400
Chrysene/Triphenylene	-	-	-	-	1000	-	-	-	-	5000				-	3900
Benzo[j] or [k]fluoranthene	-	-	-	-	-	-	-	-	-	3000				-	1800
Benzo[b]fluoranthene	-	-	-	-	-	-	-	-	-	3000				-	1300
Benzo[a]anthracene	-	-	-	-	1250	-	-	-	-	2700				-	1800
Benzo[b]chrysene	-	-	-	-	-	-	-	-	-	-				-	-
Benzo[e]pyrene	-	-	-	-	-	-	-	-	-	810				-	1300
Benzo[a]pyrene	-	-	2900	-	1170	-	-	-	-	4900				-	-
Perylene	-	-	-	-	-	-	-	-	-	370				-	-
Indeno[1,2,3,c,d]pyrene	-	-	-	-	-	-	-	-	-	1400				530	1000
Dibenz[a,h]anthracene	-	-	-	-	-	-	-	-	-	290				930	-
Benzo[g,h.i]perylene	-	-	1600	-	-	-	-	-	-	810				1200	370

TABLE 9. POLYNUCLEAR AROMATIC HYDROCARBONS, 1983

TSD Station No.	0231					0269					0280				
	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSed
Indene	36000	140	550	ND	ND	23000	15	N	-	-	310	-	9400	58000	ND
1,2,3,4-Tetrahydronaphthalene	800	28	150	ND	ND	-	-	O	-	-	-	-	5100	-	ND
Naphthalene	400	-	220	ND	ND	-	-		-	520	-	-	43000	-	ND
2-Methylnaphthalene	400	120	-	ND	ND	-	66	S	-	-	-	-	2700	-	ND
Quinoline	-	42	-	ND	ND	-	33	A	-	-	-	-	2200	-	ND
1-Methylnaphthalene	-	78	-	ND	ND	-	36	M	-	-	-	-	-	-	ND
B-Chloronaphthalene	-	-	-	ND	ND	-	-	P	-	-	-	-	-	-	ND
Acenaphthylene	-	-	1100	ND	ND	-	-	L	-	-	-	-	1400	-	ND
Acenaphthene	-	-	-	ND	ND	-	-	E	-	330	-	-	420	-	ND
Fluorene	-	-	-	ND	ND	-	-		-	520	-	-	-	-	ND
Phenanthrene	-	23	-	ND	ND	-	13	-	-	470	-	-	-	-	ND
Anthracene	-	-	-	ND	ND	-	-	-	-	-	-	-	-	-	ND
Fluoranthene	-	-	180	ND	ND	-	-	-	-	1700	-	-	2400	-	ND
Pyrene	-	-	180	ND	ND	-	-	-	-	1800	-	-	-	-	ND
Chrysene/Triphenylene	-	-	160	ND	ND	-	-	-	-	3700	-	-	-	-	ND
Benzo[j] or [k]fluoranthene	-	-	-	ND	ND	-	-	-	-	1700	-	-	-	-	ND
Benzo[b]fluoranthene	-	-	57	ND	ND	-	-	-	-	2000	-	-	-	-	ND
Benzo[a]anthracene	-	-	130	ND	ND	-	-	-	-	1600	-	-	-	-	ND
Benzo[b]chrysene	-	-	-	ND	ND	-	-	-	-	-	-	-	270	-	ND
Benzo[e]pyrene	-	-	98	ND	ND	-	-	-	-	1300	-	-	2800	-	ND
Benzo[a]pyrene	-	-	320	ND	ND	-	-	-	-	3400	-	-	-	-	ND
Perylene	-	-	53	ND	ND	-	-	-	-	-	-	-	-	-	ND
Indeno[1,2,3,c,d]pyrene	-	-	-	ND	ND	-	-	-	-	740	-	-	820	-	ND
Dibenz[a,h]anthracene	-	-	47	ND	ND	-	-	-	-	-	-	-	650	-	ND
Benzo[g,h.i]perylene	-	-	23	ND	ND	-	-	-	-	370	-	-	1600	-	ND

TABLE 9. POLYNUCLEAR AROMATIC HYDROCARBONS, 1983

TSD Station No.	0311					0314					0330				
	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSed
Indene	21000	4.1	N	2800	-	30000	-	42000	N	N	10000	28	560	28000	-
1,2,3,4-Tetrahydronaphthalene	-	3.2	O	36000	330	10000	180	2900	O	O	900	-	590	-	-
Naphthalene	15000	4.4		15000	-	26000	1500	28000			38000	1600	2500	2900	-
2-Methylnaphthalene	-	2.6	S	-	-	-	130	2100	S	S	-	170	-	-	-
Quinoline	-	-	A	-	-	-	1600	1400	A	A	-	2000	-	-	-
1-Methylnaphthalene	-	-	M	-	-	-	1700	2200	M	M	-	2200	-	-	-
B-Chloronaphthalene	-	-	P	7100	-	-	17	-	P	P	-	-	-	-	-
Acenaphthylene	-	-	L	-	-	-	5.5	340	L	L	-	-	-	-	-
Acenaphthene	-	-	E	-	-	-	28	-	E	E	-	-	-	-	-
Fluorene	-	-		-	-	-	40	690			-	60	-	-	-
Phenanthrene	-	-		-	830	-	16	790			-	35	-	-	-
Anthracene	-	-		-	-	-	-	-			-	-	-	-	-
Fluoranthene	-	-		-	2000	-	-	2400			-	23	-	-	-
Pyrene	-	-		-	1400	-	8	930			-	-	-	-	550
Chrysene/Triphenylene	-	-		-	2100	-	-	2400			-	-	-	-	-
Benzo[j] or [k]fluoranthene	-	-		-	2100	-	-	1400			-	-	-	-	-
Benzo[b]fluoranthene	-	-		-	560	-	-	-			-	-	-	-	-
Benzo[a]anthracene	-	-		630	330	-	-	630			-	-	-	-	-
Benzo[b]chrysene	-	-		-	-	-	-	-			-	-	1900	-	-
Benzo[e]pyrene	-	-		-	570	-	-	670			-	-	-	-	-
Benzo[a]pyrene	-	-		-	600	-	8	4600			-	-	-	-	-
Perylene	-	3.4		-	280	-	-	290			-	-	-	-	-
Indeno[1,2,3,c,d]pyrene	-	-		-	-	-	-	-			-	-	880	-	-
Dibenz[a,h]anthracene	-	-		-	-	-	22	-			-	-	-	-	-
Benzo[g,h.i]perylene	-	-		630	-	-	16	-			-	-	-	-	-

TABLE 9. POLYNUCLEAR AROMATIC HYDROCARBONS, 1983

TSD Station No.	0346					0352					0353				
	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSed
Indene	18000	260	N	7800	850	69000	18	3300	N	N	14000	13	1000	N	N
1,2,3,4-Tetrahydronaphthalene	-	74	O	-	800	-	85	930	O	O	-	22	150	O	O
Naphthalene	13000	900		-	4000	-	300	11000			-	320	140		
2-Methylnaphthalene	-	98	S	-	450	-	650	320	S	S	-	7.7	120	S	S
Quinoline	-	200	A	-	800	-	525	570	A	A	-	530	220	A	A
1-Methylnaphthalene	-	310	M	-	2000	-	-	470	M	M	-	600	420	M	M
B-Chloronaphthalene	-	-	P	-	-	-	-	-	P	P	-	-	-	P	P
Acenaphthylene	-	130	L	-	750	-	-	430	L	L	-	-	120	L	L
Acenaphthene	-	45	E	-	1100	-	13	370	E	E	-	13	120	E	E
Fluorene	-	100		-	450	-	28	370			-	38	120		-
Phenanthrene	-	180		-	1200	-	28	230			-	21	-		-
Anthracene	-	-		-	550	-	-	-			-	-	92		-
Fluoranthene	-	91		-	1800	-	35	-			-	-	420		-
Pyrene	-	-		-	2100	-	-	-			-	-	190		-
Chrysene/Triphenylene	-	-		-	-	-	-	-			-	-	-		-
Benzo[j] or [k]fluoranthene	-	-		-	-	-	-	-			-	-	44		-
Benzo[b]fluoranthene	-	-		-	-	-	-	-			-	-	44		-
Benzo[a]anthracene	-	-		-	-	-	-	-			-	-	76		-
Benzo[b]chrysene	-	-		-	-	-	-	-			-	-	210		-
Benzo[e]pyrene	-	-		-	-	-	-	-			-	-	22		-
Benzo[a]pyrene	-	-		-	-	-	-	-			-	-	310		-
Perylene	-	-		-	-	-	-	-			-	-	-		-
Indeno[1,2,3,c,d]pyrene	-	-		-	-	-	-	1900			-	-	-		-
Dibenz[a,h]anthracene	-	-		-	-	-	-	-			6100	-	580		-
Benzo[g,h.i]perylene	-	-		-	-	710	-	-			-	-	92		-

TABLE 9. POLYNUCLEAR AROMATIC HYDROCARBONS, 1983

TSD Station No.	0370					0379					0384				
	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSED	ML	Aple	SS	PW	SSed
Indene	24000	-	N	5400	-	300	11	36000	N	N	-	8	-	N	N
1,2,3,4 Tetrahydronaphthalene	5300	-	O	-	-	1000	9.8	1700	O	O	-	-	11000	O	O
Naphthalene	9700	-		-	-	-	21	23000			13000	19	76000		
2-Methylnaphthalene	-	-	S	-	-	-	-	-	S	S	-	-	1500	S	S
Quinoline	-	-	A	-	-	-	11	-	A	A	-	17	6000	A	A
1-Methylnaphthalene	-	-	M	-	-	-	18	-	M	M	-	-	-	M	M
B-Chloronaphthalene	-	-	P	-	260	-	3.3	-	P	P	-	-	630	P	P
Acenaphthylene	-	-	L	-	-	-	-	-	L	L		-	1800	L	L
Acenaphthene	-	-	E	-	-	-	3.4	-	E	E	-	-	-	E	E
Fluorene	-	-		-	-	-	-	-			-	-	-		
Phenanthrene	5600	-		-	730	17000	-	-			13000	-	-		
Anthracene	-	-		-	-	-	-	-			-	-	-		
Fluoranthene	-	-		-	1000	-	-	2300			-	-	-		
Pyrene	-	-		-	800	-	-	-			-	-	9100		
Chrysene/Triphenylene	-	-		-	-	-	-	-			-	-	-		
Benzo[j] or [k]fluoranthene	-	-		-	-	-	-	-			-	-	-		
Benzo[b]fluoranthene	-	-		-	-	-	-	-			-	-	-		
Benzo[a]anthracene	-	-		-	-	-	-	-			-	-	-		
Benzo[b]chrysene	-	-		-	-	-	-	1500			-	-	1400		
Benzo[e]pyrene	-	-		-	-	-	-	-			-	-	1400		
Benzo[a]pyrene	-	-		-	-	-	-	-			-	-	4600		
Perylene	-	-		-	-	-	-	-			-	-	-		
Indeno[1,2,3,c,d]pyrene	-	-		-	-	-	-	-			-	-	-		
Dibenz[a,h]anthracene	1000	-		-	-	-	-	620			-	-	-		
Benzo[g,h.i]perylene	-	-		-	-		-	2300			-	-	5100		

TABLE 9. POLYNUCLEAR AROMATIC HYDROCARBONS, 1983

TSD Station No.	0399				
	ML	Aple	SS	PW	SSED
Indene	2800	16	10000	17000	-
1,2,3,4 Tetrahydronaphthalene	770	8	1500	-	-
Naphthalene	1700	26	13000	-	-
2-Methylnaphthalene	-	3.5	700	-	-
Quinoline	-	17	550	8400	-
1-Methylnaphthalene	-	27	850	-	-
B-Chloronaphthalene	-	7.5	-	-	-
Acenaphthylene	-	-	260	-	-
Acenaphthene	-	-	-	-	-
Fluorene	-	2.3	2000	-	-
Phenanthrene	-	4.7	-	-	-
Anthracene	-	-	-	-	-
Fluoranthene	-	9.5	2800	-	-
Pyrene	-	4.5	-	-	-
Chrysene/Triphenylene	-	-	-	-	-
Benzo[j] or [k]fluoranthene	-	8	-	-	-
Benzo[b]fluoranthene	-	-	-	-	-
Benzo[a]anthracene	-	-	-	-	-
Benzo[b]chrysene	-	-	520	-	-
Benzo[e]pyrene	-	4.8	-	-	-
Benzo[a]pyrene	-	-	-	-	-
Perylene	-	17	-	-	-
Indeno[1,2,3,c,d]pyrene	-	49	-	-	-
Dibenz[a,h]anthracene	-	-	300	-	-
Benzo[g,h.i]perylene	-	28	2700	-	-

APPENDIX

TOXIC SUBSTANCES DATA BASE
TOXIC SUBSTANCES DATA BASE

LAKE ERIE - DETROIT RIVER - LAKE ST. CLAIR

STATION NUMBERS

LAKE ERIE	0001 - 0200
LAKE ERIE WESTERN BASIN	0140 - 0200
DETROIT RIVER	0201 - 0400
LAKE ST. CLAIR	0401 -

APPENDIX

DESCRIPTOR CODE

OW - open water
PE - pipe effluent
DS - docking slip
BY - bay
TR - tributary
PD - pond
DA - disposal area
WI - water intake
CR - creek
CH - channel - canal
SC - shipping channel
L - lake

SAMPLE TYPES CODES

SL - surface micro-layer
SS - suspended solids
AS - air samples
AP - APLE 200L
W1 - water sample 1 m
S - surficial sediment
PW - pore water

ANALYSES CODES

PNA - polynucleararomatic hydrocarbons
OC - organochlorine residues
P - phenols (chlorinated)
PCB - polychlorinated biphenyls
CB - chlorobenzenes
V - volatiles
NPS - nitrogen, phosphorus, sulphur residues
T - microtox
MT - methyl tins
ML - methyl leads
BT - butyl tins
M - metals

TOXIC SUBSTANCES DATA BASE
STATION NUMBERS FOR DETROIT RIVER
STUDY 1982-83

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0201	S-72 = V-2	At Detroit River light old station #2, (junction of east & west outer channel)	OW,SC	W1,S	V,OC,	V,P
0202	V-4	Spoil area under construction 600 m SSE of Pte Mouillee USA	OW,DA	S	OC, PCB	
0203	V-5, S-71, B5	Spoil area under construction 600 m SE of Pte Mouilee, Upper northend, USA	OW,DA	W1,S	V,OC, PCB	V,T
0204	V-3	300 m North of Dumping Ground 2.5 km SE of Pte Mouilee USA	OW	W1,S	V,OC, PCB	
0205	OPEN					
0206	B29	3.5 km S of Bar Point (Can)	OW	W1		V,T,P
0207		3.0 km S of Bar Point (Can)				
0208	V-6	1.5 km ENE of mouth of Huron River, USA	OW	W1	V	
0209	V-7	3 km ENE of mouth of Huron River, USA 2 km SW of diverging shipping channels	OW	W1 S	OC,V PCB	
0210	MC-16,B4 V-8,C29	2 km S of Sunset Beach CAN 1.5 km ESE of diverging shipping channels	OW	W1,S,PW SS	V,OC PCB	OC,PCB,V T,ML,MT BT,P,NPS PNA,M

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0211	KL-24,V-1 MC-1	Point of diverging shipping channels Buoy LT29D 2.25 km SW of Sunset Beach Can	OW,SC	W1	V,OC PCB	V
0212	S-48,MC-17 B3	0.45 km NW of diverging shipping channel at mouth of Detroit River. Near Buoy B1F1G.	OW	W1,S,SS AP,AS	-	PNA,P OC,PCB,V T,ML,MT BT
0213	S-47,MC-18	Mid channel due west bar point (Can)	OW	W1,S,SS AP,AS	-	OC,PCB,V T,ML,MT BT,P,NPS
0214	MC-19,B1	2 km E of Milleville Beach 3 km WNW of diverging shipping channels	OW	W1,S,SS AP,AS		OC,PCB,V T,NPS PNA,OC PCB,BT MT,ML
0215	S-46	(approx) 500 (m) S of red white buoy 1.4 km E of Maple Beach USA, 2.4 km S of Grosse Isle	OW	W1		V
0216	OPEN					
0217	S-70	Inlet bay (SW of Sturgeon Bar) 1 km N of Milleville Beach USA	OW	W1		V
0218	S-20	At south tip of Celeron Island (1 km)	OW	W1		V
0219	OPEN					

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0220	V-11	1 km S of Hickory Island (Grosse Ile) 0.8 km E of Celeron Island	OW	W1	V	
0221	S-69	Corner of creek, bay (Mouth of Bronwnstown Creek) at Gibraltar, USA	CR	W1	-	V
0222	OPEN					
0223	S-21,G-2	Mid channel SW of buoy LT8FR Frank and Poet drain	CR	W1,S,SS PW,SL	-	OC,P,PNA NPS,PCB MT,ML,BL V,T
0224	G-12	Mid channel 0.5 km S of Grosse Ile 0.35 km E of Celeron Is and 0.75 km WSW of Hickory Island	OW	W1,S,SS AS,PW,SL	-	OC,PNA PCB,NPS MT,ML,BL
0225	S-45	At red buoy R8FIR (SE of Hickory Island)(Grosse Ile)	OW	W1		V,T
0226	V-10	1.4 km SW of Bois Blanc Island middle of shipping channel 1.7 km SE of Sugar Island (Grosse Ile)	OW,SC	W1	V	
0227	OPEN					
0228	V-9 KL-23(392)	1 km S of main mass of Bois Blanc Island Centre of upbound channel	OW,SC	W1,SS	V	M

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0229	OPEN					
0230	E-29	15 m from the end of a pipe 1.2 km N of Sunset Beach 3.75 km S of Amherstburg CAN	PE	W1	-	P,V,T
0231	B11	Mouth of inlet south of Sturgeon Bar (USA)	OW	W,S,SS S1,AP,PW	-	OC,PCB PNA,NPS MT,ML,BT
0232	OPEN					
0233	OPEN					
0234	OPEN					
0235	OPEN					
0236	OPEN					
0237	OPEN					
0238	D29	50 m offshore from Sunset Beach Canada	OW	W1	-	P,T
0239	OPEN					
0240	OPEN					
0241	OPEN					
0242	OPEN					
0243	OPEN					
0244	OPEN					
0245	OPEN					
0246	OPEN					
0247	OPEN					
0248	OPEN					
0249	OPEN					
0250	OPEN					
0251	OPEN					

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0252	OPEN					
0253	OPEN					
0254	OPEN					
0255	S-22,G11	400 m north of Gibraltar, 0.5 km W of Calf Island	OW,CH	W,S,SS,AP	-	MT,ML,BT P,V,T OC,PCB, PNA,NPS
0256	V-13	0.6 km W of Grosse Ile 0.3 km N of Calf Island 1 km NE of Gibraltar USA	OW	W1,S	OC,V PCB	-
0257	S-23,G3	Entrance to lagoon on south side W of Grosse Ile at Monsanto Co.	CH	W1,S	-	V,T MT,BT,ML
0258	S-68	East side in bay airport bay (Grosse Ile) (S of Grosse Ile Municipal Airport)	OW	W1	-	V,T
0259	OPEN					
0260	S-67	At mouth of channel (NE of Hickory Island)(Grosse Ile)	CH	W1	-	V,T
0261	OPEN					
0262	OPEN					
0263	F-29	At coast guard slip Amherstburg	DS	W1	-	P,V,T
0264	OPEN					
0265	V-14	1.4 km W of Bois Blanc Island 0.6 km E of Grosse Ile	OW	W1	OC, V PCB	-

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0266	OPEN					
0267	V-30	100 m E of Bois Blanc Island 300 m W of Amherstburg in shipping channel	OW	W1	V	
0268	V-29	300 m NW of Bois Blanc Island in shipping channel	OW,SC	W1	V	
						PNA,NPS
0269	S-44,G1	At buoy mid channel (east of Fox Island)	OW	W1,S,SS		OC,V,T
		(1 km east of Grosse Ile)		AP,PW,AS		PCB,PAH
		1.2 km NW of Bois Blanc Island		SL		NPS,MT, ML,BT
0270	OPEN					
0271	S-43,V-44	At Allied outfall (oil on water) flow 25 L/sec (Can)	PE	W1	V	P,V,T
0272	V-16	0.75 km E of Grosse Ile	OW	W1,S	V,OC	-
0273		0.6 km N of Stony Island			PCB	
0274	V-15	1 km NE of Stony Island	OW	W1	V	
0275	S-30	Mouth of Canard river (CAN)	TR,OW	W1	-	V,T
0276	S-65	At buoy #83 (west of mouth of Canard river) a km W of 0275	OW,SC	W1	-	V,T
0277	OPEN					

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0278	S-63	Due east 0300, middle of shipping channel	OW,SC	W1	-	V,T
0279	S-64,V-17 KL-19(388)	At station #17 (at north end Thorofare Canal (Grosse Ile)	OW,SC	W1,S,SS	OC,PCB V	V,T,M
0280	P2 KL-18(387)	Midchannel below bridge at buoy #3 SW of Turkey Island	OW,SC	W1,S,SS SL,AP,PW	-	V,T,M OC,PCB, NPS,MT, ML,BT, PNA
0281	S-31,G1	To east of Turkey Island (mid channel)	OW,SC	W1	-	V,T
0282	S-32	On south tip of Fighting Is.	PD	W1		P,V,T
0283	S-24,V-28 KL-22(391)	West channel, Trenton, USA off Detroit Edison plant most southerly stack	OW	W1,SS	V	P,V,T,M
0284	S-25	Below outfall of blue tank W of Grosse Ile (McLouth Steel Corp)	OW,SC	W1		P,V,T
0285	V-18	In midchannel NW of Turkey Island (100 m)	OW,SC	W1	OC,PCB V	
0286	S-25A	Pipe effluent from McLouth Steel Corp. W of Grosse Ile	PE	W1	-	V
0287	V-27	Midchannel 0.6 km SE of McLouth Steel Corp. 0.16 km W of Grosse Ile	OW,SC	W1	V	-

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0288	S-26	At mouth of creek below bridge from Firestone. W of northern end of Grosse Ile.	CR,OW	W1	-	P,V,T
0289	OPEN					
0290	OPEN					
0291	V-26	90 m from shore (west bank) off of Firestone Steel Products (USA) west of Grosse Ile	OW,SC	W1	V	
0292	S-27	At outfall (at Pennwalt Corp.) (w. of north tip of Grosse Ile) Wyandotte STP	PE	W1	-	P,V,T
0293	OPEN					
0294	OPEN					
0295	S-28	At steel pipe from waste bed (on Grosse Ile west side of northern tip)	PE,DA	W1	-	V
0296	OPEN					
0297	S-29	At midchannel buoy 30 between northernmost tip of Grosse Ile and Wyandotte	OW	W1		P,V,T
0298	KL21(390)	South of swing bridge on Grosse Ile, north of McLouth Steel		SS		M
0299	OPEN					
0300	S-62A	Off lagoon east side Point Hennepin	OW,SC	W1		V,T
0301	OPEN					

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0302	V-25 KL20(389)	60 m from W bank (off of Wyandotte) 0.45 km NW of Grosse Ile	OW,SC	W1,SS	V	M
0303	OPEN					
0304	OPEN					
0305	OPEN					
0306	OPEN					
0307	OPEN					
0308	OPEN					
0309	OPEN					
0310	OPEN					
0311	S-38,V-24 P-1	At mouth of Ecorse river	TR,OW	W1,S,SS AS,AP,PW SL	V,OC PCB	OC,PCB V,T,P MT,ML,BT PNA,NPS
0312	S-37	Near buoy "4" at steel grate west of Mud Island (500 m N of mouth of Ecorse river)	OW,SC	W1	-	P,V,T
0313	OPEN					
0314	P11 KL17(386)	0.45 km NE of Mud Island Buoy BC25 1 km W of northern tip of Fighting Island	OW,SC	W,S,SS AS,AP,PW SL	-	V,P,MT ML,BT PNA,OC NPS,PCB M
0315	OPEN					
0316	OPEN					
0317	OPEN					
0318	S-36,V-23	At cooling water outfall of Great Lakes Steel (southern part of plant)	PE	W1	V	V,T
0319	S-33	At red buoy east of Fighting Is (mid channel) (southern end)	OW,SC	W1	-	

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0320	V-19	On Fighting Island (east side) 1.4 km N of southern tip of island. Waste pond	PD,DA	W1,S	OC,PCB V	-
0321	S-40	On east side of Fighting Island (approx) 500 m below green hut (approx) 500 m above red black buoy	PE,DA	W1	-	V,T
0322	S-41,V-20	On east side of Fighting Island at big drainage pipe from north bed. Little trickle (small flow) W of Grosse Island	PE,DA	W1	V	P,V,T
0323	S-42	On east side of Fighting Island (approx) 500 m up from previous station (0322) at pipe with rocks	PE,DA	W1	-	P,V,T
0324	S-39	At Fighting Island (NW side) "barge" (route) 50 m from shore	OW,DA	W1	-	P,V,T
0325	OPEN					
0326	OPEN					
0327	S-34	East of Grass Island above gas station midchannel (east of Fighting Island	OW,SC	W1	-	V,T
0328	S-49	Turkey Creek at private bridge NE of Fighting Island	OW,TR	W1	-	V,T
0329	P-12	100 m east of northern tip of Fighting Island	OW	S,PW SL	-	OC,NPS PNA,PCB MT,ML,BT V

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0330	S-35,V-21 P12	(North of Fighting Island) Near mid channel buoy.	OW,SC	W,SS,AP	V	V,T,P OC,NPS PNA,PCB MT,ML,BT
0331	S-50	At Salt Bay (Canada Rock Salt Co. Ltd.) N of Fighting Island		W1	-	T
0332	V-43,P13	45 m from east bank 0.75 km N of Canada Rock Salt Co. Ltd.	OW,SC	W1	V	T,V
0333	S-51	In slip (near Morton Terminal Ltd.) across river from mouth of south branch of River Rouge.	OW,DS	W1		V,T
0334	OPEN					
0335	S-52	Due north of buoy W4F1W Can side	OW	W1	-	V,T
0336	OPEN					
0337	V-39	N of power line slip (Canada Steamship Lines Ltd.) in front of Sterling Fuels	OW,SC,DS	W1	V	
0338	S-53	Canadian Customs & Immigration slip	OW,DS	W1	-	V,T
0339	S-54	At fuels tank slip (Sterling Fuels) (Can) 1.5 km downstream from Ambassador bridge	OW,DS	W1	-	V,T

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0340	S-55	At slip about a foot off Mill St. (Can) 0.75 km downstream from Ambassador bridge	PW,DS	W1	-	V,T
0341	V-22	(pipe effluent) At Great Lakes Steel Div. National Steel (NW of Fighting Island)	PE	W1	-	V,T
0342	OPEN					
0343	S-19	At boat slip. N. of Great Lakes Steel	OW,DS	W1	-	P,V,T
0344	V-42, P-14	Close to west bank of Detroit river 300 m south of Great Lakes Steel Div. National Steel (Northern plant just south of River Rouge)	OW,SC	W1	V	P,V
0345	S-18	Southern Branch of River Rouge (500 m upstream from mouth)	OW,TR,SC	W1	-	P,V,T
0346	V-41, Y-5	In the River Rouge 300 m W of the branching for Zug Island	OW,TR,SC	W,S,PW,AS SL,PL,S,AP	V,OC, PCB	V,P,OC PCB,MT, ML,BT, PNA
0347	S-17	Below outfall pipe east side of Zug Island		W1	-	P,V,T
0348	S-16	Upper end Zug Island in northern branch 300 m downstream from Detroit river.	OW,TR,SC	W1	-	P,V,T

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0349	V-40	North of river Rouge near Fort Wayne (USA)	OW,SC	W1	V	-
0350	S-60	At high pressure discharge "(no flow)" below Ambassador bridge (US side)	OW	W1	-	P,T
0351	S-61	Underwater discharge 30 m offshore at lower end of Zug Island 100 m north of 0352. Detroit STP	OW,W1,SC	W1	-	V,T
0352	Y-4 KL-16 (385)	75 m east of Zug Island 200 m north of the mouth of southern branch of river Rouge.	OW,SC	W,SS,AS S,PW,SL	-	V,P,OC PCB,NPS PNA,M
0353	Y-3	150 m west of the east bank of DR. ENE of mouth of southern branch of the Rouge River	OW,SC	W,SS,AS S,PW,SL AP	-	V,P,OC, PCB,NPS MT,ML,BT PNA
0354	KL15	American side, west of Commercial Towers in front of Chrysler tanks	OW,SC	SS	-	M
0355	OPEN					
0356	OPEN					
0357	S-56	Above bridge (Ambassador) near red buoy 20 m offshore at storm sewers	OW,SC	W1	-	V,T
0358	OPEN					
0359	OPEN					
0360	OPEN					
0361	OPEN					
0362	OPEN					

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0363	S-57	Just below Holiday Inn (Windsor)	OW,SC	W1	-	V,T
0364	OPEN					
0365	V-38	100 m from CAN shore near automobile tunnel at Windsor	OW,SC	W1	V	-
0366	OPEN					
0367	OPEN					
0368	OPEN					
0369	S-58	At Canadian Club silos downstream from Ford Motor Co. (CAN)	OW,SC	W1	-	P,V,T
0370	Y-2 KL-14(383)	300 m from bank at Ford Motor Co. of Canada Ltd. (Windsor)	OW,SC	W,SS,SL AS,S,PW	-	M,OC PCB,PNA NPS,MT ML,BT
0371	S-8	Brown effluent from Ford outfall East end of plant (Windsor)	PE	W1	-	P,V,T
0372	V-31	300 m from bank. 600 m NE (upstream) of Ford Motor Co. of Canada Ltd.	OW,SC	W1	V	-
0373	OPEN					
0374	OPEN					
0375	S-9	At coast guard station east end of Belle Isle	OW	W1	-	P,V,T
0376	V-32	300 m south of eastern tip of Belle Isle	OW,SC	W1	V	-
0377	OPEN					

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0378	S-10	At L. St. Clair. Midway between buoy and shore 100 m from shore between Wend Peach Island and CAN shore	OW,SC	W1	-	P,V,T
0379	Y-12,V-33 KL-13(382)	Mid channel between Peach Island and CAN shore (at L. St. Clair)	OW,SC	W1,SS,S SL,PW	V,OC PCB	OC,PCB V,M,NPS PAH,MT ML,BT
0380	OPEN					
0381	S-59,V-37	At US shore below Centre (above tunnel) near US end automobile tunnel (Detroit/ Windsor)	OW,SC	W1	V	V,T
0382	OPEN					
0383	S-15	At 3 silo slip at Detroit across the river from Ford Motor Co.	OW,DS	W1	-	P,V,T
0384	Y-6	In channel 50 m offshore upstream silo slip	OW	W,AP,SS S,PW,SL	-	OC,PCB PNA,MT ML,BT NPS
0385	OPEN					
0386	Y-1	In channel between western tip of Belle Isle and Detroit	OW	W	-	MT,ML,BT
0387	OPEN					

TSD CODE	DUPLICATE STATION NO.	DESCRIPTION	DESCRIPTOR CODE	SAMPLE TYPES	ANALYSES 1982	ANALYSES 1983
0388	S-14,V-36	At green buoy 300 m above bridge. Midchannel N of Belle Isle	OW	W1,S	OC PCB V	P,V,T
0389	S-13	Detroit boat basin slip mainland N of central Belle Isle	OW,DS	W1	-	P,V,T
0390	OPEN					
0391	OPEN					
0392	OPEN					
0393	S-12	Outlet slip below power plant (0.75 km downstream from mouth of Conners Creek) USA	OW,DS	W1	-	P,V,T
0394	OPEN					
0395	V-35	Midchannel between eastern tip of Belle Isle and Detroit	OW	W1	V-	-
0396	OPEN					
0397	S-11	Mouth of Conners Creek N of east end of Belle Isle	OW,CR	W1	-	P,V,T
0398	OPEN					
0399	V-34	150 m from shore at Fox Creek (USA) and L. St. Clair	OW,SC	W,AP,S SS,SL,PW	V	OC,PCB NPS,PNA MT,ML,BT
0400	S-6	North side of yacht club. E of mouth of Fox Creek (USA) at L. St. Clair	OW,SC	W1	-	P,V,T