FINAL
CHARACTERIZATION REPORT
GILL CREEK INVESTIGATION
NIAGARA FALLS, NEW YORK

IT PROJECT NO. 408166.010.02

PREPARED FOR:

OLIN CORPORATION

PREPARED BY:

IT CORPORATION
KNOXVILLE, TENNESSEE

JULY 1993

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7/30/93

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IT Corporation

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James J. King, Quality Assurance Officer
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Table of Contents

List of Tables

List of Figures

List of Acronyms

%D	percent difference
BHC	hexachlorocyclohexane
cfs	cubic feet per second
EP	extraction procedure
IT	IT Corporation
NYPA	New York Power Authority
NYSDEC	New York State Department of Environmental Conservation
msl	mean sea level
MS/MSD	matrix spike/matrix spike duplicate
Olin	Olin Corporation
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
ppb	parts per billion
ppm	parts per million
QC	quality control
RCRA	Resource Conservation and Recovery Act
RECRA	RECRA Environmental Inc.
RI	Remedial Investigation
RPD	relative percent differences
RSD	relative standard deviation
RRF	relative response factors
TCLP	Toxicity Characteristic Leaching Procedure
SVOC	semivolatile organic compound
SWDA	Safe Drinking Water Act
U.S. EPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

List of Appendices

Executive Summary

Olin Corporation (Olin) contracted IT Corporation (IT) to: (1) evaluate existing data on Gill Creek, Niagara Falls, New York; (2) conduct a limited field investigation on a specific stretch of the creek; and (3) produce a report that presents the available information in a unified manner. Specifically, IT's field investigation included the portion of Gill Creek between Packard Road and Buffalo Avenue. This stretch of creek is approximately 200 feet east of the Industrial Welding Site. The field investigation of Gill Creek was conducted concurrently with the remedial investigation (RI) conducted by IT at the Industrial Welding Site.

The objectives of this report are to:

- Present and evaluate the available data regarding the extent and distribution of contaminants in creek sediments and water in the stretch of Gill Creek adjacent to the Industrial Welding Site.
- Evaluate available data to determine if a correlation exists among catch basin, storm sewer outfall, and creek sediment contaminants.
- Present and evaluate data to characterize the creek sediments for final disposition.

The stretch of creek investigated in this study contains a variety of sediment contaminants, most notably polycyclic aromatic hydrocarbons (PAHs), hexachlorocyclohexanes (BHC), and mercury. The contaminants were present in all portions of the creek studied here, and no clear distribution pattern was evident. Only two water samples were collected, and mercury and BHC were detected in at least one of those samples.

No correlation could be established between contaminants in the catch basins and storm sewer outfalls, although it was observed that generally similar contaminants were found in the basins and the outfalls as well as in the creek sediments. It is unclear whether the sediment in the catch basins are simply creek sediments that are trapped in the basins during storm events, when turbid creek water may back into the catch basins, or if the sediments are from elsewhere.

The source of the contaminants in the creek was not conclusively determined. However, several observations can be made:

- The contaminants found in the catch basins, storm sewer outfalls, creek sediments, and creek water (most notably BHC, PAHs, and mercury) are similar to those found in wastes or soils at the nearby Industrial Welding Site.

- The most upstream sample, upstream of the Industrial Welding Site but south of Packard Road, contained generally similar levels of contaminants as the downstream levels. Due to the configuration of the creek bed between Packard Road and Buffalo Avenue and the periodic backflow of Gill Creek water from the Niagara River, it is likely that sediments have a tendency to be deposited in that creek stretch and little variation in contaminant levels would be expected.

- BHC, PAHs, and mercury have been measured in Gill Creek sediment samples from previous studies as far upstream as just below Hyde Park Lake, approximately 1 mile upstream of the study area. The source(s) of the contaminants was not identified in those studies.

- There have been reports, which are still being investigated, that the City of Niagara Falls Wastewater Treatment Plant disposed of contaminated sludge into Gill Creek and specifically into the stretch of Gill Creek adjacent to the Industrial Welding Site.

The analysis of creek sediment samples for Resource Conservation and Recovery Act (RCRA) characteristics revealed that the sediments do not exhibit hazardous characteristics.

1.0 Introduction

1.1 Study Objectives and Report Organization

Olin Corporation (Olin) contracted IT Corporation (IT) to: (1) evaluate existing data on Gill Creek, Niagara Falls, New York; (2) conduct a limited field investigation on a specific stretch of the creek; and (3) produce a report that presents the available information in a unified manner. Specifically, IT's field investigation included the portion of Gill Creek adjacent to the Industrial Welding Site. The field investigation of Gill Creek was conducted concurrent with the remedial investigation (RI) conducted by IT at the Industrial Welding Site. The reader is referred to the RI Report (IT, 1993) for information regarding the Industrial Welding Site and additional discussions on area ecology and hydrology.

The objectives of the Gill Creek investigation and of this report are to:

- Present and evaluate the available data regarding the extent and distribution of contaminants in creek sediments and water in the stretch of Gill Creek adjacent to the Industrial Welding Site.
- Evaluate available data to determine if a correlation exists among catch basin, storm sewer outfall, and creek sediment contaminants.
- Present and evaluate data to characterize the creek sediments for final disposition.

Chapter 2.0 of this report provides a description of the field and analytical methods used and shows sample locations. Chapter 3.0 of this report presents the results of the investigation. Chapter 4.0 provides conclusions and recommendations. Chapter 5.0 presents the references cited. Complete analytical data, including data collected by others, are presented in appendices.

1.2 Creek Location and Description of Study Area

Gill Creek flows from north to south, rising from a swamp in the town of Lewiston and entering the Niagara River approximately 7.5 miles downstream of its origin and 0.3 miles south of the Industrial Welding Site. Approximately 1 mile north of the Industrial Welding Site is Hyde Park Lake, which is dam-controlled. A regional map is shown on Figure 1-1.

The flow in the creek below the dam is controlled to a large extent by dam releases. Gill Creek is classified as a Class C surface water (New York State Codes, Rules, and

STARTING DATE: 3-1-88	DATE LAST REV.: 1-5-93	INITIATOR: C. STUEWE	DRAWING NO.: 408613-A-01
DRAWN BY: BILL SMITH	DRAWN BY: repitts	PROJ. MGR. K. BRADLEY	PROJECT NO.: 408613

2 10-25-89 1 CR

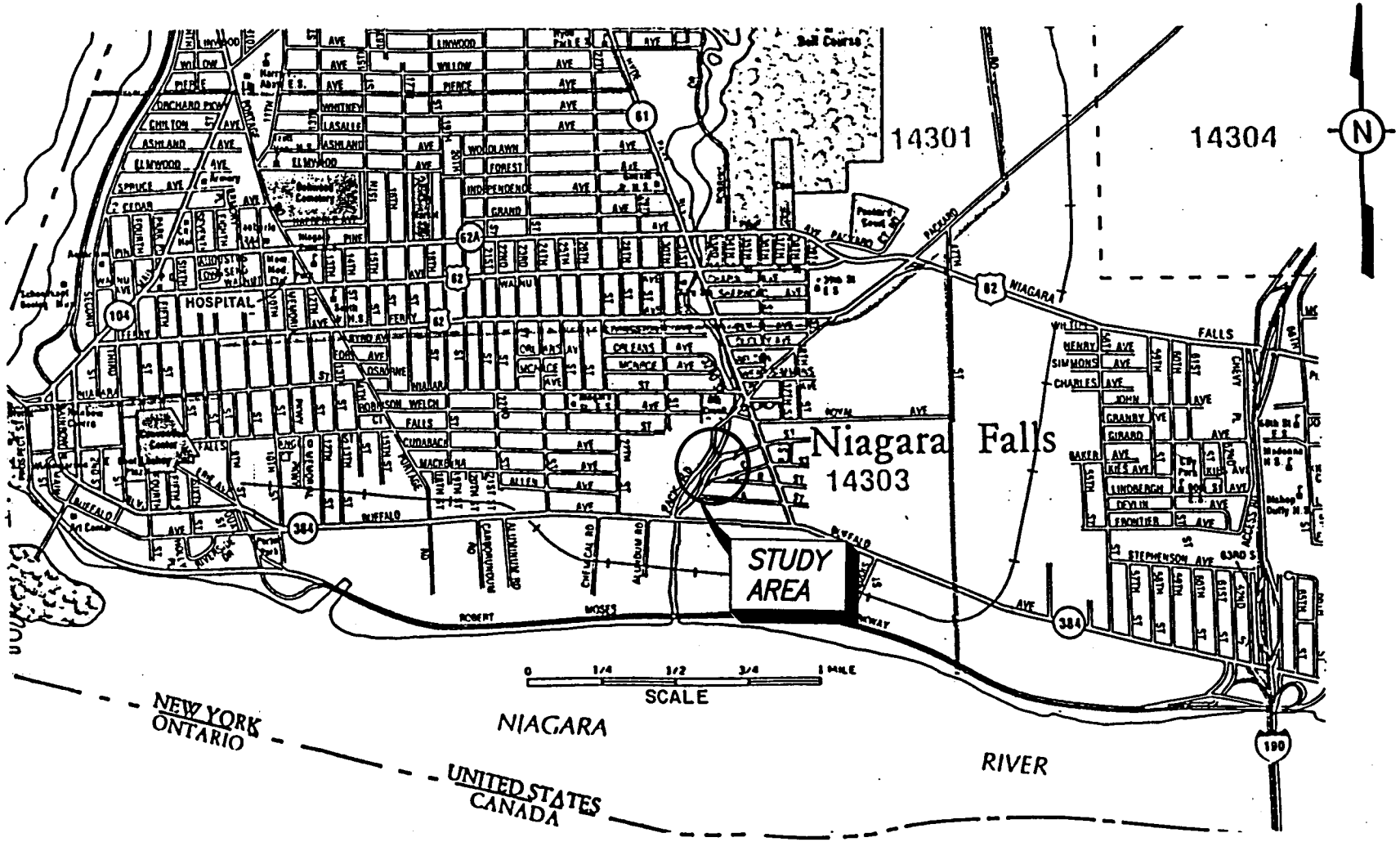


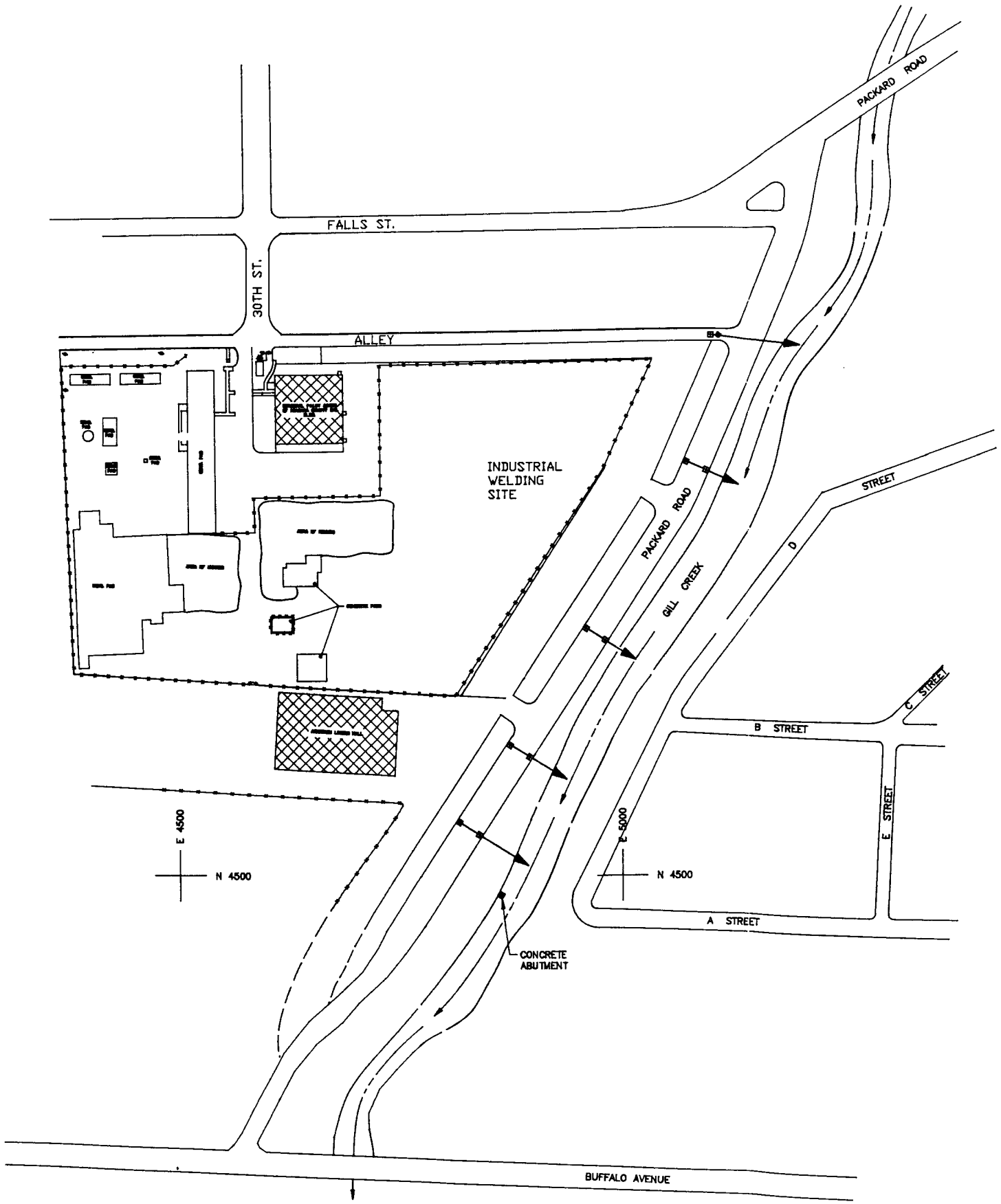
FIGURE 1-1

STUDY AREA

NIAGARA FALLS, NEW YORK

SOURCE: COPYRIGHT MAP WORKS, INC., 1989

INTERNATIONAL TECHNOLOGY CORPORATION



LEGEND:

⊞ CATCH BASIN

STORM SEWER LINE WITH FLOW DIRECTION INDICATED

SCALE:

0 200 400 FEET

FIGURE 1–2

GILL CREEK STUDY AREA

NIAGARA FALLS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

DRAFT. CHCK. BY: G. PACHECO	INITIATOR: G. PLAMONDON
ENGR. CHCK BY:G. PLAMONDON	PROJ. MGR.: K. BRADLEY
STARTING DATE: 1/7/93	DRAWING NO.: 408166–B–128
DRAWN BY: G. PACHECO	PROJ. NO.: D08490
DATE LAST REV.:	
DRAWN BY:	

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Regulations, Title 6, Chapter X, Part 701.19). The classification lists the best usage of waters to be suitable for fishing and specifies, "The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose."

The portion of the creek subject to this study is the area adjacent to the Industrial Welding Site, which is located approximately 200 feet west of Gill Creek between Packard Road and Buffalo Avenue (Figure 1-2). All sampling conducted during this investigation was conducted in this stretch of the creek.

1.3 Creek Hydrology

The Gill Creek watershed is approximately 12 square miles and includes Hyde Park Lake, which covers approximately 32 acres. Along the reach of the creek adjacent to the site, water depths average 1.5 to 2 feet. The slope of the creek bottom is nearly flat with a gradient of 0.0003 foot drop for every 1 foot of distance. Buffalo Avenue marks the southern end of the gently sloping bottom where it rises to a high point elevation of 562.5 feet mean sea level (msl). After Buffalo Avenue, the creek bottom drops again and then rises back up just north of the Adams Street Bridge, thus forming a small basin. Downstream of the Adams Street Bridge, the creek bottom steeply drops off to a low point elevation of 555.5 feet msl at the mouth of the creek.

Flow rates and direction in Gill Creek vary with the seasons and time of day. The Niagara River stage can fluctuate approximately 1.5 feet over a 24-hour period (Woodward-Clyde Consultants [WCC], 1990) and will influence flow in Gill Creek. The changes in the Niagara River are the results of the New York Power Authority (NYPA) diverting river flow for hydroelectric production. Diversion gates downstream of Gill Creek are closed each night and during the winter months, thus diverting water and causing water levels to rise upstream. The highest stage in the Niagara River occurs around the hours of 7:00, 8:00, and 9:00 a.m., as indicated by hourly water level data collected by the NYPA.

From several model runs using the HEC-6 Generalized Computer Program for Scour and Deposition in Rivers and Reservoirs (WCC, 1990), it has been determined that the potential for downstream sediment transport in Gill Creek exists. However, creek bottom scour and transport of bottom sediments will not occur at flows below flood stage of 500 cubic feet per second (cfs). Normal downstream flow in Gill Creek between storm events is approximately

2 cfs. Consequently, sediments transported during normal flow conditions are those in the suspended load.

WCC has reported in their Gill Creek Sediment Project (WCC, 1990) that upstream flows occur near the creek mouth on a daily basis for approximately 1 hour and possibly more frequently or for longer durations during the winter months when the Niagara River stage remains high. Upstream creek velocities have been measured as far north as the Niagara Street bridge (north of Packard Road bridge). During those periods of upstream flow, flow velocities in Gill Creek are first slowed from moving downstream and then reversed to move upstream. The reverse occurs when the Niagara River stage is restored to normal levels. During these periods, many downstream flowing suspended sediments will settle out when flow velocities are low. Therefore, along the nearly flat reach of Gill Creek just east of the Industrial Welding Site, where the gradient is very low, there is a high potential for sediments to be deposited when the flow velocities are low.

The hydrogeological data collected during the Industrial Welding Site RI (IT, 1993) indicate that neither shallow nor deep groundwater discharge into the creek in the study area. There is a potential for discharge of water into the creek from a perched swale area that has been filled with waste material at the Industrial Welding Site. However, there is no direct evidence of such a discharge.

1.4 Previous Investigations

From 1978 to 1980, the New York State Department of Environmental Conservation (NYSDEC) collected 13 sediment samples along the bottom of Gill Creek from Buffalo Avenue to Hyde Park Lake. Samples from this sampling event were analyzed for lindane (gamma BHC) and PCBs. PCBs were detected in all locations and lindane was detected at 9 of the 13 locations, with detections as far north as between the high and low dams of Hyde Park Lake. In 1984, the City of Niagara Falls conducted additional sediment sampling under an Environmental Credit project identified as the Gill Creek Restoration Project. The analyses performed for the Gill Creek Restoration Project sampling conducted by the City on November 1, 1984 were as follows:

- Analysis of leachate after Extraction Procedure (EP) preparation for:
  - Safe Drinking Water Act (SDWA) Pesticides and Herbicides
  - SDWA Primary Metals
  - Priority Pollutant Pesticides and PCBs.

- Direct analysis of the sediment for:
  - VOCs and SVOCS
  - Priority Pollutant Pesticides/PCBs.

BHC, mercury, and polycyclic aromatic hydrocarbons (PAHs), among other contaminants, were found at each sampling location (from Buffalo Avenue north to just below the Hyde Park Lake dam). None of the samples exceeded EP Toxicity criteria.

In 1983 the Canadian Ministry of the Environment carried out biomonitoring programs along the Niagara River. The programs were conducted by the Ministry's Great Lakes and Aquatic Biology Sections. Testing for contaminants consisted of exposing caged clams to Gill Creek for five consecutive 3-week periods to determine contaminant availability and temporal variation in contaminant inputs. Clams were also exposed for the full 15-week period. Also collected for analysis were young-of-the-year spottail shiners. Water samples were collected at 3-week intervals. No conclusions were drawn on the data in the data report.

The last known round of Gill Creek sediment sampling prior to the NYSDEC/IT split sampling in 1990 (Section 2.2) was conducted by the City of Niagara Falls, Utilities Department on March 18,1988. The City collected two split sediment samples with one sample being sent out for analysis to Ecology and Environment, Inc., and the other to the Niagara Falls Wastewater Treatment Plant. Both samples had BHC, PAHs, and mercury and one of the samples failed EP Toxicity criteria for lindane. The data report did not indicate the location of these samples.

Data from these previous Gill Creek sampling episodes are presented in Appendix A.

2.0 Field Investigations and Sample Analyses

2.1 Gill Creek Sediment and Water Sampling

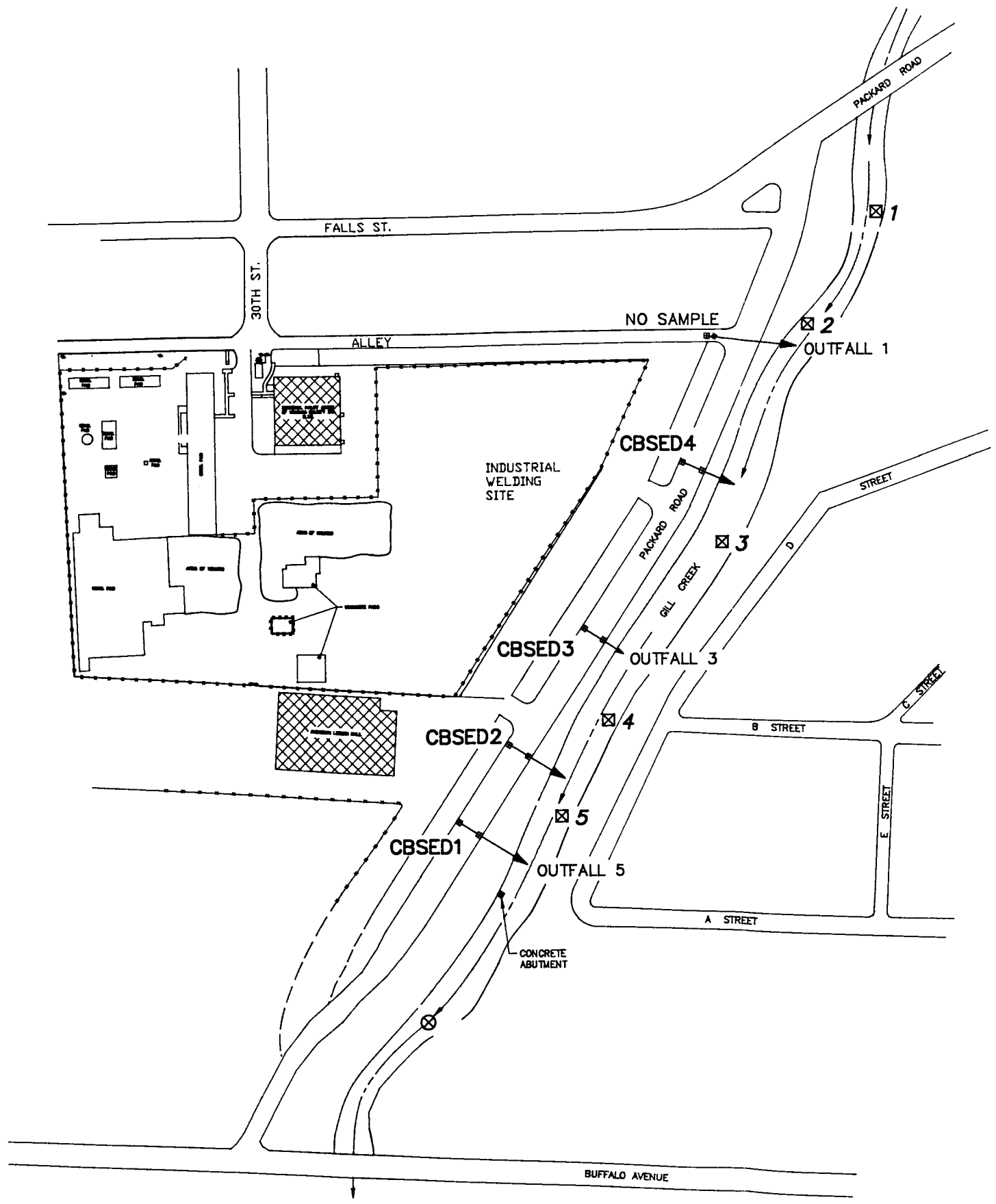
On November 15, 1990, IT accepted split samples of water and sediments collected from Gill Creek by the NYSDEC. Samples were collected at five different stations in the creek center and at the west creek bank (Figure 2-1) as summarized in Table 2-1. Sediment samples were taken from all five locations while surface water was only sampled upstream (Station 1) and downstream of the Industrial Welding Site (Station 5). Sediment samples were collected with a Ponar sediment sampler (surface samples) and a manual core sampler (deep samples) from the center of the creek and from the west creek bank. Sediment and water samples were analyzed by both IT and NYSDEC for mercury, pesticides, and polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). NYSDEC also analyzed for other metals. Analytical methods are discussed in Section 2.3.

On November 16, 1990, the NYSDEC also collected sediment samples at the storm sewer outfalls along the west bank of Gill Creek with a stainless steel hand trowel (Figure 2-1). These outfalls drain into the creek and receive drainage from catch basins located on both sides of Packard Road. IT did not receive split samples from the outfall samples. The outfall sediment samples were analyzed by NYSDEC for VOCs and SVOCs, pesticides, PCBs, and metals.

The catch basins on the west side of Packard Road were sampled by IT and the NYSDEC on May 24, 1991. The catch basin sediments were analyzed by IT for VOCs, PCBs, pesticides, and mercury, and by NYSDEC for VOCs, SVOCs, pesticides, PCBs, and metals.

On October 6, 1992, NYSDEC collected three sediment samples from 0 to 1 foot deep at the east bank, west bank, and center of Gill Creek. The samples were collected on a transect between the Industrial Welding Site and Buffalo Avenue (Figure 2-1). IT did not observe the sampling and did not receive sample splits. NYSDEC analyzed the samples for VOCs, SVOCs, pesticides, PCBs, and metals.

Results from these sampling events and summary data tables are discussed in Chapter 3.0. Complete analytical data are presented in Appendices B through F.



LEGEND:

OUTFALL 1 — STORM SEWER OUTFALL WITH NYSDEC SAMPLE NUMBER (NOV. 1990)

⊠ 3 — SAMPLING LOCATION WITH STATION NUMBER (NOV. 1990)

⊗ — NYSDEC SAMPLING LOCATION (OCT. 1992)

⊞ CBSED1 — CATCH BASIN WITH SAMPLE NUMBER (MAY 1991)

SCALE:

0 200 400 FEET

FIGURE 2–1

GILL CREEK AND CATCH BASIN SAMPLING LOCATIONS

NIAGARA FALLS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

DRAFT. CHCK. BY: R. PITTS | INITIATOR: G. QUARLES | DRAWING NO.: 408166-B-132

ENGR. CHCK BY:G. QUARLES | PROJ. MGR.: K. BRADLEY | PROJ. NO.: 408166

DATE LAST REV.:

STARTING DATE: 1/11/93 | DRAWN BY:

DRAWN BY: C. ROBERTSON

Table 2-1

Summary Table of
Gill Creek Sediment and Water Sampling
Niagara Falls, New York

Station	West Creek Bank Sediment Samples		Center Creek Sediment Samples	Water Samples	Total Number of Samples	
	Surface	Deep			Soil	Water
1	No	No	Yes	Yes	1	1
2	Yes	Yes	Yes	No	3	0
3	No	No	Yes	No	1	0
4	Yes	Yes	Yes	No	3	0
5	Yes	Yes	Yes	Yes	3	1

2.2 Gill Creek Sediment Sampling for RCRA Characteristics Analysis

In September 1992, IT collected composite sediment samples from four transects on Gill Creek for Resource Conservation and Recovery Act (RCRA) characteristics analysis. The objective of the sampling was to characterize the sediments for final disposition.

The locations of the four transects are shown on Figure 2-2 and are described below:

Transect A is located midway between the northern boundary of the Industrial Welding Site and the Packard Road bridge. This transect provides an indication of sediment characteristics upstream of the Industrial Welding Site.

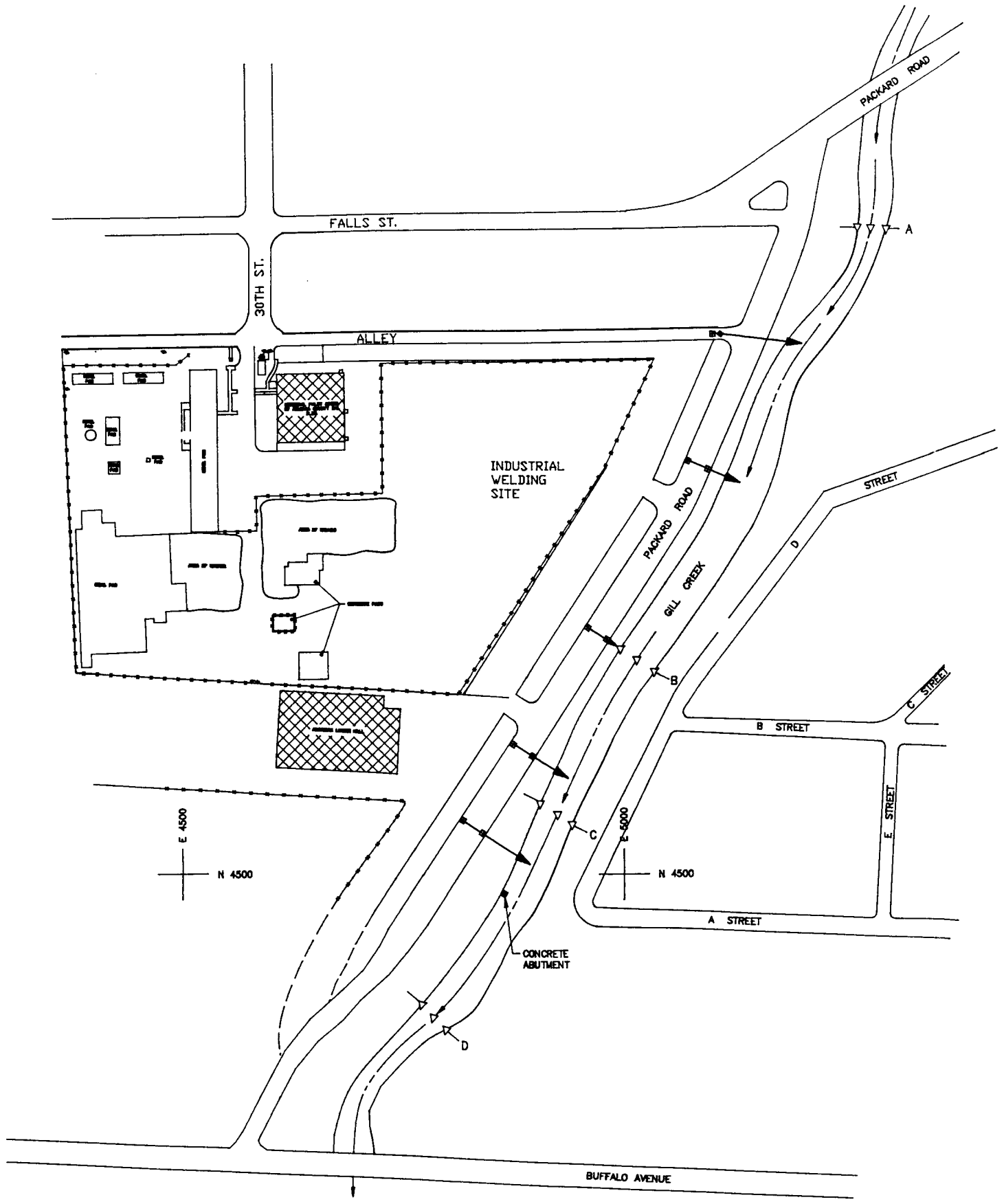
Transect B is at the location of a NYSDEC storm water outfall sample (Outfall 3). This sample contained the highest level of mercury of the three outfalls sampled in November 1990 (Section 3.1).

Transect C is at the location of NYSDEC sampling that indicated the highest levels of mercury in the creek sediments in November 1990 sampling (Section 3.2). It is approximately 175 feet downstream of the Industrial Welding Site waste area.

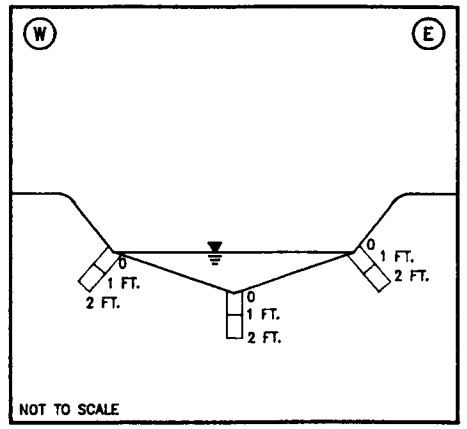
Transect D is located midway between Transect C and the Buffalo Avenue bridge. It provides an indication of sediment characteristics further downstream of the Industrial Welding Site.

Two-foot-long sediment core samples were collected at each of three locations on each transect, east bank, creek center, and west bank. The bank samples were collected at the estimated normal water level except at Transect B, where the west bank sample was collected at the storm drain outfall previously sampled by NYSDEC. All samples were collected in a perpendicular orientation to the sediment surface using a hand-driven core sampler. Each sediment core was then split into 0- to 1-foot and 1- to 2-foot samples and composited at the laboratory within each transect to result in a 0- to 1-foot and a 1- to 2-foot composite sample for each of the four transects.

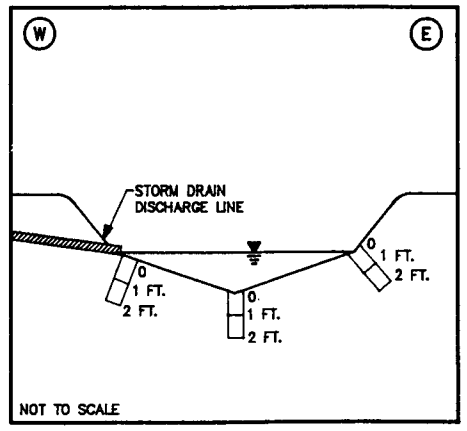
Portions of each of the composite samples were analyzed for RCRA hazardous waste characteristics: ignitability, corrosivity, reactivity, and toxicity (Toxicity Characteristic Leaching Procedure [TCLP]). Corrosivity and ignitability characteristics are not applicable to solids (e.g., creek sediments) and the data are not included in this report. After the initial

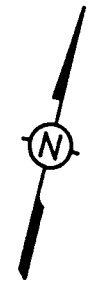


TYPICAL CROSS SECTIONAL VIEW OF CREEK SAMPLING LOCATIONS



CROSS SECTIONAL VIEW OF CREEK SAMPLING LOCATION B





LEGEND:

⊞	CATCH BASIN
◄—	STORM SEWER LINE WITH FLOW DIRECTION INDICATED
▽	GILL CREEK SEDIMENT TCLP SAMPLING LOCATION
—C—	SAMPLING LOCATION TRANSECT LINE

SCALE:

0 200 400 FEET

FIGURE 2–2

GILL CREEK SEDIMENT TCLP SAMPLING LOCATIONS

NIAGARA FALLS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

DRAFT. CHCK. BY: G. PACHECO | INITIATOR: G. PLAMONDON | DRAWING NO.: 408166-B-123
ENGR. CHCK BY:G. PLAMONDON | PROJ. MGR.: K. BRADLEY | PROJ. NO.: D08490
STARTING DATE: 1/6/93 | DATE LAST REV.:
DRAWN BY: G. PACHECO | DRAWN BY:

analytical results revealed an elevated level for lead in the TCLP leachate in the 1- to 2-foot composite at Transect D, an additional aliquot of remaining sample from each of the 1- to 2-foot sample locations on Transect D was extracted by the TCLP procedure for lead analysis to determine if lead is present at elevated levels across the entire transect or if the lead is isolated.

In April 1993, Olin retained RECRA Environmental Inc. (RECRA) to resample the same locations using the same laboratory and field procedures used by IT in 1992. Data from both the IT (Sep92) and RECRA (Apr93) sampling events are presented in Appendix F and discussed in Section 3.2

2.3 Analytical Methods

The analytical methods employed for all analyses of sediment and water samples from Gill Creek are from U.S. Environmental Protection Agency's (U.S. EPA) SW-846 manual, third edition. The specific analytical methods used are shown on Table 2-2.

2.4 Data Quality Review

All of IT's sediment and water analytical data from the Olin Gill Creek sampling effort were reviewed prior to their interpretation. The review consisted of identifying field and laboratory situations that may have adversely affected accuracy of the data. Qualifiers were then assigned to the affected data by the reviewer based on the U.S. EPA Hazardous Site Evaluation Division's "Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses" (February 1988) and "Laboratory Data Validation: Functional Guidelines for Evaluating Inorganics Analyses" (July 1988).

The reviewer examined field and laboratory documentation to verify that:

- Each analysis requested on the request-for-analysis form was performed by the laboratory.
- The preserving technique used was appropriate.
- Holding times were met for each analysis for each sample.
- Each sample was documented on the chain-of-custody and request for analysis forms.
- A trip blank for each sample requiring volatiles analysis was assigned.

Table 2-2

IT/RECRA Analytical Methods

Sample Type	Date	Analytical Method*
Water	November 1990	8240, 8270, 8080, 7470
Sediment	November 1990	8240, 8270, 8080, 7471
Catch Basin Sediments	May 1991	8240, 8080, 7471
Sediment	September 1992, April 1993	3010 followed by 6010, 7470, 8080/8150, 8240, 8270, PM, 9030/9010

*8240 = EPA Method 8240 (VOCs).
8270 = EPA Method 8270 (Semivolatiles).
8080/8150 = EPA Method 8080/8150 (PCBs/pesticides).
7470/7471 = EPA Method 7470/7471 (Mercury - CVAA Analysis).
6010 = EPA Method 6010 (Metals - ICP Analysis).
PM = Pensky Martin Closed Cup Flashpoint Analysis.
9030/9010 = EPA Method 9030/9010 (Reactivity as total sulfide and total cyanide).
3010 = EPA Method 3010 (TCLP extraction).

- Calibration performance was acceptable: tuning, initial, and continuing calibration responses.
- Standard recoveries (internal, surrogate, spikes) were within procedure guidelines.
- Relative percent differences (RPD) between duplicates (precision) and matrix spike/matrix spike duplicate (MS/MSD) pairs were accurate within procedure guidelines.
- Blanks did not contain contamination (i.e., field, method, and equipment rinsate blanks.)

Most of the data were in full conformance with U.S. EPA's guidelines. As discussed in the following paragraphs, some samples or analytes required additional qualifiers or had qualifiers removed as a result of the data validation. Generally, however, the data were of good quality. The NYSDEC data were not validated and are presented as reported by the laboratory.

Qualifiers were added to all of the 1990 mercury results because no preservation was noted on the chain-of-custody and the soil matrix spike recovery was outside control limits. One sample had all of the volatile compounds qualified and one sample had all of the semivolatile compounds with positive results qualified because holding times were exceeded. Semivolatile nondetects for this sample were rejected. Five methylene chloride and nine bis(2-ethylhexyl)phthalate results were qualified as nondetected because these compounds were detected in the blanks. One bis(2-ethylhexyl)phthalate and two methylene chloride results exceeded ten times the blank contamination. The "B" qualifier was removed from these results. Eleven hexachlorocyclopentadiene, eleven 2,4-dinitrophenol and three 2-butanone results had qualifiers added because the initial calibration relative standard deviation (RSD) exceeded the quality control (QC) limit. Finally, one acetone result was qualified because the continuing calibration percent difference exceeded the QC limit.

Qualifiers were added to the 1991 mercury results because the duplicate RPD exceeded QC limits. No other qualifiers were added to any of the 1991 data results.

Qualifiers were added to all of the September 1992 TCLP pesticide results because the holding time was exceeded by one day. Nine other 1992 TCLP samples also had qualifiers added to the results. Eight 2-butanone results were rejected because the initial and continu-

ing calibration relative response factors (RRF) were below QC limits. One lead result (Table F-3) was qualified as estimated because the serial dilution percent difference (%D) was slightly above the QC limit.

The April 1993 TCLP volatile analyses reported trichloroethene, tetrachloroethene, and benzene in some samples. Those contaminants were also found in the associated method blanks, however, and the data were qualified.

3.0 Results

In many cases, IT and NYSDEC split samples. NYSDEC did not supply validation data packages to Olin. Consequently, IT can only verify its own data. Because of this, IT data are discussed in this section except where no IT data are available. In those cases, the NYSDEC data are discussed. IT and NYSDEC data are presented in their entirety in Appendices B through G.

3.1 Catch Basins and Outfalls

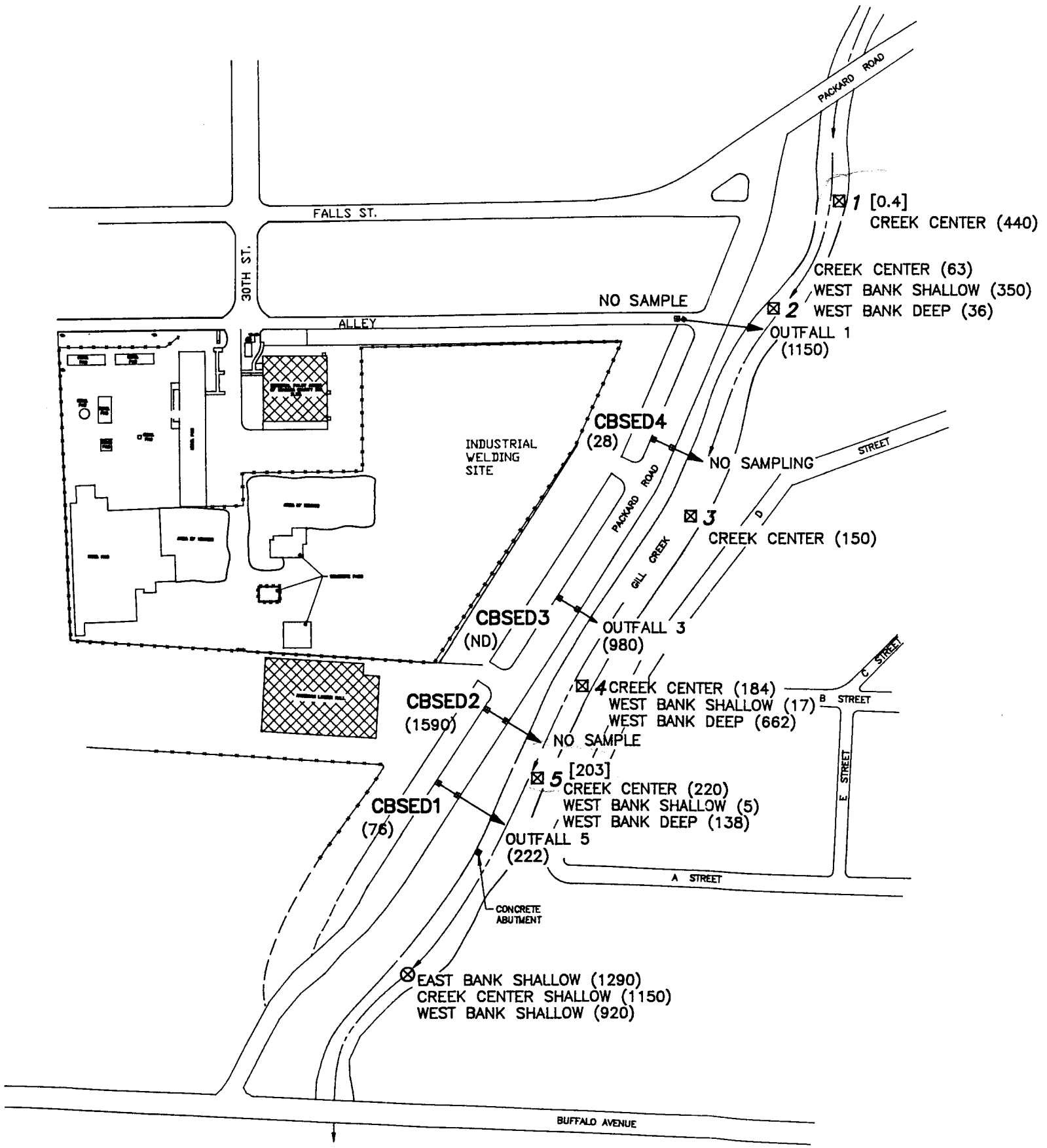
In May 1991, sediments from four catch basins were sampled and analyzed by IT for VOCs, pesticides, BHC, and mercury. Split samples were analyzed by NYSDEC for those analytes plus SVOCs and additional metals. The sampling locations are shown in Figures 2-1 and 3-1. IT data are presented in Appendix B.1 and NYSDEC data are presented in Appendix B.2. The samples are designated CBSED1 through CBSED4.

Acetone and methylene chloride were detected at low concentrations in each sample. The concentrations of other detected VOCs were estimated below the detection limit. Either the alpha or beta isomer of BHC was detected in all samples except CBSED3 (Figure 3-1). Mercury ranged in estimated concentrations from 0.24 parts per million (ppm) in CBSED2 to 7.5 ppm in the duplicate sample for CBSED1 (Figure 3-2).

NYSDEC performed SVOC analysis on its catch basin sample splits. NYSDEC data showed PAHs present in sediments from all catch basins, ranging from a total of 13,740 ppb at Catch Basin 4 (CBSED 4) to 59,007 ppb at Catch Basin 2 (CBSED 2). PAH distribution is shown in Figure 3-3. Phthalates were found in each sample from 3,880 ppb (total phthalates) in Catch Basin 1 to 15,020 ppb in Catch Basin 2.

In November 1990, NYSDEC collected and analyzed sediment from the Gill Creek outfalls connected to the site catch basins. The correlation of the outfall samples to Phase II RI catch basin samples is as follows (see Figure 2-1):

Catch Basin Sample#	Outfall Sample#
CBSED1	Outfall 5
CBSED2	No sample
CBSED3	Outfall 3
CBSED4	No sample
No sample	Outfall 1



N

LEGEND:

OUTFALL 1 →	STORM SEWER OUTFALL WITH NYSDEC SAMPLE NUMBER (NOV. 1990)
⊠ 1	SAMPLING LOCATION WITH STATION NUMBER (NOV. 1990)
⊗	NYSDEC SAMPLING LOCATION (OCT. 1992)
⊞ CBSED1	CATCH BASIN WITH SAMPLE NUMBER (MAY 1991)
(440)	TOTAL BHC CONCENTRATION IN ppb FOR SEDIMENT
[203]	TOTAL BHC CONCENTRATIONS IN ppb FOR WATER
(ND)	NOT DETECTED

SCALE:

0 200 400 FEET

FIGURE 3–1

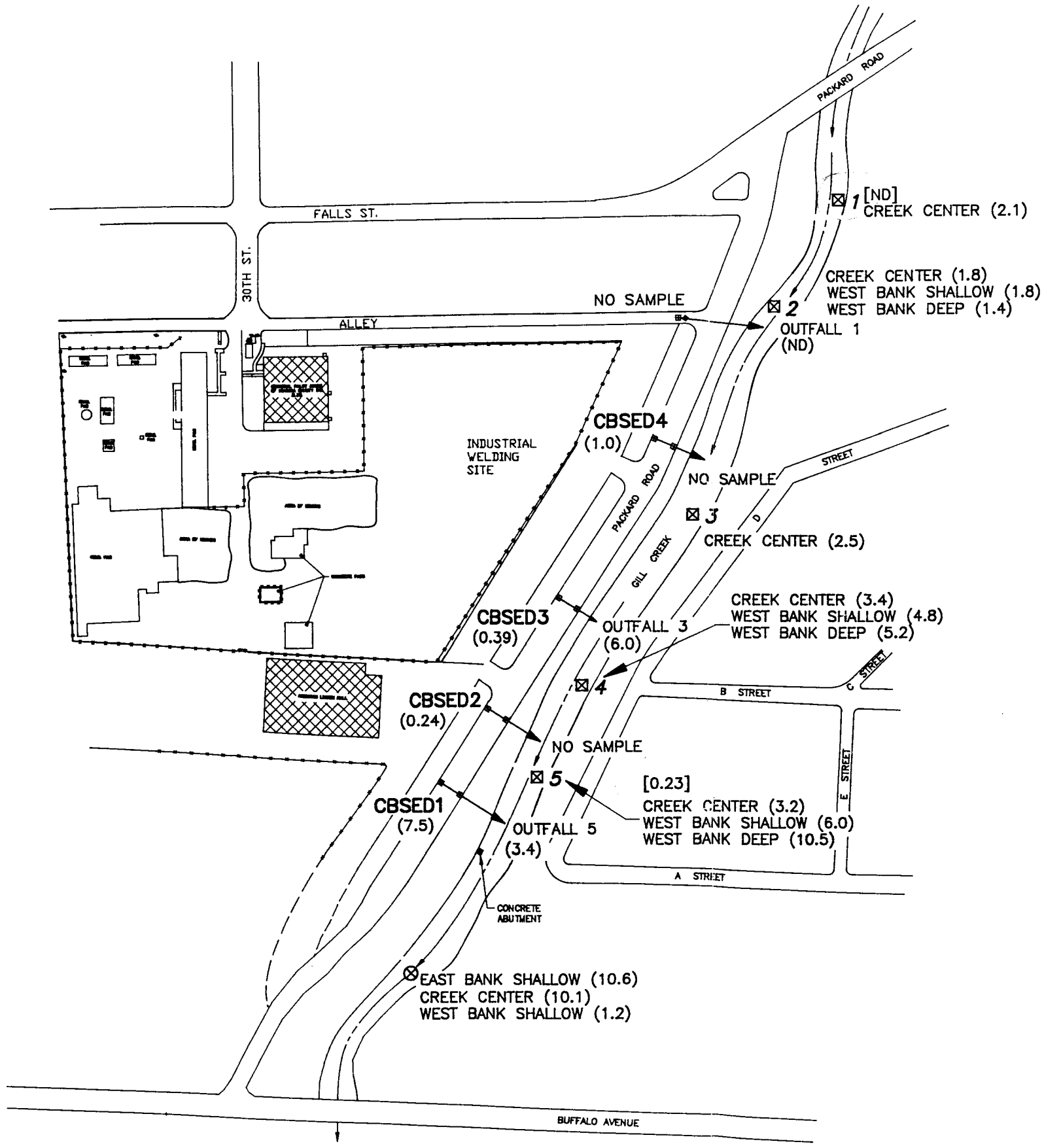
CONCENTRATION OF TOTAL BHCs IN CATCH BASIN, STORM SEWER OUTFALLS, GILL CREEK SEDIMENTS, AND GILL CREEK WATER

NIAGARA FALLS, NEW YORK

IT INTERNATIONAL TECHNOLOGY CORPORATION

DRAFT. CHCK. BY: R. PITTS | INITIATOR: G. QUARLES | DRAWING NO.: 408166-B-130
ENGR. CHCK BY:G. QUARLES | PROJ. MGR.: K. BRADLEY | PROJ. NO.: 408166
STARTING DATE: 1/11/93 | DATE LAST REV.:
DRAWN BY: J. TABLER | DRAWN BY:

KD09673
81660130 01/12/93 1:42pm GWP



N

LEGEND:

OUTFALL 1	STORM SEWER OUTFALL WITH NYSDEC SAMPLE NUMBER (NOV. 1990)
⊠ 3	SAMPLING LOCATION WITH STATION NUMBER (NOV. 1990)
⊗	NYSDEC SAMPLING LOCATION (OCT. 1992)
⊞ CBSED1	CATCH BASIN WITH SAMPLE NUMBER (MAY 1991)
(2.1)	MERCURY CONCENTRATION IN ppm FOR SEDIMENT
[0.23]	MERCURY CONCENTRATION IN ppb FOR WATER
ND	NOT DETECTED

SCALE:

0 200 400 FEET

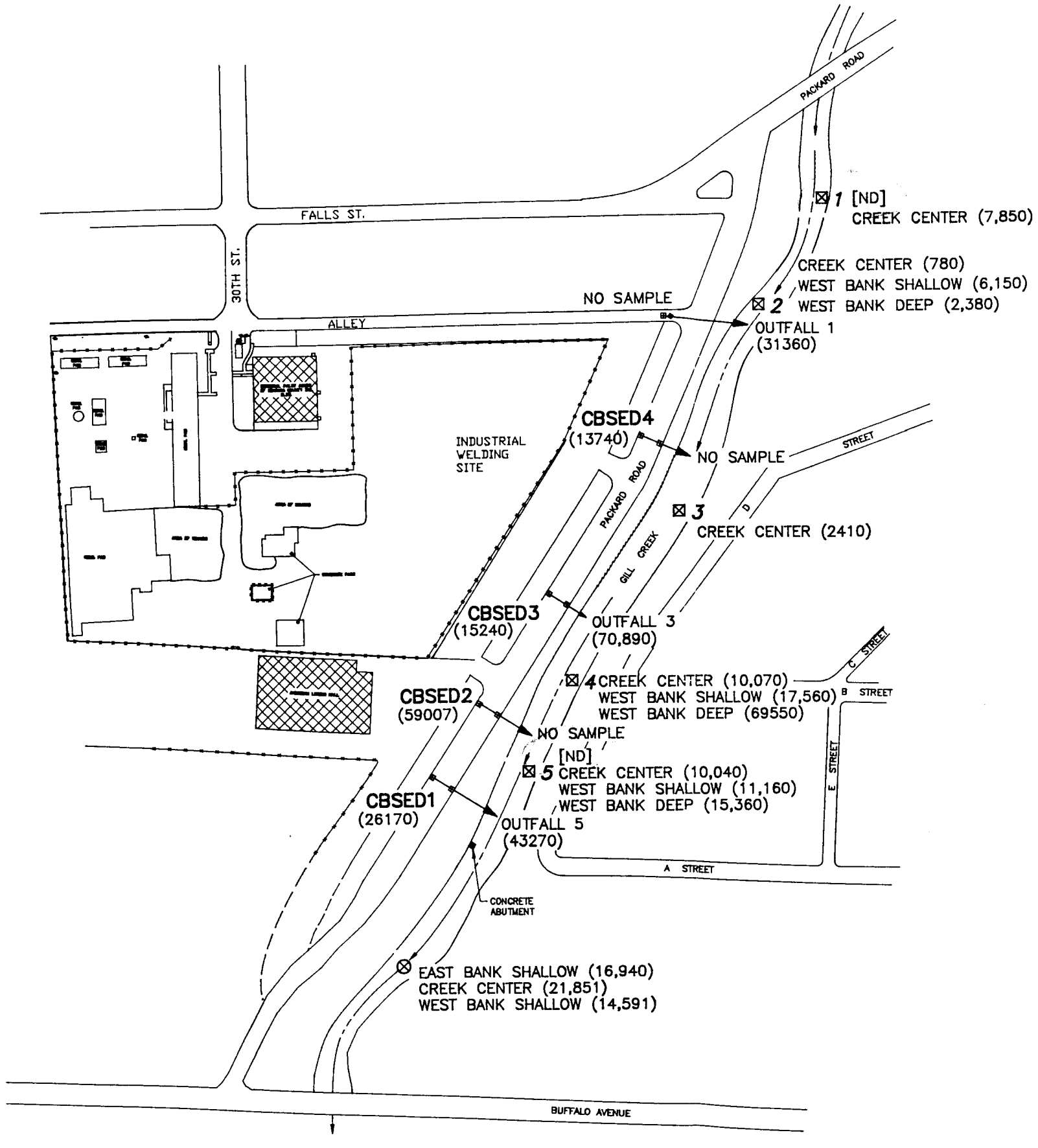
FIGURE 3-2

CONCENTRATION OF MERCURY IN CATCH BASIN, STORM SEWER OUTFALLS, GILL CREEK SEDIMENTS, AND GILL CREEK WATER

NIAGARA FALLS, NEW YORK

IT INTERNATIONAL TECHNOLOGY CORPORATION

DRAFT. CHCK. BY: R. PITTS
ENGR. CHCK BY:G. QUARLES
INITIATOR: G. QUARLES
PROJ. MGR.: K. BRADLEY
DRAWING NO.: 408166-B-131
PROJ. NO.: 408166
DATE LAST REV.:
DRAWN BY:
STARTING DATE: 1/11/93
DRAWN BY: G. PACHECO



N

LEGEND:

- OUTFALL 1 — STORM SEWER OUTFALL WITH NYSDEC SAMPLE NUMBER (NOV. 1990)
- ⊠ 1 — SAMPLING LOCATION WITH STATION NUMBER (NOV. 1990)
- ⊗ — SAMPLING LOCATION (OCT. 1992)
- ⊞ CBSED1 — CATCH BASIN WITH SAMPLE NUMBER (MAY 1991)
- (2,380) — TOTAL PAH CONCENTRATION IN ppb FOR SEDIMENT
- [ND] — TOTAL PAH CONCENTRATION IN ppb FOR WATER
- (NA) — NOT ANALYZED

SCALE:

0 200 400 FEET

FIGURE 3-3

CONCENTRATIONS OF TOTAL PAHs IN CATCH BASIN, STORM SEWER OUTFALLS, GILL CREEK SEDIMENTS AND GILL CREEK WATER

NIAGARA FALLS, NEW YORK

INTERNATIONAL TECHNOLOGY CORPORATION

STARTING DATE: 1/11/93 | DATE LAST REV.: | DRAFT. CHCK. BY: R. PITTS | INITIATOR: G. QUARLES | DRAWING NO.: 408166-B-129
DRAWN BY: J. TABLER | DRAWN BY: | ENGR. CHCK BY:G. QUARLES | PROJ. MGR.: K. BRADLEY | PROJ. NO.: 408166

The samples were analyzed for VOCs, SVOCs, pesticides and PCBs, and metals. The results are presented in Appendix C.

Low levels of acetone and methylene chloride were detected, but not in all samples. Benzene was detected in every outfall sample at very low concentrations ranging from 4 to 7 parts per billion (ppb). Chlorobenzene was detected in every sample at concentrations ranging from 14 ppb in Outfall 5 to 440 ppb in Outfall 3, and 1,4-Dichlorobenzene was estimated at 680 ppb in Outfall 1. PAHs were detected in every sample (Figure 3-3) with the highest concentrations in Outfall 3 (70,890 ppb total PAHs).

Aroclor-1242 was detected in a single outfall sample, Outfall 3, at 0.8 ppm. The alpha, beta, and delta isomers of BHC were detected in every sample with the highest concentration (1.2 ppm total BHC) in Outfall 1. The lowest total BHC concentration (0.22 ppm) was detected in Outfall 5 (Figure 3-1).

Mercury in the outfall samples ranged in concentration from ND (Outfall 1) to 6.0 ppm (Outfall 3) in the samples (Figure 3-2).

It does not appear reasonable to correlate data in catch basin versus outfall samples due to several factors. First, samples were collected approximately six months apart. The catch basin samples were collected during May 1991 and the outfall samples during November 1990. Degradation of various compounds, either by microbial or chemical mechanisms could reduce concentrations. Additional contaminants could be added to one or more locations, and flushing could occur during a storm event. Second, hydraulic separation of sediments by grain size may occur between the catch basin and corresponding outfall. During normal flow from the catch basin to the outfall, coarser-grained particles will tend to settle in the catch basins and finer clay sized particles will remain suspended in the water stream for a longer period, and are more likely to be deposited at the outfall. Finer particles tend to adsorb organics to a greater degree than coarser particles resulting in higher concentrations. Third, only two of the sampled outfalls correlate with sampled catch basins, thus resulting in a small data set for correlation. Fourth, during storm events, it is possible that the normal movement of sediments from the catch basins to the creek may be reversed and deposition of sediments into the catch basins from turbid creek water may occur.

3.2 Creek Sediments

3.2.1 November 1990 Sediment Sampling

In November 1990, NYSDEC took samples of surface water and sediments in Gill Creek and IT collected split samples. The sampling is described in Section 2-1 and the sample locations are shown on Figures 2-1 and 3-1. Results of the water sampling are discussed in Section 3.3. Eleven sediment samples were collected from five stations. Stations 1 and 2 are upstream of the Industrial Welding Site, Stations 3 and 4 are adjacent to the Industrial Welding Site, and Station 5 is slightly downstream of the Industrial Welding Site waste area. The results of the IT and NYSDEC split sampling are presented in Appendix D.

Methylene chloride, acetone, and chlorobenzene were found consistently in the sediment samples. Methylene chloride, which ranged from 5 ppb in deep sediment from Station 2 to 130 ppb from the center creek sample from Station 1, was also found in many of the associated method blanks. Acetone was detected in ten samples, ranging from 8 ppb in the deep sediment sample from Station 2 to 120 ppb from the center creek sample from Station 1. Chlorobenzene was found in ten of the samples ranging from 21 ppb in the shallow sediment sample from Station 5 to 59 ppb in the shallow sediment sample from Station 4.

PAHs were found in all samples; totals for these compounds are presented on Figure 3-3. The highest total value for PAHs was at the deep sample from the west bank at Station 4 (69,550 ppb) and the lowest value was at the creek center at Station 2 (780 ppb). No clear pattern was observed between shallow and deep samples or between upstream and downstream samples. Additional SVOCs detected were: dibenzofuran (1 sample), hexachlorobenzene (1 sample), 1,4-dichlorobenzene (4 samples), and bis(2-ethylhexyl)phthalate (all samples). The latter was also detected in the method blank samples.

BHCs were detected in all sediment samples. The total BHC (the sum of the various isomers) are shown in Figure 3-1. The totals range from a low of 5 ppb from the shallow sediment sample from Station 5 to a high of 630 ppb from the deep sediment sample from Station 4. PCB (Aroclor-1248) was confirmed in nine samples ranging from 130 ppb from the shallow sediment sample from Station 5 to 3,900 ppb from the center creek sample from Station 3. Other Aroclors detected were Aroclor-1221 and Aroclor-1260, both from upstream samples.

Mercury was detected in all eleven samples (Figure 3-2) ranging from 1.4 ppm in the deep sediment sample from Station 2 to 10.5 ppm from the deep sediment sample from Station 5.

3.2.2 October 1992 Sediment Sampling

On October 6, 1992, NYSDEC collected three sediment samples from a transect downstream of the Industrial Welding Site; this transect is at the location of Transect D used for RCRA characteristics sampling (Section 2.2). The samples were collected from 0 to 1 foot deep and a sample was taken from the east bank, west bank, and the creek center. IT did not observe the sampling or receive sample splits. The NYSDEC analytical data for these samples are presented in Appendix E.

Acetone, 2-butanone, benzene, and chlorobenzene were found in all three samples. Acetone and chlorobenzene were the most elevated of these VOCs, with acetone found from 88 to 100 ppb and chlorobenzene found at 27 to 840 ppb.

PAHs were found in all three samples: 14,591 ppb total PAHs at the west bank, 21,851 ppb at the center, and 16,940 ppb at the east bank. Totals for the PAH compounds are shown on Figure 3-3. Various levels of 1,3-dichlorobenzene, 1,4-dichlorobenzene, and 1,2,4-trichlorobenzene were also observed in all samples.

BHC were observed in all three samples: 920 ppb total BHC at the west bank, 1,150 ppb total BHC at the creek center, and 1,290 ppb total BHC at the east bank (Figure 3-1). Aroclor-1248 was observed in all three samples also, with a range of 4,400 ppb to 8,200 ppb.

Mercury was found at 1.2 ppm at the west bank, 10.1 ppm at the creek center, and 10.6 ppm at the east bank (Figure 3-2).

3.2.3 Sediment Sampling for RCRA Characteristics

In September 1992, IT collected 0- to 1-foot and 1- to 2-foot composite sediment samples from four transects on Gill Creek for RCRA characteristics analyses. The objective of the sampling was to characterize the sediments for final disposition. In April 1993, RECRA resampled the same locations for Olin to confirm the previous results. The sampling is described in Section 2.2 and the sample locations are shown on Figure 2-2. The analytical data are presented in Appendix F.

The only VOC found in the TCLP extract from either the September 1992 or April 1993 sampling was chlorobenzene at levels (ND to 0.054 ppm) within the allowable level (100.0 ppm). Trichloroethene (TCE) was observed in several samples from the April 1993 sampling and analysis; however, TCE was also present in the method blank for those samples and is believed, therefore, to be a lab contaminant. No SVOCs, pesticides, or herbicides were detected in the TCLP extracts.

TCLP extracts were within allowable levels for arsenic, barium, cadmium, and mercury. Arsenic (ND to 0.11 ppm) and barium (0.73 to 1.75 ppm) were detected in TCLP extracts, but at levels within allowable limits: 5.0 ppm for arsenic and 100.0 ppm for barium. Cadmium was found, in one sample, at 0.03 ppm which is within the allowable level of 1.0 ppm and mercury was found in a single sample at 0.0006 ppm which is within the regulatory level of 0.2 ppm.

At the 0- to 1-foot depth, lead was within the allowable level of 5.0 ppm (ND - 0.20 ppm) at all four transects. In the 1- to 2-foot composite for transect D, however, a lead concentration of 38.9 ppm was detected in the extract from the September 1992 sampling. Aliquots from each of the discrete samples (remaining in the laboratory) that made up the transect D 1- to 2-foot composite sample were then extracted by the TCLP procedure and analyzed for lead. In that analysis of discrete samples, only the sample from the east bank had detectable quantities of lead (estimated at 54.4 ppm). The April 1993 analysis for the samples composited at the 1- to 2-foot depth at transect D was below the detection level for lead (0.05U) and, therefore, did not confirm the presence of lead. Lead was not detected in either the September 1992 or April 1993 sampling events at any other transect at the 1- to 2-foot depth. It is apparent that the lead detected in the September 1992 sample at the 1- to 2-foot depth at the east bank of transect D is confined to a very small volume, probably represents only a small mass of lead, and may be due to a sampling artifact. Based on the data, lead is not believed to be an element of concern in the creek sediments.

All of the samples were within the allowable levels of reactivity for sulfide (500 ppm). The September 1992 analyses (transect D, 0- to 1-foot) indicated 450 ppm of cyanide. The April 1993 resampling at the same location did not, however, detect any cyanide. The RCRA criterion for cyanide is 250 ppm. The occurrence of cyanide reactivity in Gill Creek sediments is considered highly unlikely and could not be confirmed by the follow-up sampling. Therefore, it is believed that the sediments do not exhibit reactivity.

3.3 Creek Water

IT accepted split samples of two surface water samples collected by NYSDEC in November 1990 in conjunction with the sediment sampling. The sampling is described in Section 2.1 and the sample locations are shown on Figures 2-1 and 3-1. Complete analytical data are included in Appendix G.

The only VOC found in the water samples was methylene chloride, which was found in both samples below quantitation limits. Methylene chloride was also found in the method blank. No SVOCs were detected.

Both samples contained alpha, beta, and gamma BHC. Values for total BHC are 0.4 and 2.03 ppb in the samples from Stations 1 and 5, respectively (Figure 3-1). Mercury was found just above the quantitation limit at 0.23 ppb in the sample from Station 5 (Figure 3-1).

4.0 Conclusions

The stretch of creek investigated in this study contains various sediment contaminants, most notably PAHs, BHC, and mercury. The contaminants were present in all portions of the creek studied here, and no clear distribution pattern was evident. Only two water samples were collected, and mercury and BHC were detected in at least one of those samples.

No correlation could be established between contaminants in the catch basins and storm sewer outfalls, although it was observed that generally similar contaminants were found in the basins and the outfalls as well as in the creek sediments. It is unclear whether the sediment in the catch basins are simply creek sediments that are trapped in the basins during storm events, when turbid creek water may back into the catch basins, or if the sediments are from elsewhere.

The source of the contaminants in the creek was not conclusively determined. However, several observations can be made:

- The contaminants found in the catch basins, storm sewer outfalls, creek sediments, and creek water (most notably BHC, PAHs, and mercury) are similar to those found in wastes or soils nearby.

- The most upstream sample, upstream of the Industrial Welding Site but south of Packard Road, contained generally similar levels of contaminants as the downstream levels. Due to the configuration of the creek bed between Packard Road and Buffalo Avenue and the periodic backflow of Gill Creek water from the Niagara River, it is likely that sediments have a tendency to be deposited in that creek stretch and little variation in contaminant levels would be expected.

- BHC, PAHs, and mercury have been measured in Gill Creek samples from previous studies as far upstream as just below Hyde Park Lake, approximately 1 mile upstream of the study area. The source(s) of the contaminants was not identified in those studies.

- There have been reports, which are still being investigated, that the City of Niagara Falls Wastewater Treatment Plant disposed of contaminated sludge into Gill Creek adjacent to the Industrial Welding Site.

The analysis of creek sediment samples for RCRA characteristics indicates that the sediments do not exhibit hazardous waste characteristics.

APPENDIX A

HISTORICAL GILL CREEK SAMPLING CHEMICAL ANALYSIS DATA

City of Niagara Falls

NEW YORK 143

July 12, 1984

Mr. Peter Buechi, P.E.
New York State Department of
Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202

RE: Gill Creek Sampling Plan -
City WWTP Consent Decree
(Civil No. 81-363C)

Dear Mr. Buechi:

As you are aware, the referenced consent decree contains a provision for an Environmental Credit project to be performed by the City, identified as a "Gill Creek Restoration Project". Initially, a sediment sampling and analysis program is required, addressing both EP Toxicity and priority pollutants.

Mr Yavuz Erk of your office kindly supplied the results of previous sampling of Gill Creek in the reach of interest; from Buffalo Ave. to Hyde Park lake. Only lindane and PCB's were analyzed, with the particular sample results from this reach shown in Table I, attached. It appears there are only two areas of concern, one near Buffalo Ave. and one near the Falls Street bridge. I can possibly understand the high results for the sample near Buffalo Ave. (Site #4-1980) due to the nearby Industrial Welding site, but not the high results for the sample near the Falls St. bridge (Site #17-1980). Since these samples were probably analyzed by gas chromatography without confirmation, it is possible they are "false positives". Our pesticides analysis program will include a confirmatory analysis with a second GC column.

The City proposed sampling and analysis program consists of the following:

Five (5) transect composite samples will be taken, each being a composite of three (3) core samples of approximately 12"-18" depth. Approximate locations will be:

1. Immediately south of the Pine Ave. bridge
2. Along Hyde Park Blvd. at Orleans Ave.
3. Just south of the Falls St. bridge
4. Midway between Falls St. and Buffalo Ave.
5. 100' North of Buffalo Ave.

(continued)

These locations are marked with X's on the attached sketch.

Laboratory analysis of each of the five(5) samples will consist of:

1. EP Toxicity extraction with subsequent analysis for the leachate for:
   a. SDWA pesticides and herbicides by GC (6 compounds)
   b. SDWA primary metals (8 metals)
   c. Priority Pollutant Pesticides/PCB's by GC (25 compounds)
2. Direct analysis of the sediment for:
   a. Volatile, Acid and Base/Neutral Priority Pollutants by GC/MS (88 compounds)
   b. Priority Pollutant Pesticides/PCB's by GC (25 compounds) with second column confirmation.

Please review this proposed sampling and analysis program and determine whether or not it meets the requirements of your department and our consent decree. As soon as we get your concurrence, we will initiate the sampling and analysis program to get the project underway. When analytical results have been received, we would like to, at that point, sit down with you to interpret the numbers.

Thank you for your continued help in this matter. If you have any questions, please call me at 278-8138.

Very truly yours,

DEPARTMENT OF UTILITIES

John R. Westendorf

John R. Westendorf
Chemist

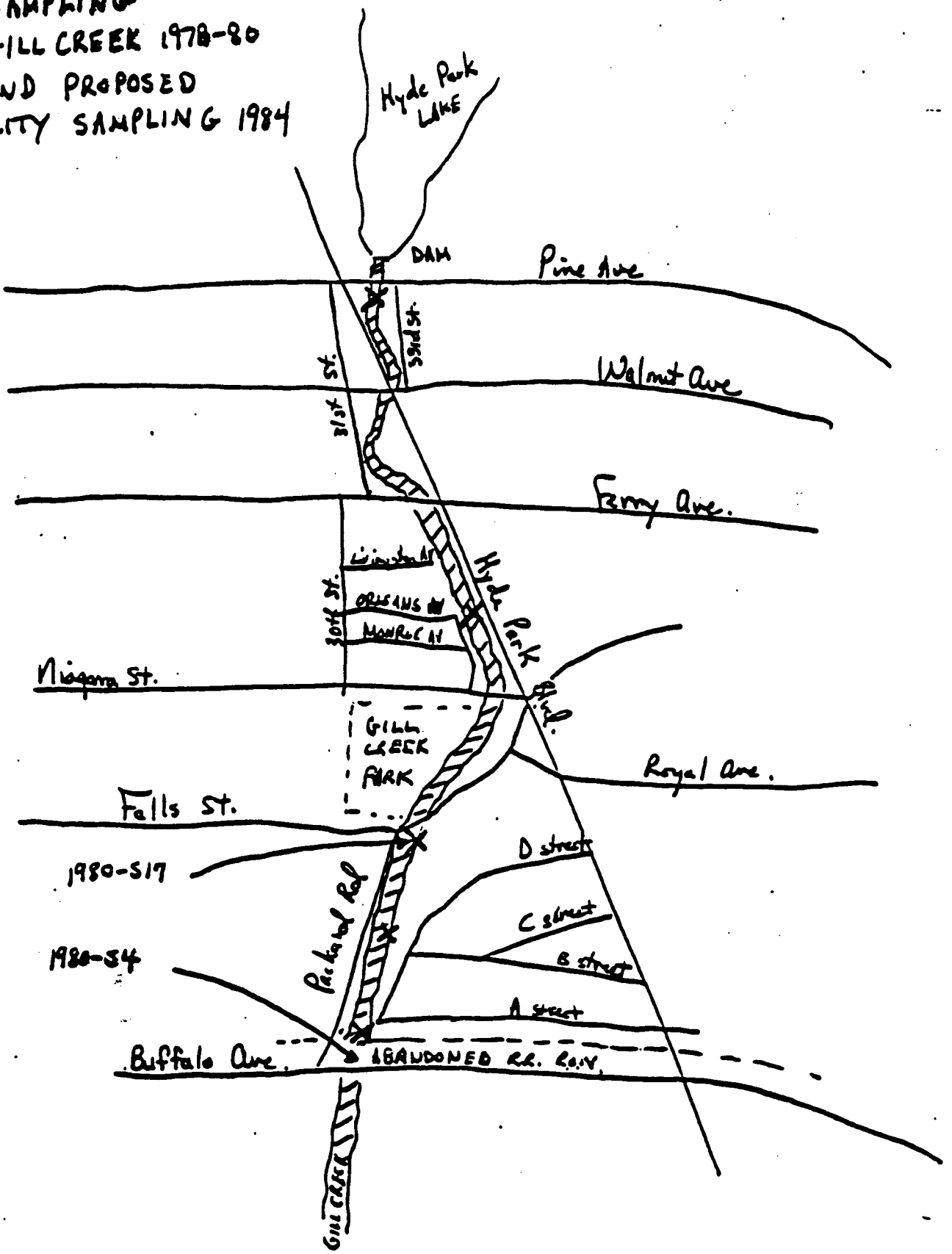
JRW:mo
cc: R. Game
C. Mooradian
D. Brooks
L. Krizan

TABLE I

DEC SEDIMENT SAMPLES - GILL CREEK BETWEEN HYDE PARK LAKE & BUFFALO AVENUE

Date	Sample #	Location	Lab Results (ppm) PCB-1248	PCB-1254	γ-BHC
1978	10	100-150' N. of Buffalo Ave.	<0.0089 (Incl. 1254)		--
1978	R2	Near E. Sie Hyde Park @ Walnut; S. of Dam	0.020	< 0.02	--
1978	R3	Near Ctr. E. Falls St. Bridge at Packard	≤0.040	< 0.040	--
1978	R4	Line W/Ctr. Am. Leg. Parking Lot; 100' N. of Dr. on Packard	≤0.020	< 0.020	--
1980	#9	Site #4 transect composite just upstream of Buffalo Ave. Bridge	2.75	----	112
1980	#10	Site #17 transect composite 20' downstream of Falls St. Bridge	1.23	----	120
1980	#11	Site #5 transect composite 30' downstream of Walnut Ave. Bridge	trace	----	0.52
1980	#12	Site #10 transect composite midway between low dam and high dam	trace	----	0.14
1980	#17	Site #18 transect composite opposite Orleans Ave.	0.55	----	0.01
1980	#18	Site #17A 60' below S. curb on A Street - east side of creek	6.73	----	0.21
1980	#19	Site #17B 60' below S. curb on A Street - mid. of creek	8.57	----	0.06
1980	#20	Site #17C 60' below S. curb on A Street - west side of creek	3.00	----	0.10
1980	#21	Site #19 - 50' upstream from Royal Ave. C O	trace	----	0.06

DEC SEDIMENT SAMPLING GILL CREEK 1978-80 AND PROPOSED CITY SAMPLING 1984



GRV

City of Niagara Falls

NEW YORK

March 4, 1985

Mr. Robert Speed, P.E.
Regional Water Quality Engineer
NYS Dept. of Environmental Conservation
600 Delaware Avenue
Buffalo, N.Y. 14202

RE: Gill Creek Restoration Project - Consent Decree, City of Niagara Falls, Civil No.: 81-363C

Dear Bob:

The attached report from Julie Wang, Environmental Chemist describes the sampling and analysis plan for the subject project as approved by your correspondence of August 24, 1984. The five (5) transect composite samples were taken on November 1, 1984 and sent to ETC Laboratories in Edison, N.J. for analysis. The City's Water Quality Laboratory also performed selected analyses on split samples.

The EP Toxicity extraction tests show that only zinc and alpha BHC were found above the method detection limits in any of the five (5) leachates." Zinc was found in each, but with only a maximum concentration of 3.2 mg/l. It should be noted that there is no EP Toxicity action level for zinc. The only sample to show reportable amount of alpha BHC was sample number 28410, the one collected 25 feet north of Buffalo Avenue. Even this was well below (by 2 orders of magnitude) the EP Toxicity action level of 0.4 mg/l. It would appear that none of the sediments exhibit the characteristics of a hazardous solid waste, as far as EP Toxicity is concerned.

Further extensive testing of the sediments themselves were also performed for organic priority pollutants as well as metals. The ETC Lab volatiles analyses showed low parts per billion concentration of tetrachloroethylene, toluene and chlorobenzene in four (4) of the five (5) samples. Split sample results for acid, base/neutrals, pesticides and metals (only positive hits, including single PBL, are shown) show the presence at ppm levels, of polynuclear aromatics (PNA's) and phthalates. These two (2) classes of compounds are ubiquitous in sediments. In addition, a few hits for chlorinated

benzenes were detected, with a maximum of 1.53 ppm. Of the metals analyzed, only lead and mercury exhibited patterns of increasing concentrations upon proceeding downstream. The concentrations seem to have stablized at around 100-160 ppm for lead and 3.9 to 5.0 ppm for mercury in the two downstream sediments (#28409 and #28410). These levels are probably not of concern, since the metals are shown to be in a stable non-soluble form (see the EP Toxicity results).

The pesticide results on the sediment samples (Table V attached memo) do reveal a pattern of increasing BHC's concentrations in the downstream samples. These results are not unexpected due to the past history of activity on this stream. The DEC proposed alpha plus gamma BHC sediment criterious of 2.0 mg/kg was exceeded in one instance by the City's results on sample #28410 (25 mg/kg), the most downstream sample near Buffalo Avenue. PCB's, another expected detection, did not occur above 3 mg/kg (ppm), and are thus probably not of concern.

The toxaphene detections by ETC Laboratories are highly questionable. City review of their methods and results reveals that these detections should not have been reported. One interesting detection is that of Dechlorane Plus by the City Laboratory. All results are below one (1) ppm, but Dechlorane Plus exhibits a distinctive double isomer peak. The Concentrations are, however, too low for GC/MS confirmation and are to be considered somewhat suspect.

In conclusion, it would appear that only the most downstream sampling locations exhibits any analytical results of concern (BHC's), in my opinion. The City would like to proceed with the proposed Consent Decree Project, but only in the reach from Pine Avenue to "B" Street. Please review the data and advise the City of your agreement, if appropriate.

The detailed laboratory data reports are available for review at the City Wastewater Plant. Please call me at 278-8183 if you have any questions.

Very truly yours,

DEPARTMENT OF UTILITIES

John R. Westendorf

John R. Westendorf
Environmental Engineer

JRW:dc
Att.
cc: D. Jaros/M. Bettino
R. Game
L. Krizan/D. Brooks
N. Marchelos
C. Mooradian
W. Garrow/J. Wang

CITY OF NIAGARA FALLS

NEW YORK

February 1, 1985

TO: John R. Westendorf
Environmental Engineer

FROM: Julie Wang
Environmental Chemist JW

SUBJECT: Samples From Gill Creek

Five (5) sediment samples (see attached map) were taken from Gill Creek on November 1, 1984. The samples were split and one set was sent to Environmental Testing and Certification Laboratory, Edison, N.J. to analyze for all priority pollutants and for the metals, Hg, Pb, Zn in sediments. An EP toxicity test was also done. The City's Water Quality Laboratory analyzed the other set of split samples for pesticides, PCB's, toxaphene, B/N compounds and metals (Pb, Hg, Zn, Cu, Ni, Cd, Cr) in sediments.

The EP toxicity results (Table I) indicated trace amounts of BHC isomers were found in Sample #28407 and #28409. Sample #28410 had 3.6 ppb of Alpha-BHC along with other types of BHC isomers. Table II is the EP toxicity results for metals and herbicides. All the results are below the method detection limit and well below the RCRA Alert Level. Zinc is the only metal that was found in the leachates and its level ranged from 0.56 ppm to 2.8 ppm. There is no RCRA Alert Level for Zinc.

Table III is the volatile organics results for the sediments done by ETC Laboratory. Tetrachloroethylene, toluene and chlorobenzene were found in the sediments.

Table IV is the priority pollutant's B/N compounds in the sediments. The table shows the comparison of results between the ETC Laboratory and the City's Water Quality Lab. The City Lab results for the B/N compounds are higher than the ETC Lab. The original sample sizes used are different (1-5 g for the City Lab vs 30 g by the ETC Lab). The extraction procedures are different (sonication vs soxhlet extraction). The results for metals are similar for each laboratory.

Table V is the pesticides and PCB's results from both laboratories. The data was generated by using GC/EC single column determination. The City Lab used the fused silical capillary column (30 meter, 0.25 um Bonded SE-54) for the analysis. Sample #24810 (#5 sta) has very high BHC's in the City's report. PCB's were found in samples #28407, #28408, #28409, and #28410 in approximately the 1 ppm range. Toxaphene was not

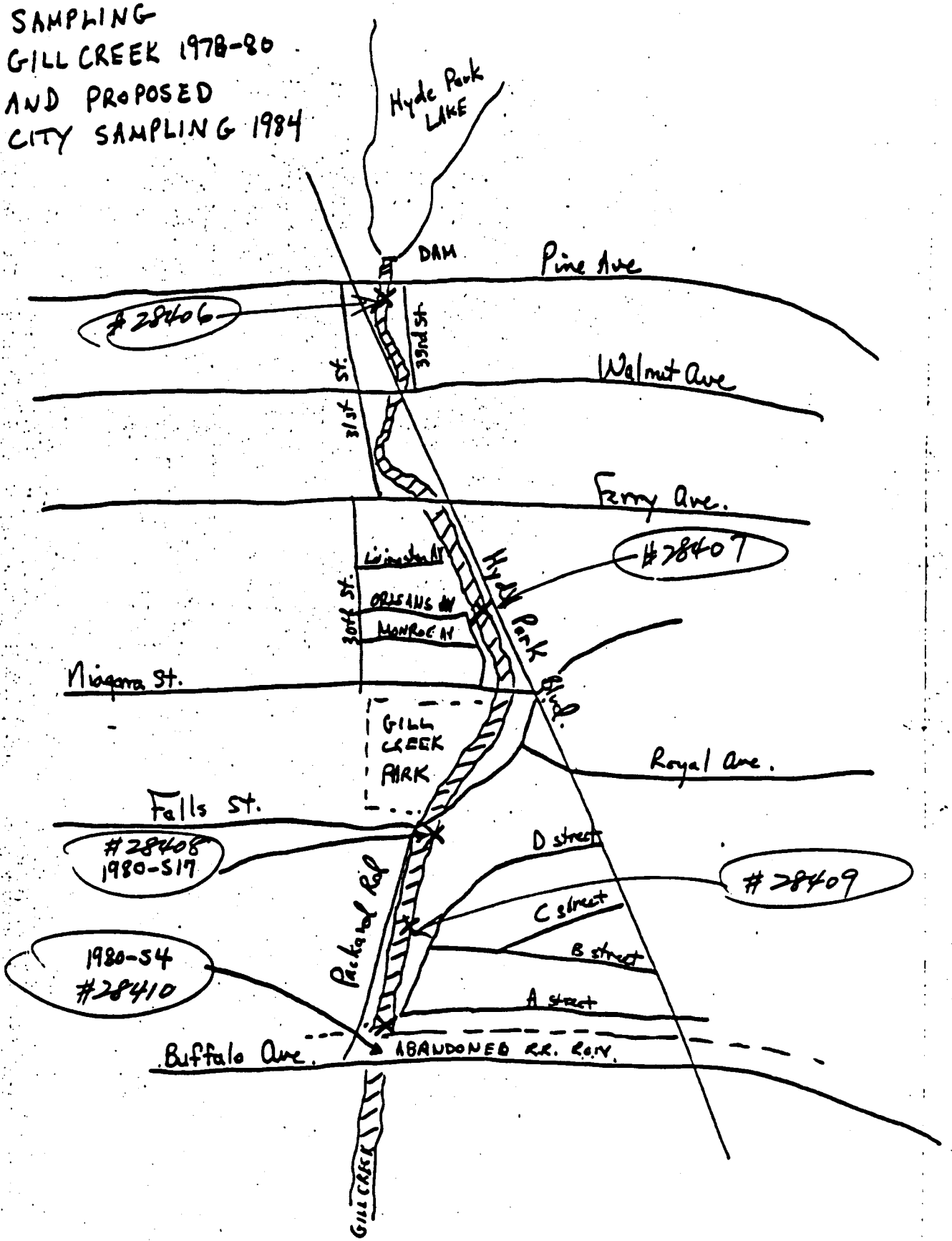
detected in any of the samples. The ETC Laboratory used the standard packed column for pesticides and PCB's. The PCB's were not detected at the detection limit 5 ppm. Toxaphene was found in all samples in 1-3 ppm range. Per my phone converation with ETC Lab, they are using one retention time (major peak) instead of pattern recogization. They recommended that GC/MS be used to confirm the compound. The GC/MS in the Environmental Lab will not be able to detect the compound below the 10 ppm range. I called the Sales Representative, Mike Bonomo several times regarding re-analysis of sample #28410 on GC/MS to confirm this compound. He has not called me back yet.

JW:dc
Att.
cc: W. Garrow
S.V. Smith
Lab

GILL CREEK SAMPLES

#28406	#1	Core grab taken at 9:30 AM from south of the Pine Avenue Bridge. Composite cores from points 1A, 1B, and 1C.
#28407	#2	Core grab taken at 10:45 AM from Hyde Park Blvd. and Orleans Avenue. Composite the sample cores from 2A, 2B and 2C.
#28408	#3	Core grab taken at 11:10 AM from south of Falls Street Bridge. Composite the core samples from point 3A, 3B, and 3C.
#28409	#4	Core grab taken at 11:30 AM from the B Street between Falls Street and Buffalo Avenue. Composite the core samples from points 4A, 4B, and 4C.
#28410	#5	Core grab at 12:00 PM from 25 feet north of Buffalo Avenue. Composite core samples 5A, 5B, and 5C.

DEC SEDIMENT SAMPLING GILL CREEK 1978-80 AND PROPOSED CITY SAMPLING 1984



AND PROPOSED CITY SAMPLING 1984

N ↑	"A" WEST SIDE	"B" CENTER	C EAST SIDE	COMMENTS
#1 So. of Pine Ave. Bridge Located & Staked	① 29½"	① 40"	① 35"	MEAS FROM BRIDGE "A" OF SEDIMENT
	21"	26"	26"	11-1-84 9:30AM
#2 Hyde Park Blvd at Orleans Ave	① 18"	—	—	
	13'12"	11"	9½"	11-1-84 Rocky Bottom 10:45
#3 1980-$17 S. of Falls St. Bridge	① 26¾"	① 21"	① 14"	MEAS FROM BRIDGE
	10½" + 10" of Sediment	10" + 7" of Sediment	10" + 6" of Sediment	11-1-84 11:10AM
#4 B. St between Falls St & Buffalo Ave.	① —	—	① 15"	
	8" + 15" Sediment	13" + 14" of Sediment	13" + 16 of Sediment	11-1-84 11:30
#5 1980-$4 25Ft North of Buffalo Ave Bridge	① 8"	9"	9"	Rocky Bottom: Meas From Bridge
	Sample near bank Rock Bottom-Hi Tide	Rocky Bottom	Sample near bank Rocky Bottom Hi Tide	Sampled at Banks 11-1-84 12:00

① PRELIMINARY MEAS 10-12-84 - SURVEY ONLY NO SAMPLES

TABLE I

LEACHATE FROM GILL CREEK SOIL SAMPLES

Analyzed by ETC Laboratory

PARAMETERS mg/kg by Wet Wt.	#1 #28406 Leach F7561	#2 #28407 Leach F7562	#3 #28408 Leach F7565	#4 #28409 Leach F7563	#5 #28410 Leach F7564	Method Detection Limit mg/kg
Aldrin	ND	BMDL	ND	BMDL	BMDL	0.001
Alpha-BHC	ND	BMDL	ND	BMDL	0.0036	0.001
Beta-BHC	ND	ND	ND	BMDL	BMDL	0.001
Gamma-BHC	ND	BMDL	ND	ND	BMDL	0.001
Delta-BHC	ND	BMDL	ND	BMDL	BMDL	0.001
Chlordane	ND	ND	ND	ND	ND	0.005
4,4'-DDT	ND	ND	ND	BMDL	ND	0.001
4,4'-DDE	ND	ND	ND	ND	ND	0.001
4,4'-DDD	ND	ND	ND	ND	ND	0.001
Dieldrin	ND	ND	ND	ND	ND	0.001
Endosulfan I	ND	ND	ND	ND	ND	0.001
Endosulfan II	ND	ND	ND	ND	ND	0.001
Endosulfan Sulfate	ND	ND	ND	ND	ND	0.001
Endrin	ND	ND	ND	ND	ND	0.001
Endrin Aldehyde	ND	ND	ND	ND	ND	0.001
Heptachlor	ND	ND	ND	ND	ND	0.001
Heptachlor epoxide	ND	ND	ND	ND	ND	0.001
Toxaphene	ND	ND	ND	ND	ND	0.005
Methoxy Chlor	ND	ND	ND	ND	ND	0.050
Arochlor 1242	ND	ND	ND	ND	ND	0.001
Arochlor 1254	ND	ND	ND	ND	ND	0.001
Arochlor 1260	ND	ND	ND	ND	ND	0.001
Arochlor 1248	ND	ND	ND	ND	ND	0.001
Arochlor 1232	ND	ND	ND	ND	ND	0.001

TABLE I (Cont'd)

PARAMETERS mg/kg by wt/wt.	#28406 Leach F7561	#28407 Leach F7562	#28408 Leach F7565	#24809 Leach F7563	#24810 Leach F7564	Method Detection Limit mg/kg
Arochlor 1221	ND	ND	ND	ND	ND	0.001
Arochlor 1016	ND	ND	ND	ND	ND	0.001

TABLE II

LEACHATE FROM GILL CREEK SOIL SAMPLES

PARAMETERS Wet wt. (ppm) mg/kg	#28406 Leach F7561	#28407 leach F7562	#28408 Leach F7565	#28409 Leach F7563	#28410 Leach F7564	RCRA Alert Level (ppm)	Method Detection Limit
Arsenic	<1.0	<1.0	<1.0	<1.0	<1.0	5	1.0
Barium	<5.0	<5.0	<5.0	<5.0	<5.0	100	5.0
Cadmium	<0.2	<0.20	<0.20	<0.20	<0.20	1	0.20
Chromium	<1.0	<1.0	<1.0	<1.0	<1.0	5	1.0
Lead	<1.0	<1.0	<1.0	<1.0	<1.0	5	1.0
Mercury	<0.003	<0.003	<0.003	<0.003	<0.003	0.2	0.003
Selenium	<0.30	<0.30	<0.30	<0.30	<0.30	1	0.30
Silver	<0.20	<0.20	<0.20	<0.20	<0.20	5	0.20
Zinc	0.56	0.85	3.2	2.80	2.60	NA	NA
2,4-D	<10	<10	<10	<10	~~<10~~ 0.05	10	~~10~~ 0.05
2,4,5-TP (Silvex)	<1.0	<1.0	<1.0	<1.0	~~<1.0~~ 0.005	1.0	~~1~~ 0.005

Jim Wilding

Table III

ETC Laboratory — Gill Creek Soil Samples — VOLATILE ORGANICS by GC/MS — Method: SW846

PRIORITY POLLUTANTS (All Results ↑ check units)	#28406 F7556	#28407 F7557	#28408 F7560	#28409 F7558	#28410 F7559	Detection Limit
Chloromethane	ND	ND	ND	ND	ND	50
Bromomethane	ND	ND	ND	ND	ND	50
Vinyl Chloride #7	ND	ND	ND	ND	ND	50
Chloroethane	ND	ND	ND	ND	ND	50
Methylene Chloride #7	PBL	PBL	ND	PBL	ND	50
1,1-dichloroethylene #7	ND	ND	ND	ND	ND	50
1,1-dichloroethane	ND	ND	ND	ND	ND	50
Trans-1,2-dichloroethylene #7	ND	ND	ND	ND	ND	50
Chloroform #7	ND	ND	ND	ND	ND	50
1,2-dichloroethane	ND	ND	ND	ND	ND	50
1,1,1-trichloroethane #7	ND	ND	ND	ND	ND	50
Carbon tetrachloride #7	ND	ND	ND	ND	ND	50
Bromodichloromethane #7	ND	ND	ND	ND	ND	50
1,2-dichloropropane	ND	ND	ND	ND	ND	50
Trans-1,3-dichloropropylene #7	ND	ND	ND	ND	ND	50
Trichloroethylene #7	ND	ND	ND	ND	ND	50
Dibromochloromethane #7	ND	ND	ND	ND	ND	50
1,1,2-trichloroethane #7	ND	ND	ND	ND	ND	50
Cis-1,3-dichloropropylene #7	ND	ND	ND	ND	ND	50
Benzene #7	ND	ND	ND	PBL	ND	50
2-Chloro-ethylvinylether	ND	ND	ND	ND	ND	50
Bromoform #7	ND	ND	ND	ND	ND	50
1,1,2,2-tetrachloroethane #7	ND	ND	ND	ND	ND	50
Tetrachloroethylene #7	95	73	ND	72	57	50
Toluene #7	PBL	76	ND	51	PBL	50
Chlorobenzene #7	ND	PBL	PBL	304	PBL	50
Ethylbenzene #7	ND	ND	ND	ND	ND	50
Acrolein	ND	ND	ND	ND	ND	500
Acrylonitrile	ND	ND	ND	ND	ND	500
1,2-Dichloroethane-D4	85%	78%	80%	91%	69%	
Toluene-D8	86%	87%	78%	92%	102%	
0-Bromofluorobenzene	91%	89%	75%	95%	69%	

TABLE IV

GILL CREEK SOIL SAMPLES

PARAMETERS mg/kg dry wt.	#28406		#28407		#28408		#28409		#28410		DETECTION Limit	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
1,3-DCB	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
1,4-DCB	ND	ND	ND	ND	PBL	PBL	1.53	PBL	0.33	PBL	0.33	.5
1,2-DCB	ND	ND	PBL	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
1,2,4-Trichlorobenzene	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
Phenanthrene	0.335	PBL	PBL	PBL	PBL	PBL	PBL	0.3	0.5	0.7	.33	.2
Dibutylphthalate	ND	7	ND	13	ND	12/6	PBL	13	PBL	3	.33	.5
Fluoranthene	0.36	1	PBL	0.2	PBL	2/3	0.341	2	0.6	3	.33	.2
Pyrene	PBL	2	PBL	1	PBL	0.7/0.4	PBL	2	0.47	6	.33	.2
Bis(2-ethylhexyl)phthalate)	PBL	9	PBL	12	PBL	31/22	PBL	13	0.867	56	.33	.5
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	PBL	ND	.33	.5
Anthracene	PBL	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(a)anthracene	PBL	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(a)pyrene	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(b)fluoranthene	ND	NA	ND	NA	PBL	NA	PBL	NA	0.45	NA	.33	NA
Benzo(ghi)perylene	ND	NA	ND	NA	PBL	NA	ND	NA	0.567	NA	.33	NA
Benzo(k)fluoranthene	ND	NA	PBL	NA	PBL	NA	PBL	NA	PBL	NA	.33	NA
Chrysene	PBL	ND	PBL	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Fluorene	PBL	ND	ND	ND	ND	ND	PBL	ND	PBL	ND	.33	.5
Indeno(1,2,3-c,d)pyrene	ND	NA	ND	NA	ND	NA	ND	NA	0.33	NA	.33	NA
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	PBL	ND	.33	.2
Isophorone	ND	ND	0.53	ND	ND	ND	ND	ND	ND	ND	.33	0.5
Lead	56	40	57	43	95	97/100	100	124	160	122	4	2
Mercury	0.2	<0.5	0.9	1.4	1.0	1.0	5.0	4.6	5.0	3.9	0.3	0.5
Zinc	190	140	400	260	210	280/280	280	380	350	380	0.6	1
Copper	NA	18	NA	22	NA	39/34	NA	69	NA	59	NA	1

TABLE IV (Cont'd)

GILL CREEK SOIL SAMPLES

PARAMETERS mg/kg Dry wt.	#28406		#28407		#28408		#28409		#28410		Detection Limit	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
Nickel	NA	16	NA	17	NA	21/22	NA	33	NA	27	NA	1
Cadmium	NA	0.42	NA	1.4	NA	1.2/1.2	NA	1.3	NA	1.6	NA	0.1
Chromium	NA	16	NA	20	NA	29/34	NA	41	NA	36	NA	1

TABLE V

GILL CREEK SOIL SAMPLES

PARAMETERS mg/kg Dry wt.	#28406		#28407		#28408		#28409		#28410		DETECTION LIMIT	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
a-BHC	ND	ND	PBL	ND	0.25	PBL/PBL	0.49	0.17	0.065	17	0.05	0.1
b-BHC	0.074	ND	PBL	1.6	0.37	ND	0.36	0.34	0.27	13	0.05	0.1
g-BHC	ND	ND	ND	ND	ND	ND	0.65	ND	ND	8	0.05	0.1
d-BHC	PBL	PBL	0.098	ND	0.65	0.14/0.14	1.9	0.5	0.85	2	0.05	0.1
Heptachlor	ND	ND	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.1
Aldrin	PBL	ND	ND	PBL	1.0	PBL/ND	0.4	ND	PBL	PBL	0.05	0.1
Heptachlor Epoxide	ND	ND	ND	PBL	ND	0.1/PBL	ND	PBL	ND	PBL	0.05	0.1
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.1
P,P'-DDE	ND	PBL	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.1
Dieldrin	ND	ND	ND	ND	ND	ND	ND	PBL	ND	ND	0.05	0.1
Endrin	ND	ND	ND	ND	ND	ND	ND	PBL	ND	ND	0.05	0.1
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.1
P,P'-DDD	ND	PBL	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.1
P,P'-DDT	ND	ND	ND	ND	ND	PBL/PBL	ND	PBL	ND	ND	0.05	0.1
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.1
Mirex	NA	ND	NA	ND	NA	PBL	NA	PBL	NA	ND	NA	0.1
Dechlorane Plus	NA	0.24	NA	0.16	NA	0.69/.55	NA	0.77	NA	0.46	NA	0.1
PCB's (mg/kg)	ND	ND	ND	1	ND	PBL	ND	3	ND	1	5	1
Toxaphene	0.68	ND	0.69	ND	1.1	ND	2.8	ND	1.8	ND	0.25	NA
Methoyrchlor	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.05	NA
Chlordane	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.25	NA

City of Niagara Falls
NEW YORK

March 29, 1985

Mr. Robert Speed, P.E.
New York State Department of
Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202

RE: Gill Creek Restoration Projec
Consent Decree, City of
Niagara Falls, Civil
No.: 81-363C

Dear Bob:

After recent telephone discussions with Jim Wilding of NYSDEC Region 9, it appears that some clarifications and minor revisions are needed to the data tables which I sent you with my letter of March 4, 1985 (requesting permission for Gill Creek project). The corrected tables are enclosed with a copy to Jim Wilding, who is reviewing the data for you.

If you have any questions, please call me at 278-8138.

Very truly yours,

DEPARTMENT OF UTILITIES

John R. Westendorf

John R. Westendorf
Environmental Engineer

JRW:mo
cc: D. Jaros/M. Bettino
R. Game
L. Krizan/D. Brooks
N. Marchelos
C. Mooradian
W. Garrow/J Wang

TABLE I

EP TOXICITY LEACHATE FROM GILL CREEK SEDIMENT SAMPLES

Analyzed by ETC Laboratory

PARAMETERS mg/l (ppm)	#28406 EP Leach. F7561	#28407 EP Leach F7562	#28408 EP Leach F7565	#28409 EP Leach F7563	#28410 EP Leach F7564	Method Detection Limit (mg/l)
Aldrin	ND	BMDL	ND	BMDL	BMDI	0.001
Alpha-BHC	ND	BMDL	ND	BMDL	0.0036	0.001
Beta-BHC	ND	ND	ND	BMDL	BMDL	0.001
Gamma-BHC	ND	BMDL	ND	ND	BMDL	0.001
Delta-BHC	ND	BMDL	ND	BMDL	BMDL	0.001
Chlordane	ND	ND	ND	ND	ND	0.005
4,4'-DDT	ND	ND	ND	BMDL	ND	0.001
4,4'-DDE	ND	ND	ND	ND	ND	0.001
4,4'-DDD	ND	ND	ND	ND	ND	0.001
Dieldrin	ND	ND	ND	ND	ND	0.001
Endosulfan I	ND	ND	ND	ND	ND	0.001
Endosulfan II	ND	ND	ND	ND	ND	0.001
Endosulfan Sulfate	ND	ND	ND	ND	ND	0.001
Endrin	ND	ND	ND	ND	ND	0.001
Endrin Aldehyde	ND	ND	ND	ND	ND	0.001
Heptachlor	ND	ND	ND	ND	ND	0.001
Heptachlor epoxide	ND	ND	ND	ND	ND	0.001
Toxaphene	ND	ND	ND	ND	ND	0.005
Methoxy Chlor	ND	ND	ND	ND	ND	0.050
Arochlor 1242	ND	ND	ND	ND	ND	0.001
Arochlor 1254	ND	ND	ND	ND	ND	0.001
Arochlor 1260	ND	ND	ND	ND	ND	0.001
Arochlor 1248	ND	ND	ND	ND	ND	0.001
Arochlor 1232	ND	ND	ND	ND	ND	0.001

TABLE I (Cont'd)

PARAMETERS mg/l (ppm)	#28406 EP Leach F7561	#28407 EP Leach F7562	#28408 EP Leach F7565	#24809 EP Leach F7563	#24810 EP Leach F7564	Method Detection Limit (mg/l)
Arochlor 1221	ND	ND	ND	ND	ND	0.001
Arochlor 1016	ND	ND	ND	ND	ND	0.001

TABLE II

EP TOXICITY LEACHATE FROM GILL CREEK SEDIMENT SAMPLES

PARAMETERS mg/l (ppm)	#28406 EP Leach F7561	#28407 EP Leach F7562	#28408 EP Leach F7565	#28409 EP Leach F7563	#28410 EP Leach F7564	RCRA Alert Level (ppm)	Method Detection Limit (mg/l)
Arsenic	<1.0	<1.0	<1.0	<1.0	<1.0	5	1.0
Barium	<5.0	<5.0	<5.0	<5.0	<5.0	100	5.0
Cadmium	<0.2	<0.20	<0.20	<0.20	<0.20	1	0.20
Chromium	<1.0	<1.0	<1.0	<1.0	<1.0	5	1.0
Lead	<1.0	<1.0	<1.0	<1.0	<1.0	5	1.0
Mercury	<0.003	<0.003	<0.003	<0.003	<0.003	0.2	0.003
Selenium	<0.30	<0.30	<0.30	<0.30	<0.30	1	0.30
Silver	<0.20	<0.20	<0.20	<0.20	<0.20	5	0.20
Zinc	0.56	0.85	3.2	2.80	2.60	NA	NA
2,4-D	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	10	0.05
2,4,5-TP (Silvex)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.0	0.005

Table III

ETC Laboratory — Gill Creek Sediment Samples — VOLATILE ORGANICS by GC/MS — Method: SW846

PRIORITY POLLUTANTS (All Results µg/kg (ppb) wet wt.)	#28406 F7556	#28407 F7557	#28408 F7560	#28409 F7558	#28410 F7559	Detection Limit (ppb)
Chloromethane	ND	ND	ND	ND	ND	50
Bromomethane	ND	ND	ND	ND	ND	50
Vinyl Chloride #7	ND	ND	ND	ND	ND	50
Chloroethane	ND	ND	ND	ND	ND	50
Methylene Chloride #7	PBL	PBL	ND	PBL	ND	50
1,1-dichloroethylene #7	ND	ND	ND	ND	ND	50
1,1-dichloroethane	ND	ND	ND	ND	ND	50
Trans-1,2-dichloroethylene #7	ND	ND	ND	ND	ND	50
Chloroform #7	ND	ND	ND	ND	ND	50
1,2-dichloroethane	ND	ND	ND	ND	ND	50
1,1,1-trichloroethane #7	ND	ND	ND	ND	ND	50
Carbon tetrachloride #7	ND	ND	ND	ND	ND	50
Bromodichloromethane #7	ND	ND	ND	ND	ND	50
1,2-dichloropropane	ND	ND	ND	ND	ND	50
Trans-1,3-dichloropropylene #7	ND	ND	ND	ND	ND	50
Trichloroethylene #7	ND	ND	ND	ND	ND	50
Dibromochloromethane #7	ND	ND	ND	ND	ND	50
1,1,2-trichloroethane #7	ND	ND	ND	ND	ND	50
Cis-1,3-dichloropropylene #7	ND	ND	ND	ND	ND	50
Benzene #7	ND	ND	ND	PBL	ND	50
2-Chloro-ethylvinylether	ND	ND	ND	ND	ND	50
Bromoform #7	ND	ND	ND	ND	ND	50
1,1,2,2-tetrachloroethane #7	ND	ND	ND	ND	ND	50
Tetrachloroethylene #7	95	73	ND	72	59	50
Toluene #7	PBL	76	ND	51	PBL	50
Chlorobenzene #7	ND	PBL	PBL	304	PBL	50
Ethylbenzene #7	ND	ND	ND	ND	ND	50
Acrolein	ND	ND	ND	ND	ND	500
Acrylonitrile	ND	ND	ND	ND	ND	500
Surrogate Stds Recovery (QC):						
1,2-Dichloroethane-D_4	85%	78%	80%	91%	69%	
Toluene-D_8	86%	87%	78%	92%	102%	
O-Bromofluorobenzene	91%	89%	75%	95%	69%	

TABLE IV

GILL CREEK SEDIMENT SAMPLES

PARAMETERS ug/kg (ppm) dry weight	#28406		#28407		#28408		#28409		#28410		DETECTION Limit	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
1,3-DCB	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
1,4-DCB	ND	ND	ND	ND	PBL	PBL	1.53	PBL	0.33	PBL	0.33	.5
1,2-DCB	ND	ND	PBL	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
1,2,4-Trichlorobenzene	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
Phenanthrene	0.335	PBL	PBL	PBL	PBL	PBL	PBL	0.3	0.5	0.7	.33	.2
Dibutylphthalate	ND	7	ND	13	ND	12/6	PBL	13	PBL	3	.33	.5
Fluoranthene	0.36	1	PBL	0.2	PBL	2/3	0.341	2	0.6	3	.33	.2
Pyrene	PBL	2	PBL	1	PBL	0.7/0.4	PBL	2	0.47	6	.33	.2
Bis(2-ethylhexyl)phthalate)	PBL	9	PBL	12	PBL	31/22	PBL	13	0.867	56	.33	.5
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	PBL	ND	.33	.5
Anthracene	PBL	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(a)anthracene	PBL	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(a)pyrene	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(b)fluoranthene	ND	NA	ND	NA	PBL	NA	PBL	NA	0.45	NA	.33	NA
Benzo(ghi)perylene	ND	NA	ND	NA	PBL	NA	ND	NA	0.567	NA	.33	NA
Benzo(k)fluoranthene	ND	NA	PBL	NA	PBL	NA	PBL	NA	PBL	NA	.33	NA
Chrysene	PBL	ND	PBL	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Fluorene	PBL	ND	ND	ND	ND	ND	PBL	ND	PBL	ND	.33	.5
Indeno(1,2,3-c,d)pyrene	ND	NA	ND	NA	ND	NA	ND	NA	0.33	NA	.33	NA
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	PBL	ND	.33	.2
Isophorone	ND	ND	0.53	ND	ND	ND	ND	ND	ND	ND	.33	0.5
Lead	56	40	57	43	95	97/100	100	124	160	122	4	2
Mercury	0.2	∠0.5	0.9	1.4	1.0	1.0	5.0	4.6	5.0	3.9	0.3	0.5
Zinc	190	140	400	260	210	280/280	280	380	350	380	0.6	1
Copper	NA	18	NA	22	NA	39/34	NA	69	NA	59	NA	1

TABLE IV (Cont'd)

GILL CREEK SEDIMENT SAMPLES

PARAMETERS mg/kg (ppm) dry weight	#28406		#28407		#28408		#28409		#28410		Detection Limit	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
Nickel	NA	16	NA	17	NA	21/22	NA	33	NA	27	NA	1
Cadmium	NA	0.42	NA	1.4	NA	1.2/1.2	NA	1.3	NA	1.6	NA	0.1
Chromium	NA	16	NA	20	NA	29/34	NA	41	NA	36	NA	1

TABLE V

CILL CREEK SEDIMENT SAMPLES

PARAMETERS mg/kg (ppm) dry weight	#28406		#28407		#28408		#28409		#28410		DETECTION LIMIT	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
a-BHC	ND	ND	PBL	ND	0.25	PBL/PBL	0.49	0.17	0.065	17	0.05	0.1
b-BHC	0.074	ND	PBL	1.6	0.37	ND	0.36	0.34	0.27	13	0.05	0.1
g-BHC	ND	ND	ND	ND	ND	ND	0.65	ND	ND	8	0.05	0.1
d-BHC	PBL	PBL	0.098	ND	0.65	0.14/0.14	1.9	0.5	0.85	2	0.05	0.1
Heptachlor	ND	ND	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.1
Aldrin	PBL	ND	ND	PBL	1.0	PBL/ND	0.4	ND	PBL	PBL	0.05	0.1
Heptachlor Epoxide	ND	ND	ND	PBL	ND	0.1/PBL	ND	PBL	ND	PBL	0.05	0.1
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.1
P,P'-DDE	ND	PBL	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.1
Dieldrin	ND	ND	ND	ND	ND	ND	ND	PBL	ND	ND	0.05	0.1
Endrin	ND	ND	ND	ND	ND	ND	ND	PBL	ND	ND	0.05	0.1
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.1
P,P'-DDD	ND	PBL	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.1
P,P'-DDT	ND	ND	ND	ND	ND	PBL/PBL	ND	PBL	ND	ND	0.05	0.1
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.1
Mirex	NA	ND	NA	ND	NA	PBL	NA	PBL	NA	ND	NA	0.1
Dechlorane Plus	NA	0.24	NA	0.16	NA	0.69/.55	NA	0.77	NA	0.46	NA	0.1
PCB's (mg/kg)	ND	ND	ND	1	ND	PBL	ND	3	ND	1	5	1
Toxaphene	0.68	ND	0.69	ND	1.1	ND	2.8	ND	1.8	ND	0.25	NA
Methoyrchlor	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.05	NA
Chlordane	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.25	NA

TABLE IV

GILL CREEK SEDIMENT SAMPLES

PARAMETERS mg/kg (ppm) dry weight	#28406		#28407		#28408		#28409		#28410		DETECTION Limit	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
1,3-DCB	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
1,4-DCB	ND	ND	ND	ND	PBL	PBL	1.53	PBL	0.33	PBL	0.33	.5
1,2-DCB	ND	ND	PBL	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
1,2,4-Trichlorobenzene	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
Phenanthrene	0.335	PBL	PBL	PBL	PBL	PBL	PBL	0.3	0.5	0.7	.33	.2
Dibutylphthalate	ND	7	ND	13	ND	12/6	PBL	13	PBL	3	.33	.5
Fluoranthene	0.36	1	PBL	0.2	PBL	2/3	0.341	2	0.6	3	.33	.2
Pyrene	PBL	2	PBL	1	PBL	0.7/0.4	PBL	2	0.47	6	.33	.2
Bis(2-ethylhexyl)phthalate)	PBL	9	PBL	12	PBL	31/22	PBL	13	0.867	56	.33	.5
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	PBL	ND	.33	.5
Anthracene	PBL	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(a)anthracene	PBL	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(a)pyrene	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(b)fluoranthene	ND	NA	ND	NA	PBL	NA	PBL	NA	0.45	NA	.33	NA
Benzo(ghi)perylene	ND	NA	ND	NA	PBL	NA	ND	NA	0.567	NA	.33	NA
Benzo(k)fluoranthene	ND	NA	PBL	NA	PBL	NA	PBL	NA	PBL	NA	.33	NA
Chrysene	PBL	ND	PBL	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Fluorene	PBL	ND	ND	ND	ND	ND	PBL	ND	PBL	ND	.33	.5
Indeno(1,2,3-c,d)pyrene	ND	NA	ND	NA	ND	NA	ND	NA	0.33	NA	.33	NA
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	PBL	ND	.33	.2
Isophorone	ND	ND	0.53	ND	ND	ND	ND	ND	ND	ND	.33	0.5
Lead	56	40	57	43	95	97/100	100	124	160	122	4	2
Mercury	0.2	∠0.5	0.9	1.4	1.0	1.0	5.0	4.6	5.0	3.9	0.3	0.5
Zinc	190	140	400	260	210	280/280	280	380	350	380	0.6	1
Copper	NA	18	NA	22	NA	39/34	NA	69	NA	59	NA	1

TABLE IV (Cont'd)

GILL CREEK SEDIMENT SAMPLES

PARAMETERS mg/kg (ppm) dry weight	#28406		#28407		#28408		#28409		#28410		Detection Limit	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
Nickel	NA	16	NA	17	NA	21/22	NA	33	NA	27	NA	1
Cadmium	NA	0.42	NA	1.4	NA	1.2/1.2	NA	1.3	NA	1.6	NA	0.1
Chromium	NA	16	NA	20	NA	29/34	NA	41	NA	36	NA	1

TABLE V

GILL CREEK SEDIMENT SAMPLES

PARAMETERS mg/kg (ppm) dry weight	#28406		#28407		#28408		#28409		#28410		DETECTION LIMIT	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
a-BHC	ND	ND	PBL	ND	0.25	PBL/PBL	0.49	0.17	0.065	17	0.05	0.1
b-BHC	0.074	ND	PBL	1.6	0.37	ND	0.36	0.34	0.27	13	0.05	0.1
g-BHC	ND	ND	ND	ND	ND	ND	0.65	ND	ND	8	0.05	0.1
d-BHC	PBL	PBL	0.098	ND	0.65	0.14/0.14	1.9	0.5	0.85	2	0.05	0.1
Heptachlor	ND	ND	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.1
Aldrin	PBL	ND	ND	PBL	1.0	PBL/ND	0.4	ND	PBL	PBL	0.05	0.1
Heptachlor Epoxide	ND	ND	ND	PBL	ND	0.1/PBL	ND	PBL	ND	PBL	0.05	0.1
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.1
P,P'-DDE	ND	PBL	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.1
Dieldrin	ND	ND	ND	ND	ND	ND	ND	PBL	ND	ND	0.05	0.1
Endrin	ND	ND	ND	ND	ND	ND	ND	PBL	ND	ND	0.05	0.1
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.1
P,P'-DDD	ND	PBL	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.1
P,P'-DDT	ND	ND	ND	ND	ND	PBL/PBL	ND	PBL	ND	ND	0.05	0.1
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.1
Mirex	NA	ND	NA	ND	NA	PBL	NA	PBL	NA	ND	NA	0.1
Dechlorane Plus	NA	0.24	NA	0.16	NA	0.69/.55	NA	0.77	NA	0.46	NA	0.1
PCB's (mg/kg)	ND	ND	ND	1	ND	PBL	ND	3	ND	1	5	1
Toxaphene	0.68	ND	0.69	ND	1.1	ND	2.8	ND	1.8	ND	0.25	NA
Methoyrchlor	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.05	NA
Chlordane	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.25	NA

Ministry of the Environment
Ministère de l'Environnement
Ontario

Niagara River Project
Programme de la rivière Niagara

119 King St W
12th Floor - Box 2112
Hamilton Ontario
L8N 3Z9
416/521-7640

119 ouest, rue King
12e étage - Casier 2112
Hamilton (Ontario)
L8N 3Z9
416/521-7640

June 12, 1987

Mr. Richard K. Diamond
Operations Manager
DuPont Company
P. O. Box 787
26th Street & Buffalo Ave.
Niagara Falls, New York
14302

Dear Mr. Diamond:

Re: Impact of Gill Creek on the Niagara River

You are aware that the Ministry has been monitoring the Niagara River for impacts from land-based operations for some time. It is apparent that Gill Creek is one of these areas that can be isolated as contributing contaminants to the river system. Therefore, I have enclosed for your information a copy of an internal memorandum dated April 7, 1987 which includes data from biomonitoring programs carried out in 1983. As you will note, a final report on the 1983 monitoring is anticipated later this year.

Should you have any questions on the enclosed report, please contact me.

Yours truly,

J. Viirland
Niagara River Co-ordinator

Encl.

JV:cm

TAB. with
REA with
ABP with
cc's BJN
[redacted]
DEW
JWC
BSM
"O" + 1 x RPD
file
TBS/ESC
RFS-ESD

Ministry of the Environment
Ministère de l'Environnement

135 St. Clair Avenue West
Suite 100
Toronto, Ontario
M4V 1P5

135 ouest, avenue St. Clair
Bureau 100
Toronto (Ontario)
M4V 1P5

323-4952

April 7, 1987

MEMORANDUM

TO: J. Viirland, Co-ordinator
Niagara River Improvement Team
Hamilton Regional Office

FROM: P.B. Kauss
Senior Environmental Scientist
Great Lakes Section
Water Resources Branch

RE: NIAGARA RIVER BIOMONITORING STUDIES

In recent years, intensive biological monitoring studies have been carried out on the Niagara River by Ministry staff, and this data (up to and including the 1982 field year) was included in the Report of the Niagara River Toxics Committee (NRTC) released in October, 1984.

Since then, annual biomonitoring using Cladophora and young forage fish (Notropis hudsonius) has been continued at many of the sites recommended by the Long Term Monitoring chapter of the NRTC report. In addition, an extensive biomonitoring program was conducted in the river during 1983 by the Ministry's Great Lakes and Aquatic Biology Sections. The objectives of this program were to: (i) provide more detailed definition and information on contaminants source areas identified in the NRTC report; and (ii) further investigate the comparability of the three biota with respect to their use in trace contaminants monitoring.

The 1983 biomonitoring program in the Niagara River nearshore waters was conducted at 27 locations, 20 of which were concentrated in areas of suspected contaminant inputs along the New York mainland shore. At each of the 20 sites, caged clams (Elliptio complanata) were exposed for 5 consecutive 3-week exposure periods to determine contaminant availability and temporal variation in contaminant inputs. Clams were also exposed for the full 15 weeks period at all stations. Water samples were collected at all stations at 3-week intervals. Native Cladophora and young-of-the-year spottail shiners were also collected (in late June and late September, respectively) at as many of these locations as possible. A final report on these data is anticipated later this year.

Some of the 1983 study data (see Figure 2 regarding total PCBs) and examples of the long-term monitoring data were presented by me at the International Symposium on Toxics in the Niagara held in Toronto, February 3-6. Other 1983 data pertaining to alpha-BHC, mirex and mercury levels in water, Cladophora, clams and spottail shiners are shown in Figures 3 to 5. These, as well the PCBs comparisons, were communicated to you previously in a memo from myself, M. Jackson and K. Suns. Figures 6 to 8 indicate the spatial distribution of additional organochlorine contaminants in clams from one of the 3-week exposures (August 24 - September 14, 1983). Values plotted are arithmetic means and maximum and minimum values of the number of replicates analyzed per site. Means were calculated using all data, and replicates with no quantifiable concentrations (<w) were assigned a value of half the method detection limit.

The combined water and biota data from 1983 indicate elevated levels and biological availability of contaminants such as mercury, polychlorinated biphenyls (PCBs), mirex, hexachlorocyclohexane (BHC), octachlorostyrene (OCS) hexachlorobenzene (HCB), hexachlorobutadiene (HCBD), pentachlorobenzene (QCB), trichlorobenzene (TCB), tetrachlorobenzene (TeCB) and trichlorotoluene (TCT) at the following areas or sites:

Love Canal/102nd St./Griffon Park - mercury, OCS.

Little River (Cayuga Creek) - α-BHC, PCBs, mirex, QCB.

S-Area/Occidental 003 outfall - α-BHC, PCBs, mirex, HCB, HCBD, OCS, QCB, 1,2,4,5-TeCB, 1,2,4-TCB, 2,3,6-TCT.

Upstream of Gill Creek - 1,2,3,4-TeCB.

Gill Creek - mercury, α-BHC, PCBs, 2,3,6-TCT.

Upstream of Bloody Run Creek - mercury.

Bloody Run Creek/Hyde Park - α-BHC, PCBs, mirex, HCB, OCS, QCB, 1,2,3,4-TeCB, 2,3,6-TCT.

The possible sources of these contaminants are numerous. These include the many industrial discharges to the river section covered by stations 6 to 18 (Search and Rescue Station upstream to Occidental dock in Niagara

Falls). For example, Occidental's outfall 003 (Figure 1B), had an immediate impact on the nearshore downstream waters as shown by elevated conductivity values (Figure 9).

Records also indicate that contaminated materials (e.g. BHCs or BHC cake, PCBs, mirex, mercury brine sludge and chlorinated benzenes) have been disposed of at a number of sites in the Niagara Falls, N.Y. area - either in close proximity to the river or in its drainage basin. Furthermore, a number of these sites are believed to have contributed or are contributing contaminants to the Niagara River (NRTC, 1984).

These results further confirm some of the findings reported by the NRTC and emphasize the impacts of point sources and landfills on the aquatic environment of the Niagara River. They also show that biological monitoring can provide an enhanced ability to detect and monitor contaminants inputs, even in locations where these materials may not be detectable by routine sampling/analytical procedures for water samples or when their concentrations are highly variable temporally.

As you are aware, an extensive Ministry biological monitoring program has been proposed for both the Ontario and New York sides of the Niagara River this summer. This will: (i) update our existing 1983 data base on contaminants sources as well as identify additional sources along the river, and (ii) will serve as a basis for evaluating the effectiveness of the implementation plan for cleanup of the Niagara River, as stated in the Declaration of Intent.

If you have any questions regarding the existing biomonitoring data, please do not hesitate to call me or Janette Anderson (323-4953).

Victor Kouns

PBK/eal
A0200B/GL-6
Att.
cc: F.C. Fleischer
Y. Hamdy, Attn: J. Anderson
K. Suns, M. Jackson, A. Hayton

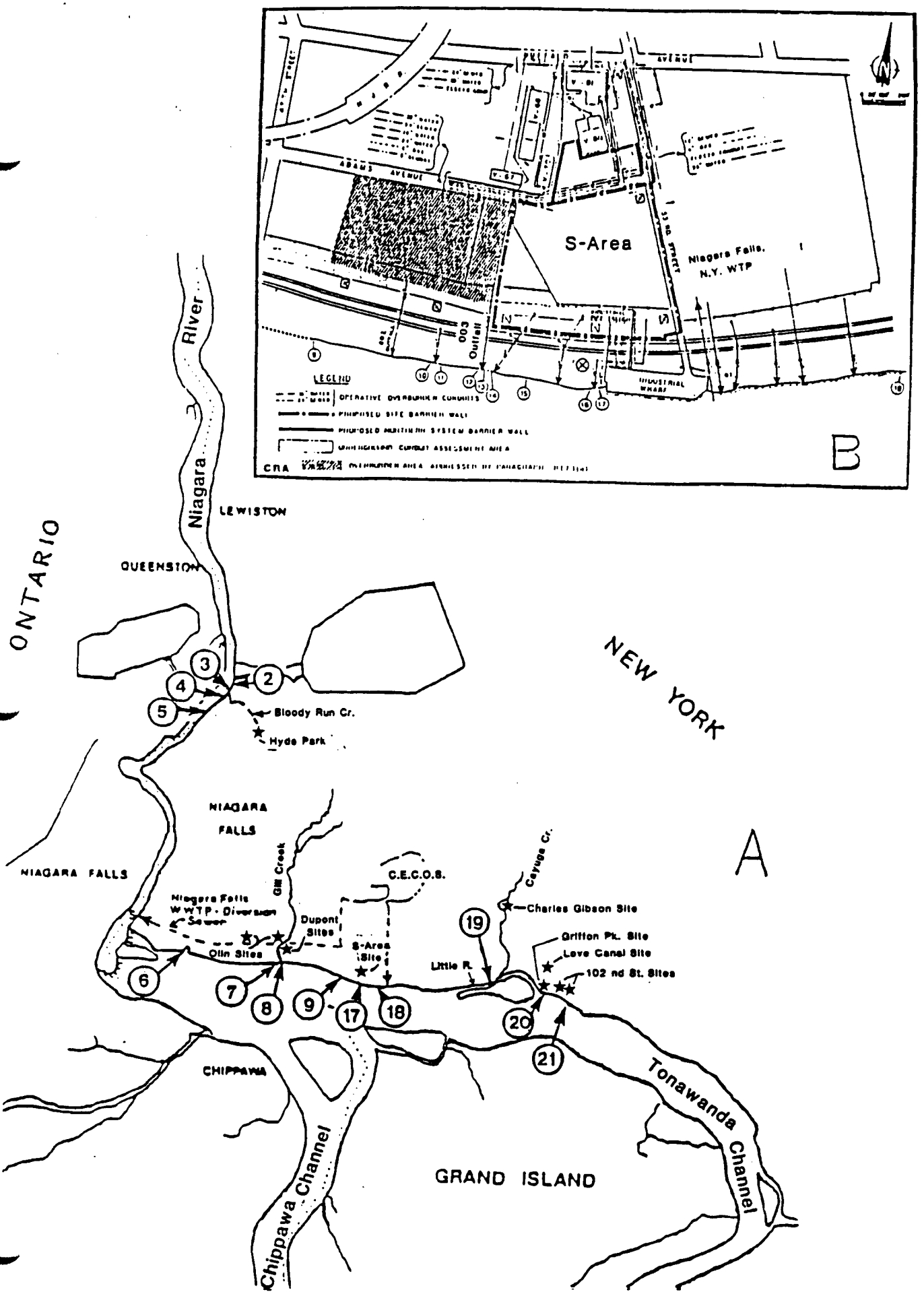


FIGURE 1 1983 BIOMONITORING AND WATER SAMPLING STATIONS (O)

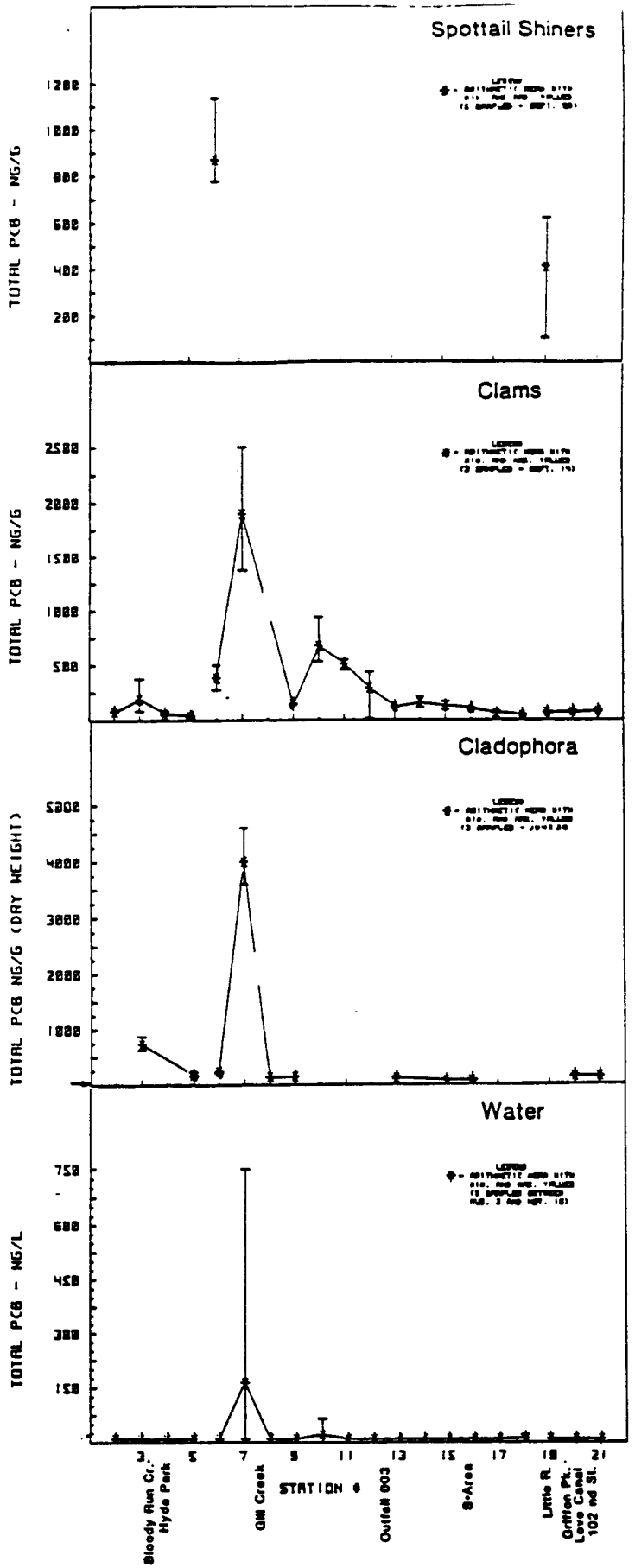


FIGURE 2 TOTAL PCBs IN WATER, CLADOPHORA, CLAMS AND SPOTTAIL SHINERS
Detection limit is 20 ng/l for water; 20 ng/g for biota.
Objectives for water (Provincial) and whole fish
(Agreement) are 1 ng/l and 100 ng/g, respectively.

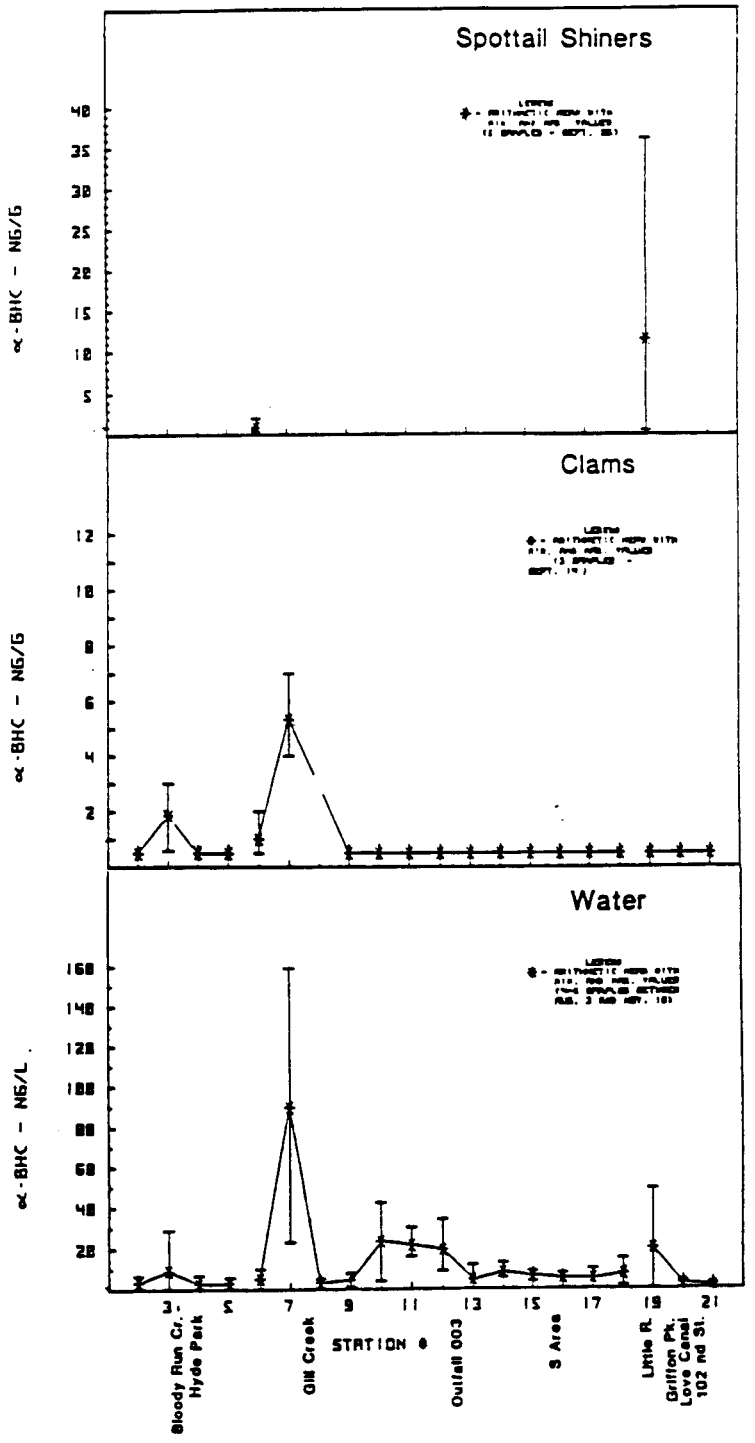


FIGURE 3 ALPHA-BHC IN WATER, CLAMS, AND SPOTTAIL SHINERS
Detection limit is 1 ng/l for water; 1 ng/g in biota.
Criterion for water (USEPA) is 10 ng/l.

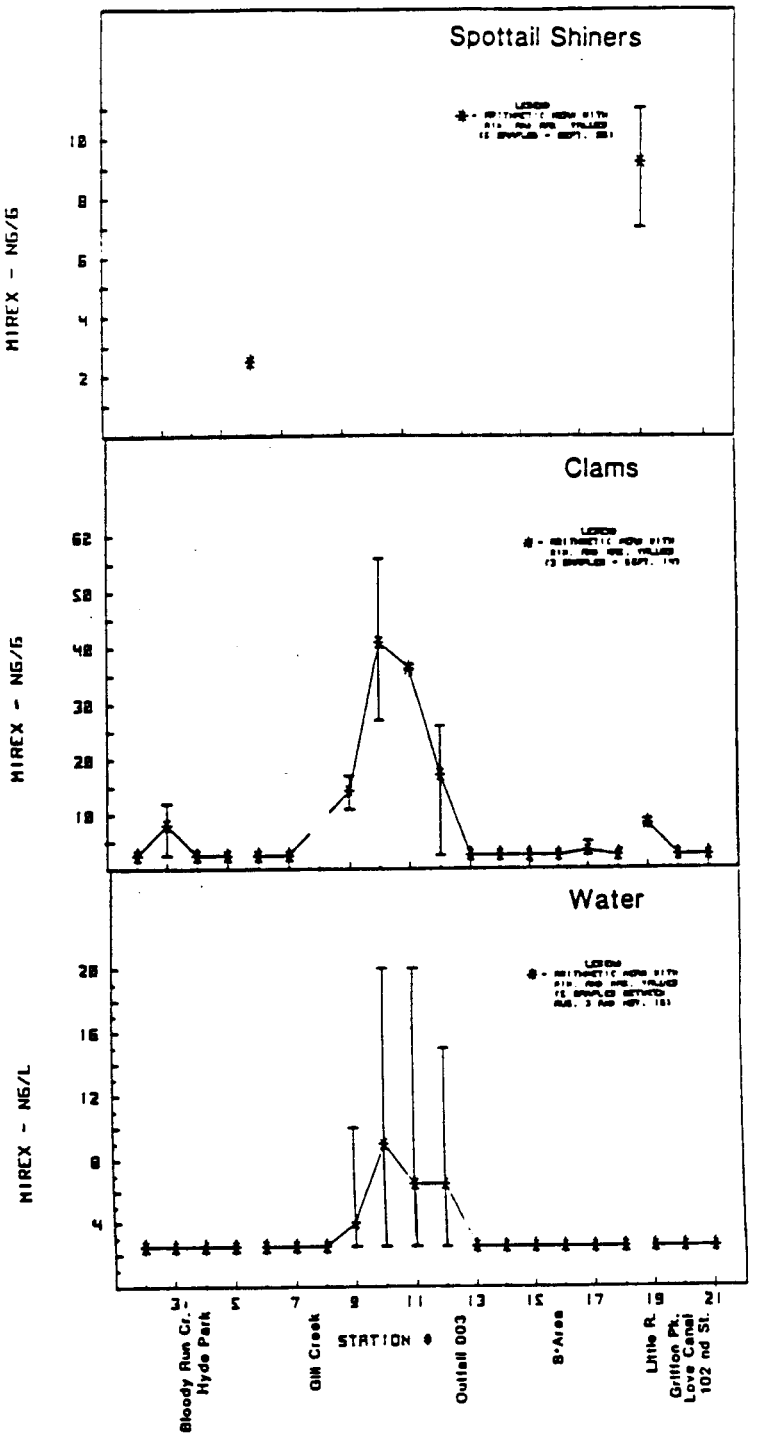


FIGURE 4 MIREX IN WATER, CLAMS AND SPOTTAIL SHINERS
Detection limit is 5 ng/l for water; 5 ng/g for biota.
Objectives for water (Provincial) and whole fish
(Agreement) are 1 ng/l and "not detectable", respectively.

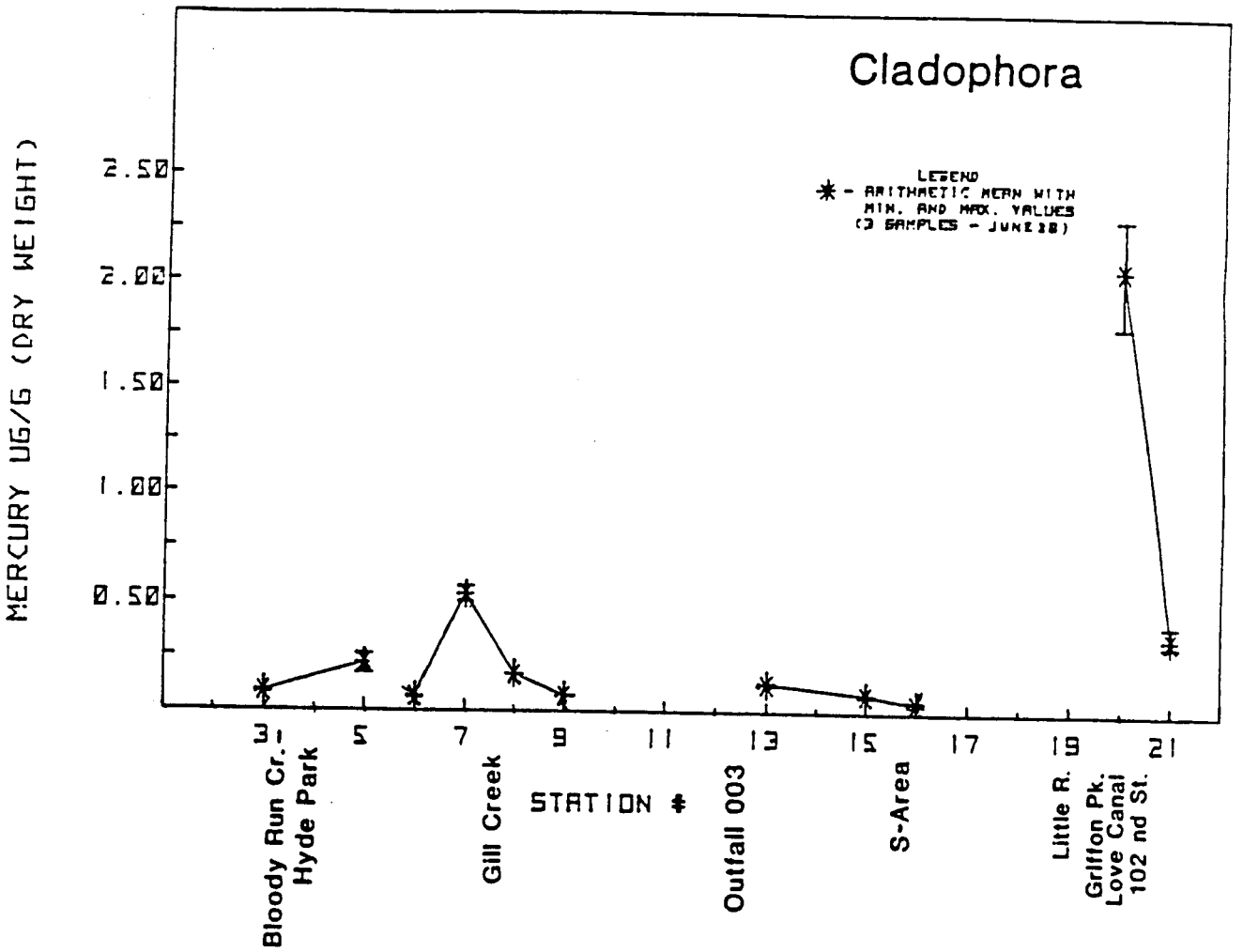


FIGURE 5 MERCURY IN CLADOPHORA
Detection limit is 0.01 ug/g (water samples were not analyzed for mercury or other inorganics).

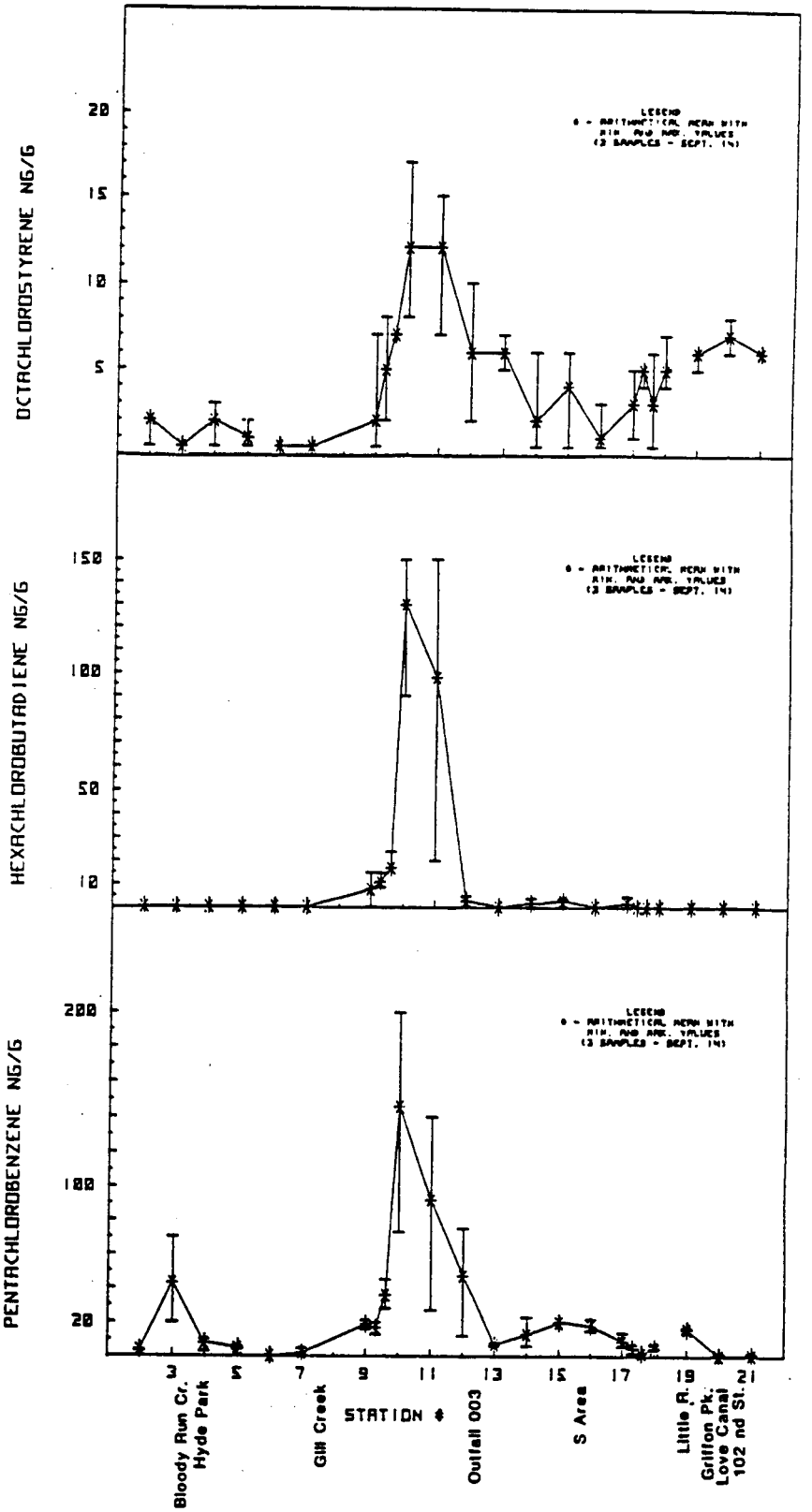


FIGURE 6 OCTACHLOROSTYRENE, HEXACHLOROBUTADIENE AND PENTACHLOROBENZENE IN CLAMS. Detection limits are 1 ng/g for each compound.

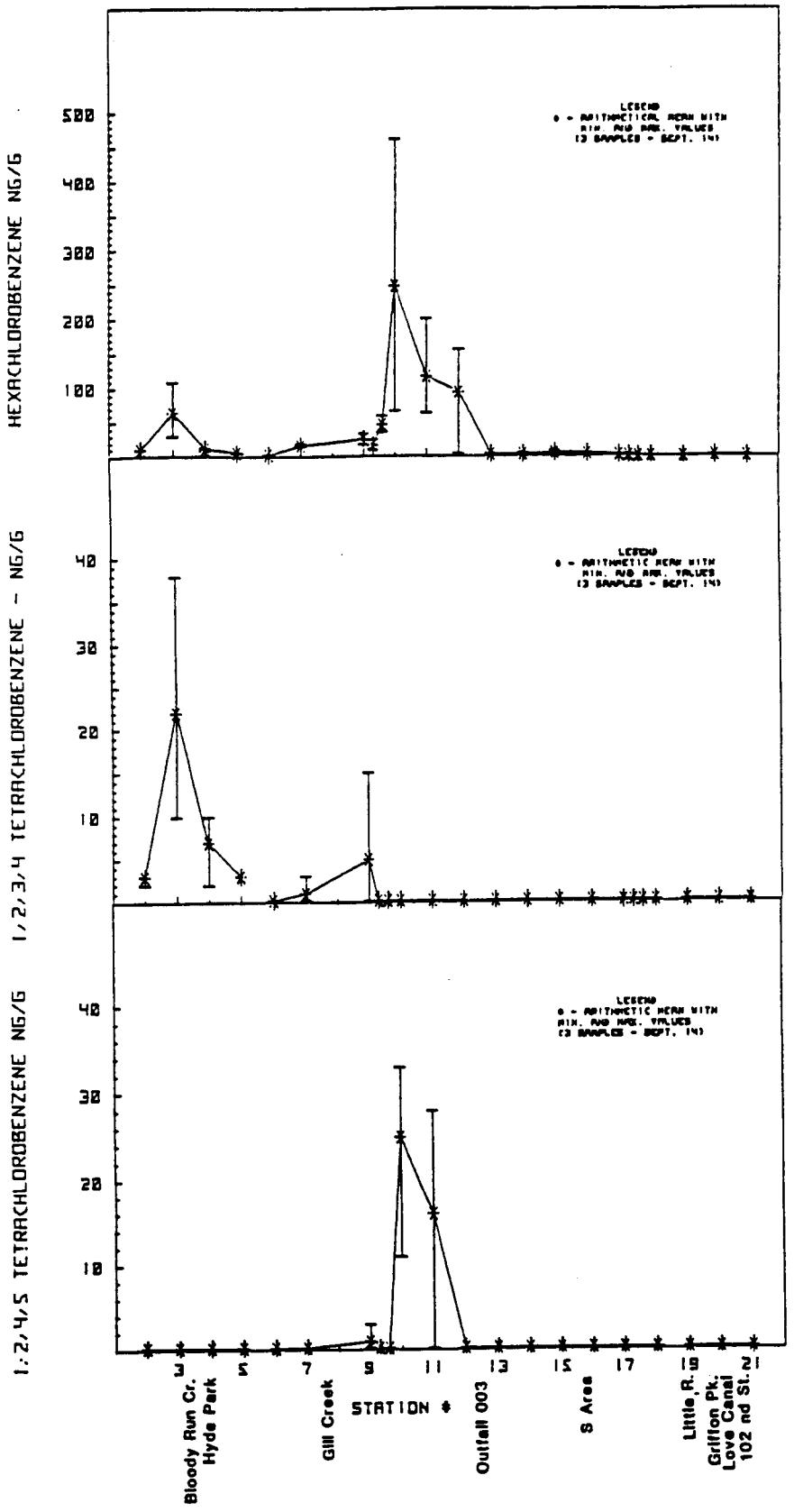


FIGURE 7 HEXACHLOROBENZENE, 1,2,3,4- AND 1,2,4,5-TETRACHLOROBENZENE IN CLAMS. Detection limits are 1, 0.5 and 0.5 ng/g, respectively.

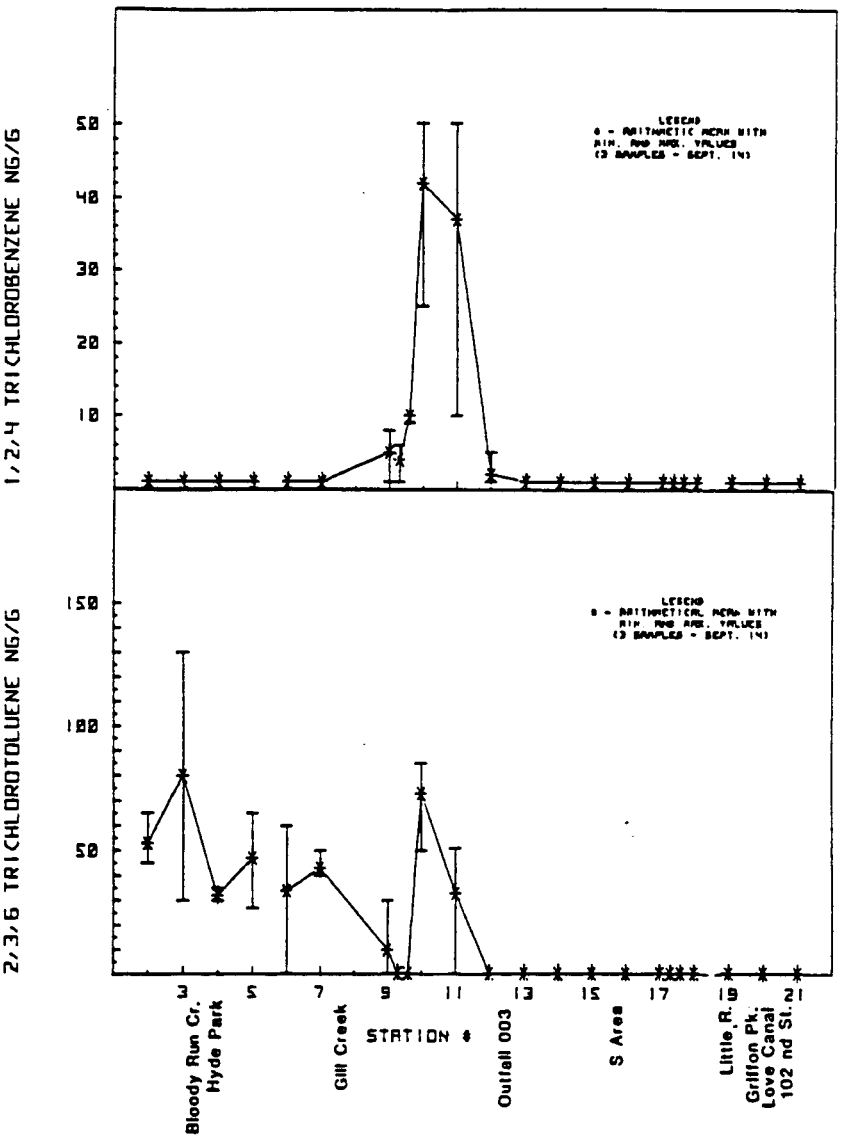


FIGURE 8 1,2,4-TRICHLOROBENZENE AND 2,3,6-TRICHLOROTOLUENE IN CLAMS. Detection limits are 2 and 1 ng/g, respectively.

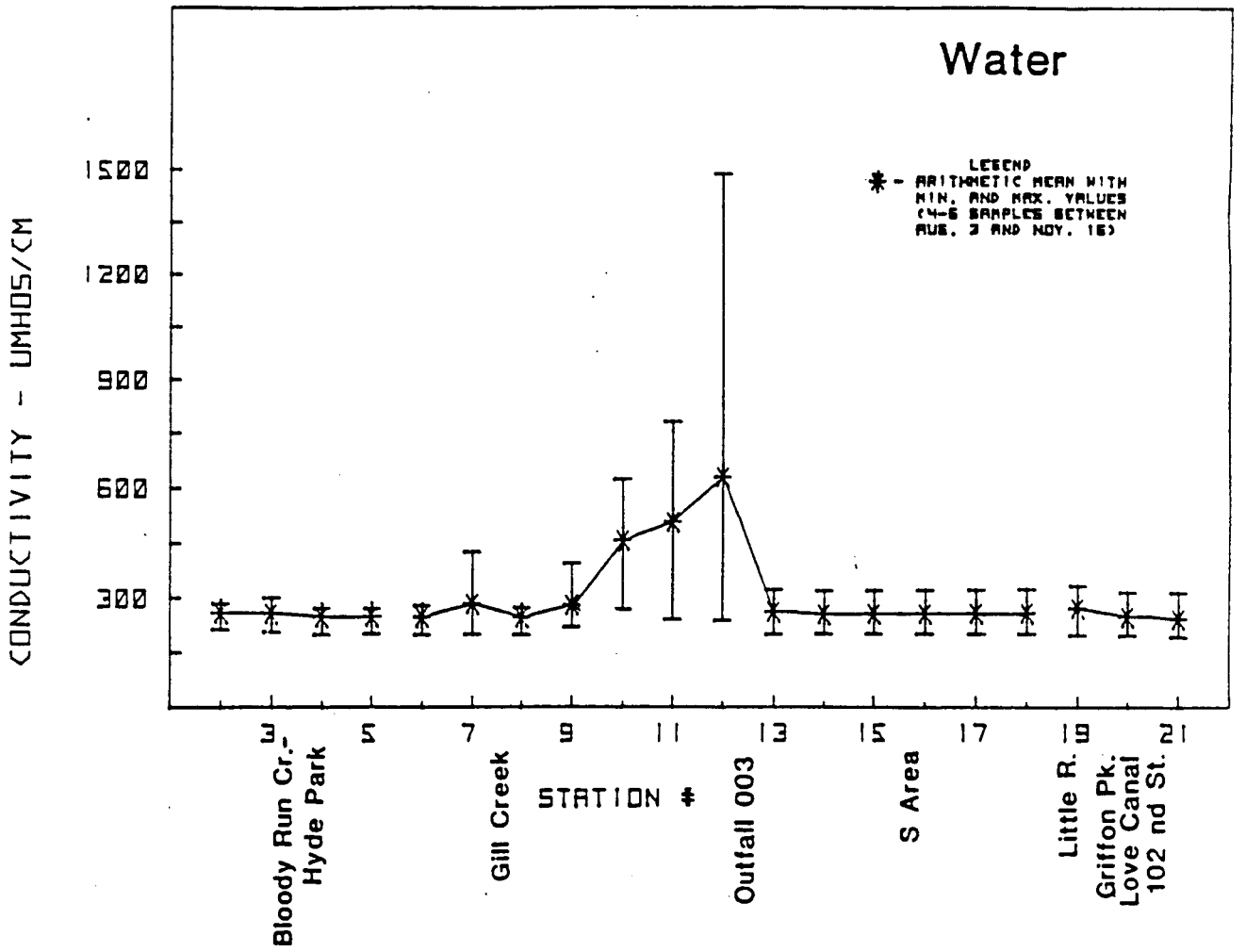


FIGURE 9 CONDUCTIVITY OF WATER SAMPLES (standardized to 25°C.)

CITY OF NIAGARA FALLS

NEW YORK

March 31, 1988

TO: N. Marchelos, D. Bettino

FROM: Walt Garrow (original & one copy)
Utilities Chemist

SUBJECT: Gill Creek Analysis - March 1988

Attached are the raw results from our recent analysis. A more detailed comparison of the results will be made available on request. This note is brief due to the requested quick response.

In comparing the City's results to Ecology & Environment results, multiply the E & E results by 2.1. This is because the E & E results are reported on the sample as received. The City results are based on dry weight (i.e., with water removed). The E & E sample #88-16260 is the same as the City's S-88-0664. This sample was of the top 4-6 inches of sediment. The next sample is E & E #88-16261, the City's S-88-0665, or Gill Creek sediment from 0-36 inches.

Please note that the EP Toxicity test conducted by E & E failed the maximum allowable concentration for Lindane. This is a possible result supported by the City analysis showing high levels of Benzene-hexachloride (BHC) in the same sample. These levels were not found in the upper level sediment. This result would label the material as a "hazardous waste" under RECRA. Purgeable organic compound results also showed 2700 ppb of chlorobenzene in the deeper sample. Both labs also found some levels of PCB in the samples.

(I have attached a copy of the March 4, 1985 report for comparison. That report was on the top 4-6 inches of sediment.)

Att
WG:vr
cc: J. Westendorf
R. Game
J. Wang
B. Bolents
A. Zaepfel

ecology and environment, inc.
ANALYTICAL SERVICES CENTER, P.O. BOX D, BUFFALO, NEW YORK 14225, TEL. 716-631-0360
International Specialists in the Environment

Mr. Walt Garrow
City of Niagara Falls
Utilities Department
53rd and Buffalo Avenue
Niagara Falls, NY 14304

RE: U-7546

Dear Mr. Garrow:

Attached is the laboratory report of the analysis conducted on two samples received at the Analytical Services Center on March 18, 1988. Analysis was performed according to the procedures set forth in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, Second Edition, U.S. EPA, 1982.

The accuracy of all analyses depends upon the representative nature of the sample and the reliability of collection procedures as well as the accuracy of the laboratory analysis of the sample as submitted. Ecology and Environment, Inc.'s activity and representations with respect to these samples are limited solely to the laboratory analysis of the samples presented to us.

All samples on which this report is based will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of $1.00 per sample container per month will be charged for eacn sample, with such charges accruing until destruction of the samples is authorized by the client.

Very truly yours,

Gary Hahn

Gary Hahn, Manager
Analytical Services Center

GH/db-L1/G

Enclosure

ecology and environment, inc.
International Specialists in the Environment

LABORATORY REPORT

FOR

CITY OF NIAGARA FALLS, NEW YORK UTILITIES DEPARTMENT

U-7546

Job No.: U-7546			RE:			
Sample Date: 3/18/88			P.O. No.:			
Date Received: 3/18/88			Sampled By: Client			
Sample Type: Soil			Delivered By: Client			
E & E Lab. No. 88-	16260	16261				
Customer No.	A	B.				
Sample Identity	Gill Creek	Gill Creek				
	Results in: mg/kg as received unless noted					
Cadmium	<1.00	<1.00				
Chromium	22.3	20.2				
Copper	18.8	18.6				
Lead	45.7	47.7				
Mercury	0.576	0.653				
Nickel	9.15	10.2				
Zinc	120	139				
Total Solids	48	46				

Analytical References:

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, Second Edition, U.S. EPA, 1982.

Supervisor: G Hale

Date: 3-31-88

ecology and environment, inc.
International Specialists in the Environment

LABORATORY REPORT

FOR

CITY OF NIAGARA FALLS, NEW YORK UTILITIES DEPARTMENT

U-7546.1

Job No.: U-7546	RE:
Sample Date: 3/18/88	P.O. No.:
Date Received: 3/18/88	Sampled By: Client
Sample Type: Soil	Delivered By: Client

RESULTS OF CHEMICAL ANALYSIS OF EXTRACTS FROM EP TOXICITY TESTS

	mg/L						Maximum Allowable Concentration (mg/L)
E & E Lab. No. 88-	16,260	16,261					
Customer No.	A	B.					
Sample Identity	Gill Creek	Gill Creek					
Arsenic	<0.50	<0.50					5.0
Barium	<5.00	<5.00					100.0
Cadmium	<0.10	<0.10					1.0
Chromium	<0.50	<0.50					5.0
Lead	0.613	<0.50					5.0
Mercury	<0.0008	<0.0008					0.2
Selenium	<0.50	<0.50					1.0
Silver	<0.50	<0.50					5.0
Endrin	<0.001	<0.001					0.02
Lindane	<0.0005	0.850					0.4
Methoxychlor	<0.005	<0.005					10.0
Toxaphene	<0.010	<0.010					0.5
2,4-D	<0.005	<0.005					10.0
2,4,5-TP (Silvex)	<0.0005	<0.0005					1.0

Analytical References:

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, Second Edition, U.S. EPA, 1982.

Supervising Analyst: [signature]

Date: 3/31/88

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOIL SAMPLES

U-7546.2

Parameter	E & E Laboratory No. 88- DI Spike	Original Value	Amount Added	Amount Determined	Percent Recovery
		(mg/L)			
2,4 - D		<0.005	0.0100	0.0071	71
Silvex		<0.0005	0.0100	0.0069	69

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF REPLICATE
ANALYSES OF SOIL SAMPLES

U-7546.3

Parameter	E & E Laboratory No. 88-16260	(mg/L)		Relative Percent Difference (RPD)
		Original Analysis	Replicate Analysis	
Lindane		<0.0005	<0.0005	--
Endrine		<0.001	<0.001	--
Methoxychlor		<0.005	<0.005	--
Toxaphene		<0.010	<0.010	--

RESULTS OF SOIL ANALYSIS FOR PRIORITY POLLUTANT
PURGEABLE ORGANIC COMPOUNDS BY GC/MS

(all results in ug/kg, as received)

U-7546.4

Compound	E & E Lab. No. 88-	16260	16261	Method Blank		
	Sample Identity	Gill Creek A	Gill Creek B			
chloromethane		<12	<60	<10		
bromomethane		<12	<60	<10		
vinyl chloride		<12	<60	<10		
chloroethane		<12	<60	<10		
methylene chloride		11	34	<5*		
1,1-dichloroethene		<6	<30	<5		
1,1-dichloroethane		<6	<30	<5		
trans-1,2-dichloroethene		<6	<30	<5		
chloroform		<6*	<30*	<5*		
1,2-dichloroethane		<6	<30	<5		
1,1,1-trichloroethane		<6	<30	<5		
carbon tetrachloride		<6	<30	<5		
bromodichloromethane		<6	<30	<5		
1,2-dichloropropane		<6	<30	<5		
trans-1,3-dichloropropene		<6	<30	<5		
trichloroethene		<6	<30	<5		
chlorodibromomethane		<6	<30	<5		
1,1,2-trichloroethane		<6	<30	<5		
benzene		<6	210	<5		
cis-1,3-dichloropropene		<6	<30	<5		
2-chloroethylvinyl ether		<12	<60	<10		
bromoform		<6	<30	<5		
tetrachloroethene		<6	<30	<5		
1,1,2,2-tetrachloroethane		<6	<30	<5		
toluene		<6	<30	<5		
chlorobenzene		86	2,700	<5		
ethylbenzene		<6	<30	<5		

*Compound present below measurable detection limit.

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY OF SURROGATE SPIKES

U-7546.5

Compound	E & E Laboratory No. 88-	Amount Added (ng)	Amount Determined (ng)	Percent Recovery
1,2-dichloroethane-D4	16260	250	322	129
	16261	250	280	112
toluene-D8	16260	250	272	109
	16261	250	301	120
4-bromofluorobenzene	16260	250	229	92
	16261	250	271	108

ECOLOGY AND ENVIRONMENT'S, INC.

ANALYTICAL SERVICES CENTER

RESULTS OF SOIL ANALYSIS FOR PRIORITY POLLUTANT
BASE/NEUTRAL EXTRACTABLE COMPOUNDS BY GC/MS

(all results in ug/kg, as received)

U-7546.6

Compound	E & E Lab. No. 88-	16260	16261+	Method Blank		
	Sample Identity	Gill Creek A	Gill Creek B			
bis(2-chloroethyl)ether		<330	<330	<330		
1,3-dichlorobenzene		<330	<330*	<330		
1,4-dichlorobenzene		<330	800	<330		
1,2-dichlorobenzene		<330	<330*	<330		
bis(2-chloroisopropyl)ether		<330	<330	<330		
N-nitrosodipropylamine		<330	<330	<330		
hexachloroethane		<330	<330	<330		
nitrobenzene		<330	<330	<330		
isophorone		<330	<330	<330		
bis(2-chloroethoxy)methane		<330	<330	<330		
1,2,4-trichlorobenzene		<330	390	<330		
naphthalene		<330	<330	<330		
hexachlorobutadiene		<330	<330	<330		
hexachlorocyclopentadiene		<330	<330	<330		
2-chloronaphthalene		<330	<330	<330		
dimethyl phthalate		<330	<330	<330		
acenaphthylene		<330	<330	<330		
fluorene		<330	<330*	<330		
acenaphthene		<330	<330*	<330		
2,4-dinitrotoluene		<330	<330	<330		
2,6-dinitrotoluene		<330	<330	<330		
diethylphthalate		<330	<330	<330		
4-chlorophenyl phenyl ether		<330	<330	<330		
N-nitrosodiphenylamine		<330	<330	<330		
4-bromophenyl phenyl ether		<330	<330	<330		
hexachlorobenzene		<330	<330	<330		
phenanthrene		<330*	<330*	<330		
anthracene		<330	<330*	<330		
di-n-butyl phthalate		<330*	<330*	<330*		
fluoranthene		<330	<330*	<330		
benzidine		<1,600	<1,600	<1,600		
pyrene		<330*	<330*	<330		
butyl benzyl phthalate		<330	<330	<330		
3,3'-dichlorobenzidine		<660	<660	<660		
benzo(a)anthracene		<330*	<330*	<330		
bis(2-ethylhexyl)phthalate		550	410	<330*		
chrysene		<330*	<330*	<330		
di-n-octyl phthalate		<330	<330	<330		
benzo(b)fluoranthene		<330*	<330*	<330		
benzo(k)fluoranthene		<330	<330	<330		
benzo(a)pyrene		<330*	<330*	<330		
indeno(1,2,3-cd)pyrene		<330	<330*	<330		
dibenzo(a,h)anthracene		<330	<330	<330		
benzo(ghi)perylene		<330	<330*	<330		

*Compound present below measurable detection limit.
+Sample 16261 contained high levels of BHC isomers (confirmation of GC analysis)

ECOLOGY AND ENVIRONMENT'S, INC.
ANALYTICAL SERVICES CENTER

RESULTS OF SOIL ANALYSIS FOR
PRIORITY POLLUTANT PESTICIDES AND PCBs BY GC

(all results in mg/kg as received)

U-7546.9

	E & E Lab. No. 88-	16260	16261					
Compound	Sample Identity	Gill Creek A	Gill Creek B.					
Aldrin		<0.04	<5.0					
a-BHC		<0.04	72					
b-BHC		<0.04	19					
g-BHC		<0.04	59					
d-BHC		<0.04	17					
Chlordane		<0.40	<10					
4,4'-DDD		<0.08	<2.0					
4,4'-DDE		<0.08	<2.0					
4,4'-DDT		<0.08	<2.0					
Dieldrin		<0.08	<2.0					
Endosulfan I		<0.04	<1.0					
Endosulfan II		<0.08	<2.0					
Endosulfan sulfate		<0.08	<2.0					
Endrin		<0.08	<2.0					
Endrin aldehyde		<0.08	<2.0					
Heptachlor		<0.04	<1.0					
Heptachlor epoxide		<0.04	<1.0					
PCB - 1016		<0.40	<10					
PCB - 1221		<0.40	<10					
PCB - 1232		<0.40	<10					
PCB - 1242		3.2	<10					
PCB - 1248		<0.40	<10					
PCB - 1254		0.96	<20					
PCB - 1260		<0.80	<20					
Toxaphene		<0.80	<20					

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF REPLICATE
ANALYSES OF SOIL SAMPLES

U-7546.7

Compound	E & E Lab. No. 88-16260	ug/kg		Relative Percent Difference (RPD)
		Original Analysis	Replicate Analysis	
bis(2-chloroethyl)ether		<330	<330	--
1,3-dichlorobenzene		<330	<330	--
1,4-dichlorobenzene		<330	<330	--
1,2-dichlorobenzene		<330	<330	--
bis(2-chloroisopropyl)ether		<330	<330	--
N-nitrosodipropylamine		<330	<330	--
hexachloroethane		<330	<330	--
nitrobenzene		<330	<330	--
isophorone		<330	<330	--
bis(2-chloroethoxy)methane		<330	<330	--
1,2,4-trichlorobenzene		<330	<330	--
naphthalene		<330	<330	--
hexachlorobutadiene		<330	<330	--
hexachlorocyclopentadiene		<330	<330	--
2-chloronaphthalene		<330	<330	--
dimethyl phthalate		<330	<330	--
acenaphthylene		<330	<330	--
fluorene		<330	<330	--
acenaphthene		<330	<330	--
2,4-dinitrotoluene		<330	<330	--
2,6-dinitrotoluene		<330	<330	--
diethylphthalate		<330	<330	--
4-chlorophenyl phenyl ether		<330	<330	--
N-nitrosodiphenylamine		<330	<330	--
4-bromophenyl phenyl ether		<330	<330	--
hexachlorobenzene		<330	<330	--
phenanthrene		<330*	<330*	--
anthracene		<330	<330	--
di-n-butyl phthalate		<330*	<330*	--
fluoranthene		<330	<330	--
benzidine		<1,600	<1,600	--
pyrene		<330*	380	--
butyl benzyl phthalate		<330	<330	--
3,3'-dichlorobenzidine		<660	<660	--
benzo(a)anthracene		<330*	<330*	--
bis(2-ethylhexyl)phthalate		550	690	23
chrysene		<330*	<330*	--
di-n-octyl phthalate		<330	<330*	--
benzo(b)fluoranthene		<330*	<330*	--
benzo(k)fluoranthene		<330	<330	--
benzo(a)pyrene		<330*	<330*	--
indeno(1,2,3-c,d)pyrene		<330	<330	--
dibenzo(a,h)anthracene		<330	<330	--
benzo(g,h,i)perylene		<330	<330	--

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY OF SURROGATE SPIKES

U-7546.8

Compound	E & E Laboratory No. 88-	Amount Added (ug/kg)	Amount Determined (ug/kg)	Percent Recovery
Nitrobenzene-D5	16260	1.7	1.1	65
	16261	1.7	1.2	71
2-fluorobiphenyl	16260	1.7	1.5	88
	16261	1.7	1.6	94
Terphenyl-D14	16260	1.7	1.5	88
	16261	1.7	1.3	76

These recoveries are acceptable to EPA Contract Lab Program (CLP) guidelines.

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF REPLICATE
ANALYSES OF SOIL SAMPLES

U-7546.10

Compound	E & E Laboratory No. 88-16260	(mg/kg)		Relative Percent Difference (RPD)
		Original Analysis	Replicate Analysis	
Aldrin		<0.04	<0.04	--
a-BHC		<0.04	<0.04	--
b-BHC		<0.04	<0.04	--
g-BHC		<0.04	<0.04	--
d-BHC		<0.04	<0.04	--
Chlordane		<0.40	<0.40	--
4,4'-DDD		<0.08	<0.08	--
4,4'-DDE		<0.08	<0.08	--
4,4'-DDT		<0.08	<0.08	--
Dieldrin		<0.08	<0.08	--
Endosulfan I		<0.04	<0.04	--
Endosulfan II		<0.08	<0.08	--
Endosulfan sulfate		<0.08	<0.08	--
Endrin		<0.08	<0.08	--
Endrin aldehyde		<0.08	<0.08	--
Heptachlor		<0.04	<0.04	--
Heptachlor epoxide		<0.04	<0.04	--
PCB - 1016		<0.40	<0.40	--
PCB - 1221		<0.40	<0.40	--
PCB - 1232		<0.40	<0.40	--
PCB - 1242		3.2	3.4	6.1
PCB - 1248		<0.40	<0.40	--
PCB - 1254		0.96	0.62	43
PCB - 1260		<0.80	<0.80	--
Toxaphene		<0.80	<0.80	--

NIAGARA FALLS WASTEWATER TREATMENT PLANT
ENVIRONMENTAL METHOD #5

NFWWTP GILL CREEK'S SEDIMENT
#R-88-012

(SAMPLED ON MARCH 18, 1988)

SAMPLE I.D.	SURFACE SEDIMENT	18-36" DEPTHS SEDIMENT	DETECTION LIMITS LOD	LOQ
Sample registry #S-88	-0664	-0665		
PESTICIDES & PCB's by GC/EC (Results are ug/gr or PPM by dried weight)				
1) a-BHC	0.06	400 **	0.01	0.02
2) b-BHC	0.06	70 **	0.01	0.02
3) g-BHC	(0.01)	160 **	0.01	0.02
4) d-BHC	0.1	100 **	0.01	0.02
5) Heptachlor	0.03	3	0.01	0.02
6) Aldrin	0.1	1	0.01	0.02
7) Heptachlor Epoxide	0.04	0.04	0.01	0.04
8) Endosulfan I	ND	ND	0.01	0.02
9) p,p'- DDE	0.05	1	0.01	0.02
10) Dieldrin	ND	0.8	0.01	0.02
11) Endrin	ND	0.9	0.01	0.02
12) Endosulfan II	0.05	1	0.01	0.02
13) p,p'- DDD	0.07	ND	0.01	0.02
14) Endrin Aldehyde	ND	3	0.01	0.05
15) Endosulfan Sulfate	ND	ND	0.01	0.02
16) p,p'- DDT	(0.01)	2	0.01	0.02
17) Mirex	(0.01)	1	0.01	0.02
18) Decholorane Plus	0.1	ND	0.1	0.4
19) PCB's as Arochlor 1248	4 **	5 **	0.05	0.2
20) C - 56	ND	ND	2	5
EXTRACTION DATE:	21MARCH'88	21MAR'88		

ANALYSIS DATE (column #1): 28-31 MARCH, 1988
ANALYSIS DATE (column #2): 29-30 MARCH, 1988

COLUMNS:
1) Fused silica capillary J&W DB-5 (30M, 0.25micron, 0.25mmID): used for identification and quantification.
2) Fused silica capillary J&W DB-1701 (30M, 0.25micron, 0.25mmID):used for confirmation of identification.

METHOD :
ENV - 5 WWTP-Environmental Pesticides,PCBs and Hexachlorocyclopentadiene (C-56) in sediments.

** Compounds are confirmed by GC/MS (HP-5996) with column (1).

ORGANIC COMPOUNDS by GC/MS
(Results are ug/gr or PPM by dried weight)

	Surface Sed. #S-88-0664	Depth Sed. #S-88-0665
1). 1,3-Dichlorobenzene	ND *	0.5
2). 1,4-Dichlorobenzene	ND *	1.6
3). 1,2-Dichlorobenzene	ND *	0.7
4). 1,2,4-Trichlorobenzene	ND *	0.7
5). 1,2,3-Trichlorobenzene	ND *	0.1
6). 1,2,4,5-Tetrachlorobenzene	Trace *	0.3
7). 1,2,3,4-Tetrachlorobenzene	Trace *	0.2
8). Acenaphthylene	0.1	0.1
9). Acenaphthene	0.1	0.1
10). Pentachlorobenzene	ND *	0.1
11). Fluorene	0.2	0.2
12). Diethylphthalate	0.1	Trace *
13). Hexachlorobenzene	ND *	Trace *
14). Phenanthrene	0.6	0.5
15). Anthracene	0.3	0.2
16). Di-n-Butylphthalate	3.2	1.8
17). Fluoranthene	1.2	0.9
18). Pyrene	1.7	0.9
19). Benzo(a)Anthracene	ND *	0.6
20). Chrysene	ND *	0.6
21). Bis(2-ethylhexyl)Phthalate	1.4	0.9
22). Di-n-Octylphthalate	0.2	Trace *
23). Benzo(b)Fluoranthene	1.1	0.6
24). Benzo(k)Fluoranthene	0.7	0.4
25). Benzo(a)Pyrene	0.6	0.1
26). Indeno(1,2,3-cd)Anthracene	1.0	0.3
27). Benzo(g,h,i)Perylene	0.8	0.2

Extraction Date: March 18, 1988
Analysis Date: March 29, 1988 on HP-5996 GC/MS

Column: Fused silica capillary J&W DB-5 (30M, 0.25micron, 0.25mmID)

Each compound's concentration was based on the responce factor of the nearest ISTD.

* Non Detected
* Compound was detected but the concentration level was below 0.1ppm.

SPECIAL ANALYSIS REPORT SHEET

DATE: 3/30/88 ANALYST: _____

COMPLETE SAMPLE IDENTIFICATION & DESCRIPTION: 3 grabs composited into #S-88-0664 (Gill Creek A-surface) & #S-88-0665 (Gill Creek B-core) on 3/18/88

REQUESTED ANALYTICAL PROCEDURE(S): SPDES Metals - as mg/Kg dry weight

REQUESTED BY: D. JAROS (PHONE) (WRITE) TO: _____ @ _____

SAMPLE NUMBER	Cd	Cr	Cu	Pb	Hg	Ni	Zn
S-88-0664	0.6	35	48	119	1.9*	31	331
S-88-0665	0.7	31	88	113	2.5	33	319

COMMENTS: *Matrix spike recovery = 111% W

Project # R-88-012

REPORTED TO: W Garrow

City of Niagara Falls
NEW YORK

March 4, 1985

Mr. Robert Speed, P.E.
Regional Water Quality Engineer
NYS Dept. of Environmental Conservation
600 Delaware Avenue
Buffalo, N.Y. 14202

RE: Gill Creek Restoration Project - Consent Decree, City of Niagara Falls, Civil No.: 81-363C

Dear Bob:

The attached report from Julie Wang, Environmental Chemist describe the sampling and analysis plan for the subject project as approved by your correspondence of August 24, 1984. The five (5) transect composite samples were taken on November 1, 1984 and sent to ETC Laboratories in Edison, N.J. for analysis. The City's Water Quality Laboratory also performed selected analyses on split samples.

The EP Toxicity extraction tests show that only zinc and alpha BHC were found above the method detection limits in any of the five (5) leachates. Zinc was found in each, but with only a maximum concentration of 3.2 mg/l. It should be noted that there is no EP Toxicity action level for zinc. The only sample to show reportable amount of alpha BHC was sample number 28410, the one collected 25 feet north of Buffalo Avenue. Even this was well below (by 2 orders of magnitude) the EP Toxicity action level of 0.4 mg/l. It would appear that none of the sediments exhibit the characteristics of a hazardous solid waste, as far as EP Toxicity is concerned.

Further extensive testing of the sediments themselves were also performed for organic priority pollutants as well as metals. The ETC Lab volatiles analyses showed low parts per billion concentrati of tetrachloroethylene, toluene and chlorobenzene in four (4) of the five (5) samples. Split sample results for acid, base/neutrals pesticides and metals (only positive hits, including single PBL, are shown) show the presence at ppm levels, of polynuclear aromatics (PNA's) and phthalates. These two (2) classes of compounds are ubiquitous in sediments. In addition, a few hits for chlorinated

benzenes were detected, with a maximum of 1.53 ppm. Of the metals analyzed, only lead and mercury exhibited patterns of increasing concentrations upon proceeding downstream. The concentrations seem to have stablized at around 100-160 ppm for lead and 3.9 to 5.0 ppm for mercury in the two downstream sediments (#28409 and #28410). These levels are probably not of concern, since the metals are shown to be in a stable non-soluble form (see the EP Toxicity results).

The pesticide results on the sediment samples (Table V attached memo do reveal a pattern of increasing BHC's concentrations in the downstream samples. These results are not unexpected due to the past history of activity on this stream. The DEC proposed alpha plus gamma BHC sediment criterious of 2.0 mg/kg was exceeded in one instance by the City's results on sample #28410 (25 mg/kg), the most downstream sample near Buffalo Avenue. PCB's, another expected detection, did not occur above 3 mg/kg (ppm), and are thus probably not of concern.

The toxaphene detections by ETC Laboratories are highly questionable City review of their methods and results reveals that these detectio: should not have been reported. One interesting detection is that of Dechlcrane Plus by the City Laboratory. All results are below one (1) ppm, but Dechlorane Plus exhibits a distinctive double isomer peak. The Concentrations are, however, too low for GC/MS confirmation and are to be considered somewhat suspect.

In conclusion, it would appear that only the most downstream samplin locations exhibits any analytical results of concern (BHC's), in my opinion. The City would like to proceed with the proposed Consent Decree Project, but only in the reach from Pine Avenue to "B" Street Please review the data and advise the City of your agreement, if appropriate.

The detailed laboratory data reports are available for review at the City Wastewater Plant. Please call me at 278-8183 if you have any questions.

Very truly yours,

DEPARTMENT OF UTILITIES

John R. Westendorf

John R. Westendorf
Environmental Engineer

JRW:dc
Att.
cc: D. Jaros/M. Bettino
R. Game
L. Krizan/D. Brooks
N. Marchelos
C. Mooradian
W. Garrow/J. Wang

CITY OF NIAGARA FALLS

NEW YORK

February 1, 1985

TO: John R. Westendorf
Environmental Engineer

FROM: Julie Wang
Environmental Chemist JCW

SUBJECT: Samples From Gill Creek

Five (5) sediment samples (see attached map) were taken from Gill Creek on November 1, 1984. The samples were split and one set was sent to Environmental Testing and Certification Laboratory, Edison, N.J. to analyze for all priority pollutants and for the metals, Hg, Pb, Zn in sediments. An EP toxicity test was also done. The City's Water Quality Laboratory analyzed the other set of split samples for pesticides, PCB's, toxaphene, B/N compounds and metals (Pb, Hg, Zn, Cu, Ni, Cd, Cr) in sediments.

The EP toxicity results (Table I) indicated trace amounts of BHC isomers were found in Sample #28407 and #28409. Sample #28410 had 3.6 ppb of Alpha-BHC along with other types of BHC isomers. Table II is the EP toxicity results for metals and herbicides. All the results are below the method detection limit and well below the RCRA Alert Level. Zinc is the only metal that was found in the leachates and its level ranged from 0.56 ppm to 2.8 ppm. There is no RCRA Alert Level for Zinc.

Table III is the volatile organics results for the sediments done by ETC Laboratory. Tetrachloroethylene, toluene and chlorobenzene were found in the sediments.

Table IV is the priority pollutant's B/N compounds in the sediments. The table shows the comparison of results between the ETC Laboratory and the City's Water Quality Lab. The City Lab results for the B/N compounds are higher than the ETC Lab. The original sample sizes used are different (1-5 g for the City Lab vs 30 g by the ETC Lab). The extraction procedures are different (sonication vs soxhlet extraction). The results for metals are similar for each laboratory.

Table V is the pesticides and PCB's results from both laboratories. The data was generated by using GC/EC single column determination. The City Lab used the fused silical capillary column (30 meter, 0.25 um Bonded SE-54) for the analysis. Sample #24810 (#5 sta) has very high BHC's in the City's report. PCB's were found in samples #28407, #28408, #28409, and #28410 in approximately the 1 ppm range. Toxaphene was not

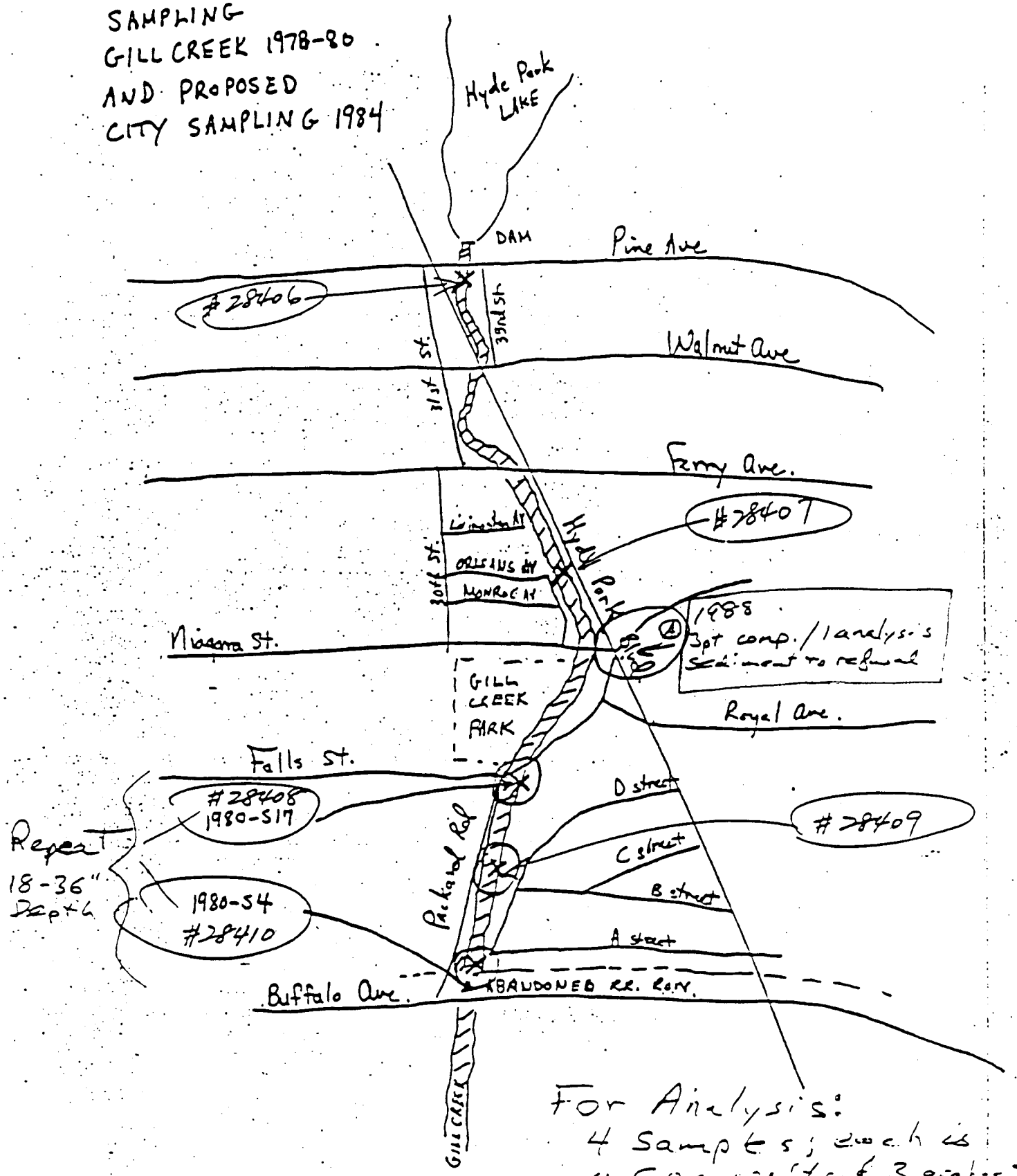
detected in any of the samples. The ETC Laboratory used the standard packed column for pesticides and PCB's. The PCB's were not detected at the detection limit 5 ppm. Toxaphene was found in all samples in 1-3 ppm range. Per my phone converation with ETC Lab, they are using one retention time (major peak) instead of pattern recogization. They recommended that GC/MS be used to confirm the compound. The GC/MS in the Environmental Lab will not be able to detect the compound below the 10 ppm range. I called the Sales Representative, Mike Bonomo several times regarding re-analysis of sample #28410 on GC/MS to confirm this compound. He has not called me back yet.

JW:dc
Att.
cc: W. Garrow
S.V. Smith
Lab

GILL CREEK SAMPLES

#28406	#1	Core grab taken at 9:30 AM from south of the Pine Avenue Bridge. Composite cores from points 1A, 1B, and 1C.
#28407	#2	Core grab taken at 10:45 AM from Hyde Park Blvd. and Orleans Avenue. Composite the sample cores from 2A, 2B and 2C.
#28408	#3	Core grab taken at 11:10 AM from south of Falls Street Bridge. Composite the core samples from point 3A, 3B, and 3C.
#28409	#4	Core grab taken at 11:30 AM from the B Street between Falls Street and Buffalo Avenue. Composite the core samples from points 4A, 4B, and 4C.
#28410	#5	Core grab at 12:00 PM from 25 feet north of Buffalo Avenue. Composite core samples 5A, 5B, and 5C.

DEC SEDIMENT
SAMPLING
GILL CREEK 1978-80
AND PROPOSED
CITY SAMPLING 1984



For Analysis:
4 samples; each is
a composite of 3 grabs of
18"-36" or refusal.

AND PROPOSED CITY SAMPLING 1984

N ↑	"A" WEST SIDE	"B" CENTER	C EAST SIDE	COMMENTS
#1 So. OF PINE AVE. BRIDGE LOCATED & STAKED	① 29½"	① 40"	① 35"	MEAS FROM BRIDGE 4" OF SEDIMENT
	21"	26"	26"	11-1-84 9:30
#2 HYDE PARK BLVD AT ORLEANS AVE	① 18"	—	—	
	13½"	11"	9½"	11-1-84 ROCKY B 10:4
#3 1980-#17 So. OF FALLS ST. BRIDGE	① 26¾"	① 21"	① 14"	MEAS FROM BRIDGE
	10½" + 10" of SEDIMENT	10" + 7" of SEDIMENT	10" + 6" of SEDIMENT	11-1-84 11:10
#4 B. ST BETWEEN FALLS ST & BUFFALO AVE.	① —	—	① 15"	
	8" + 15" SEDIMENT	13" + 14" of SEDIMENT	13" + 16" of SEDIMENT	11-1-84 11:3
#5 1980-#4 25 FT NORTH OF BUFFALO AVE BRIDGE	① 8"	9"	9"	ROCKY BOTTOM MEAS FROM BRIDGE
	SAMPLE NEAR BANK ROCK BOTTOM - H. TIDE	ROCKY BOTTOM	SAMPLE NEAR BANK ROCKY BOTTOM H. TIDE	SAMPLED AT BANKS 11-1-84 12:0

① PRELIMINARY MEAS 10-12-84 - SURVEY ONLY NO SAMPLES

TABLE I

LEACHATE FROM GILL CREEK SOIL SAMPLES

Analyzed by ETC Laboratory

PARAMETERS mg/kg by Wet Wt.	#28406 Leach F7561	#28407 Leach F7562	#28408 Leach F7565	#28409 Leach F7563	#28410 Leach F7564	Method Detection Limit mg/kg
Aldrin	ND	BMDL	ND	BMDL	BMDL	0.001
Alpha-BHC	ND	BMDL	ND	BMDL	0.0036	0.001
Beta-BHC	ND	ND	ND	BMDL	BMDL	0.001
Gamma-BHC	ND	BMDL	ND	ND	BMDL	0.001
Delta-BHC	ND	BMDL	ND	BMDL	BMDL	0.001
Chlordane	ND	ND	ND	ND	ND	0.005
4,4'-DDT	ND	ND	ND	BMDL	ND	0.001
4,4'-DDE	ND	ND	ND	ND	ND	0.001
4,4'-DDD	ND	ND	ND	ND	ND	0.001
Dieldrin	ND	ND	ND	ND	ND	0.001
Endosulfan I	ND	ND	ND	ND	ND	0.001
Endosulfan II	ND	ND	ND	ND	ND	0.001
Endosulfan Sulfate	ND	ND	ND	ND	ND	0.001
Endrin	ND	ND	ND	ND	ND	0.001
Endrin Aldehyde	ND	ND	ND	ND	ND	0.001
Heptachlor	ND	ND	ND	ND	ND	0.001
Heptachlor epoxide	ND	ND	ND	ND	ND	0.001
Toxaphene	ND	ND	ND	ND	ND	0.005
Methoxy Chlor	ND	ND	ND	ND	ND	0.050
Arochlor 1242	ND	ND	ND	ND	ND	0.001
Arochlor 1254	ND	ND	ND	ND	ND	0.001
Arochlor 1260	ND	ND	ND	ND	ND	0.001
Arochlor 1248	ND	ND	ND	ND	ND	0.001
Arochlor 1232	ND	ND	ND	ND	ND	0.001

TABLE I (Cont'd)

PARAMETERS mg/kg by wt wt.	#28406 Leach F7561	#28407 Leach F7562	#28408 Leach F7565	#24809 Leach F7563	#24810 Leach F7564	Method Detection Limit mg/kg
Arochlor 1221	ND	ND	ND	ND	ND	0.001
Arochlor 1016	ND	ND	ND	ND	ND	0.001

TABLE II

LEACHATE FROM GILL CREEK SOIL SAMPLES

PARAMETERS Wet wt. (ppm) mg/kg	#28406 Leach F7561	#28407 leach F7562	#28408 Leach F7565	#28409 Leach F7563	#28410 Leach F7564	RCRA Alert Level (ppm)	Method Detection Limit
Arsenic	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	5	1.0
Barium	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	100	5.0
Cadmium	< 0.2	< 0.20	< 0.20	< 0.20	< 0.20	1	0.20
Chromium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5	1.0
Lead	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5	1.0
Mercury	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	0.2	0.003
Selenium	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	1	0.30
Silver	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	5	0.20
Zinc	0.56	0.85	3.2	2.80	2.60	NA	NA
2,4-D	< 10	< 10	< 10	< 10	~~< 10~~ 0.05	10	~~10~~ 0.05
2,4,5-TP (Silvex)	< 1.0	< 1.0	< 1.0	< 1.0	~~< 1.0~~ 0.005	1.0	~~1~~ 0.005

Richlands

Jim Wilding

ETC Laboratory — Mill Creek Sanitary — VOLATILE ORGANICS by GC/MS — Method: SW846

PRIORITY POLLUTANTS (All Results ~~µg/L or ppb~~ wet wt.)	#28406 F7556	#28407 F7557	#28408 F7560	#28409 F7558	#28410 F7559	Detection Limit
Chloromethane	ND	ND	ND	ND	ND	50
Bromomethane	ND	ND	ND	ND	ND	50
Vinyl Chloride #7	ND	ND	ND	ND	ND	50
Chloroethane	ND	ND	ND	ND	ND	50
Methylene Chloride #7	PBL	PBL	ND	PBL	ND	50
1,1-dichloroethylene #7	ND	ND	ND	ND	ND	50
1,1-dichloroethane	ND	ND	ND	ND	ND	50
Trans-1,2-dichloroethylene #7	ND	ND	ND	ND	ND	50
Chloroform #7	ND	ND	ND	ND	ND	50
1,2-dichloroethane	ND	ND	ND	ND	ND	50
1,1,1-trichloroethane #7	ND	ND	ND	ND	ND	50
Carbon tetrachloride #7	ND	ND	ND	ND	ND	50
Bromodichloromethane #7	ND	ND	ND	ND	ND	50
1,2-dichloropropane	ND	ND	ND	ND	ND	50
Trans-1,3-dichloropropylene #7	ND	ND	ND	ND	ND	50
Trichloroethylene #7	ND	ND	ND	ND	ND	50
Dibromochloromethane #7	ND	ND	ND	ND	ND	50
1,1,2-trichloroethane #7	ND	ND	ND	ND	ND	50
Cis-1,3-dichloropropylene #7	ND	ND	ND	ND	ND	50
Benzene #7	ND	ND	ND	PBL	ND	50
2-Chloro-ethylvinylether	ND	ND	ND	ND	ND	50
Bromoform #7	ND	ND	ND	ND	ND	50
1,1,2,2-tetrachloroethane #7	ND	ND	ND	ND	ND	50
Tetrachloroethylene #7	95	73	ND	72	57	50
Toluene #7	PBL	76	ND	51	PBL	50
Chlorobenzene #7	ND	PBL	PBL	304	PBL	50
Ethylbenzene #7	ND	ND	ND	ND	ND	50
Acrolein	ND	ND	ND	ND	ND	500
Acrylonitrile	ND	ND	ND	ND	ND	500
1,2-Dichloroethane-D4	85%	78%	80%	91%	69%	
Toluene-D8	86%	87%	78%	92%	102%	
O-Bromofluorobenzene	91%	89%	75%	95%	69%	

TABLE IV

GILL CREEK SOIL SAMPLES

PARAMETERS mg/kg dry wt	#28406		#28407		#28408		#28409		#28410		DETECTION Limit	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
1,3-DCB	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
1,4-DCB	ND	ND	ND	ND	PBL	PBL	1.53	PBL	0.33	PBL	0.33	.5
1,2-DCB	ND	ND	PBL	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
1,2,4-Trichlorobenzene	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	0.33	.5
Phenanthrene	0.335	PBL	PBL	PBL	PBL	PBL	PBL	0.3	0.5	0.7	.33	.2
Dibutylphthalate	ND	7	ND	13	ND	12/6	PBL	13	PBL	3	.33	.5
Fluoranthene	0.36	1	PBL	0.2	PBL	2/3	0.341	2	0.6	3	.33	.2
Pyrene	PBL	2	PBL	1	PBL	0.7/0.4	PBL	2	0.47	6	.33	.2
Bis(2-ethylhexyl)phthalate)	PBL	9	PBL	12	PBL	31/22	PBL	13	0.867	56	.33	.5
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	PBL	ND	.33	.5
Anthracene	PBL	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(a)anthracene	PBL	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(a)pyrene	ND	ND	ND	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Benzo(b)fluoranthene	ND	NA	ND	NA	PBL	NA	PBL	NA	0.45	NA	.33	NA
Benzo(ghi)perylene	ND	NA	ND	NA	PBL	NA	ND	NA	0.567	NA	.33	NA
Benzo(k)fluoranthene	ND	NA	PBL	NA	PBL	NA	PBL	NA	PBL	NA	.33	NA
Chrysene	PBL	ND	PBL	ND	PBL	ND	PBL	ND	PBL	ND	.33	.5
Fluorene	PBL	ND	ND	ND	ND	ND	PBL	ND	PBL	ND	.33	.5
Indeno(1,2,3-c,d)pyrene	ND	NA	ND	NA	ND	NA	ND	NA	0.33	NA	.33	NA
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	PBL	ND	.33	.2
Isophorone	ND	ND	0.53	ND	ND	ND	ND	ND	ND	ND	.33	0.5
Lead	56	40	57	43	95	97/100	100	124	160	122	4	2
Mercury	0.2	∠0.5	0.9	1.4	1.0	1.0	5.0	4.6	5.0	3.9	0.3	0.5
Zinc	190	140	400	260	210	280/280	280	380	350	380	0.6	1
Copper	NA	18	NA	22	NA	39/34	NA	69	NA	59	NA	1

TABLE IV (Cont'd)

GILL CREEK SOIL SAMPLES

PARAMETERS mg/kg Dry wt.	#28406		#28407		#28408		#28409		#28410		Detection Limit	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
Nickel	NA	16	NA	17	NA	21/22	NA	33	NA	27	NA	1
Cadmium	NA	0.42	NA	1.4	NA	1.2/1.2	NA	1.3	NA	1.6	NA	0.1
Chromium	NA	16	NA	20	NA	29/34	NA	41	NA	36	NA	1

TABLE V

GILL CREEK SOIL SAMPLES

PARAMETERS mg/kg Dry Wt.	#28406		#28407		#28408		#28409		#28410		DETECTION LIMIT	
	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY	ETC	CITY
a-BHC	ND	ND	PBL	ND	0.25	PBL/PBL	0.49	0.17	0.065	17	0.05	0.1
b-BHC	0.074	ND	PBL	1.6	0.37	ND	0.36	0.34	0.27	13	0.05	0.1
g-BHC	ND	ND	ND	ND	ND	ND	0.65	ND	ND	8	0.05	0.
d-BHC	PBL	PBL	0.098	ND	0.65	0.14/0.14	1.9	0.5	0.85	2	0.05	0.
Heptachlor	ND	ND	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0.
Aldrin	PBL	ND	ND	PBL	1.0	PBL/ND	0.4	ND	PBL	PBL	0.05	0.
Heptachlor Epoxide	ND	ND	ND	PBL	ND	0.1/PBL	ND	PBL	ND	PBL	0.05	0.
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.
P,P'-DDE	ND	PBL	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0
Dieldrin	ND	ND	ND	ND	ND	ND	ND	PBL	ND	ND	0.05	0
Endrin	ND	ND	ND	ND	ND	ND	ND	PBL	ND	ND	0.05	0
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0
P,P'-DDD	ND	PBL	ND	PBL	ND	PBL/PBL	ND	PBL	ND	PBL	0.05	0
P,P'-DDT	ND	ND	ND	ND	ND	PBL/PBL	ND	PBL	ND	ND	0.05	0
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0
Mirex	NA	ND	NA	ND	NA	PBL	NA	PBL	NA	ND	NA	0
Dechlorane Plus	NA	0.24	NA	0.16	NA	0.69/.55	NA	0.77	NA	0.46	NA	0
PCB's (mg/kg)	ND	ND	ND	1	ND	PBL	ND	3	ND	1	5	1
Toxaphene	0.68	ND	0.69	ND	1.1	ND	2.8	ND	1.8	ND	0.25	1
Methoyrchlor	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.05	1
Chlordane	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.25	1

APPENDIX B

ANALYTICAL DATA FOR MAY 1991
CATCH BASIN SAMPLING

OLIN (IT) ANALYTICAL DATA FOR MAY 1991
CATCH BASIN SAMPLING

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Volatile Organic Analyses
Matrix Soil

SAMPLE LOCATION ---	CBSED1		CBSED1D		CBSED1		CBSED1		CBSED2		CBSED3		CBSED4		VBLK1		VBLK2		VBLK2	
TYPE ---			DUP		MS		MSD												MS	
DATE ANALYZED ---	5/29/91		5/29/91		5/29/91		5/29/91		5/30/91		5/30/91		5/30/91		5/29/91		5/30/91		5/30/91	
UNIT of MEASURE ---	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
SAMPLE NUMBER ---	BB6833		BB6836		BB6834		BB6835		BB6837		BB6838		BB6839		VB05293		VB0530		VSP0530	
COMPOUND																				
VOLATILES																				
Chloromethane	13	U	15	U	13	U	13	U	12	U	12	U	12	U	10	U	10	U	10	U
Bromomethane	13	U	15	U	13	U	13	U	12	U	12	U	12	U	10	U	10	U	10	U
Vinyl Chloride	13	U	15	U	13	U	13	U	12	U	12	U	12	U	10	U	10	U	10	U
Chloroethane	13	U	15	U	13	U	13	U	12	U	12	U	12	U	10	U	10	U	10	U
Methylene Chloride	5	J	4	J	4	J	4	J	15		14		21		5	U	5	U	5	U
Acetone	63		68		55		52		60		20		17		10	U	10	U	10	U
Carbon Disulfide	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene	6	U	7	U	58	S	61	S	6	U	6	U	6	U	5	U	5	U	51	S
1,1-Dichloroethane	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichlorothene (total)	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
Chloroform	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
2-Butanone	10	J	11	J	8	J	8	J	12	U	12	U	12	U	10	U	10	U	10	U
1,1,1-Trichloroethane	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
Vinyl Acetate	13	U	15	U	13	U	13	U	12	U	12	U	12	U	10	U	10	U	10	U
Bromodichloromethane	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
Trichloroethene	6	U	7	U	59	S	60	S	6	U	2	J	6	U	5	U	5	U	50	S

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Volatile Organic Analyses
Matrix Soil

SAMPLE LOCATION ---	CBSED1		CBSED1D		CBSED1		CBSED1		CBSED2		CBSED3		CBSED4		VBLK1		VBLK2		VBLK2	
TYPE ---			DUP		MS		MSD												MS	
DATE ANALYZED ---	5/29/91		5/29/91		5/29/91		5/29/91		5/30/91		5/30/91		5/30/91		5/29/91		5/30/91		5/30/91	
UNIT of MEASURE ---	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
SAMPLE NUMBER ---	BB6833		BB6836		BB6834		BB6835		BB6837		BB6838		BB6839		VB05293		VB0530		VSP0530	
COMPOUND																				
Dibromochloromethane	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane	6	J	7	J	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
Benzene	2	J	8		62	S	65	S	6	U	6	U	6	U	5	U	5	U	49	S
trans-1,3-Dichloropropene	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
Bromoform	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
4-Methyl-2-Pentanone	13	U	15	U	13	U	13	U	12	U	12	U	12	U	10	U	10	U	10	U
2-Hexanone	13	U	15	U	13	U	13	U	12	U	12	U	12	U	10	U	10	U	10	U
Tetrachloroethene	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
Toluene	5	J	14		68	S	70	S	6	U	6	U	6	U	5	U	5	U	48	S
Chlorobenzene	6	U	7	J	60	S	61	S	6	U	6	U	6	U	5	U	5	U	48	S
Ethylbenzene	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
Styrene	6	U	7	U	6	U	6	U	6	U	6	U	6	U	5	U	5	U	5	U
Xylenes (total)	3	J	4	J	4	J	5	J	6	U	6	U	2	J	5	U	5	U	5	U
2-Chloroethylvinylether	NA		NA		NA		NA		NA		NA		NA		10	U	10	U	NA	
Ethane, 1,1,2-Trichloro-1,2	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Unknown (Freon)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Freon	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Volatile Organic Analyses
Matrix Soil
ppb - MG/KG
ppm - MG/KG
NA - Not Analyzed
U - Analyzed for but not detected. Reported value is quantation limit.
J - Reported value was estimated
X - Laboratory defined qualified, See original data package.

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Semi-volatiles Organic Analyses

Matrix Soil

SAMPLE LOCATION ---	CBSED1	CBSED1D	CBSED1	CBSED1	CBSED2	CBSED3	CBSED4	VBLK1	VBLK2	VBLK2
TYPE ---		DUP	MS	MSD						MS
DATE ANALYZED ---	5/29/91	5/29/91	5/29/91	5/29/91	5/30/91	5/30/91	5/30/91	5/29/91	5/30/91	5/30/91
UNIT of MEASURE ---	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
SAMPLE NUMBER ---	BB6833	BB6836	BB6834	BB6835	BB6837	BB6838	BB6839	VB05293	VB0530	VSP0530
COMPOUND										
SEMI-VOLATILES										
Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitroso-Di-n-Propylamine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Semi-volatiles Organic Analyses

Matrix Soil

SAMPLE LOCATION ---	CBSED1	CBSED1D	CBSED1	CBSED1	CBSED2	CBSED3	CBSED4	VBLK1	VBLK2	VBLK2
TYPE ---		DUP	MS	MSD						MS
DATE ANALYZED ---	5/29/91	5/29/91	5/29/91	5/29/91	5/30/91	5/30/91	5/30/91	5/29/91	5/30/91	5/30/91
UNIT of MEASURE ---	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
SAMPLE NUMBER ---	BB6833	BB6836	BB6834	BB6835	BB6837	BB6838	BB6839	VB05293	VB0530	VSP0530
COMPOUND										
4-Chloroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl Phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Semi-volatiles Organic Analyses

Matrix Soil

SAMPLE LOCATION ---	CBSED1	CBSED1D	CBSED1	CBSED1	CBSED2	CBSED3	CBSED4	VBLK1	VBLK2	VBLK2
TYPE ---		DUP	MS	MSD						MS
DATE ANALYZED ---	5/29/91	5/29/91	5/29/91	5/29/91	5/30/91	5/30/91	5/30/91	5/29/91	5/30/91	5/30/91
UNIT of MEASURE ---	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
SAMPLE NUMBER ---	BB6833	BB6836	BB6834	BB6835	BB6837	BB6838	BB6839	VB05293	VB0530	VSP0530
COMPOUND										
4,6-Dinitro-2-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)Phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Octyl Phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)Perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Semi-volatiles Organic Analyses

Matrix Soil

SAMPLE LOCATION ---	CBSED1	CBSED1D	CBSED1	CBSED1	CBSED2	CBSED3	CBSED4	VBLK1	VBLK2	VBLK2
TYPE ---		DUP	MS	MSD						MS
DATE ANALYZED ---	5/29/91	5/29/91	5/29/91	5/29/91	5/30/91	5/30/91	5/30/91	5/29/91	5/30/91	5/30/91
UNIT of MEASURE ---	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
SAMPLE NUMBER ---	BB6833	BB6836	BB6834	BB6835	BB6837	BB6838	BB6839	VB05293	VB0530	VSP0530
COMPOUND										
1,3-Butadiene, Pentachloro-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexanedioic Acid, Bis (2-ethy	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexanedioic Acid, Mono (2-eth	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptadecane,2,6,dimethyl- (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachloronitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene,3,6-dimethyl- (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetramethyl Phenanthrene (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Unknown (1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-pentanone,4-hydroxy-4methyl- (1)(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ppb - MG/KG

ppm - MG/KG

NA - Not Analyzed

U - Analyzed for but not detected. Reported value is quantation limit.

J - Reported value was estimated

X - Laboratory defined qualified, See original data package.

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Pesticide/PCB Analyses

Matrix Soil

SAMPLE LOCATION ---	CBSED1		CBSED1D		CBSED1		CBSED1		CBSED2		CBSED3		CBSED4		VBLK1		VBLK2		VBLK2	
TYPE ---			DUP		MS		MSD												MS	
DATE ANALYZED ---	5/29/91		5/29/91		5/29/91		5/29/91		5/30/91		5/30/91		5/30/91		5/29/91		5/30/91		5/30/91	
UNIT of MEASURE ---	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
SAMPLE NUMBER ---	BB6833		BB6836		BB6834		BB6835		BB6837		BB6838		BB6839		VB05293		VB0530		VSP0530	
COMPOUND																				
PESTICIDES																				
a-BHC	61	U	42	U	NA		NA		1100		54	U	21	U	16	U	NA		16	U
B-BHC	76		44		NA		NA		490		54	U	28		16	U	NA		16	U
y-BHC	61	U	42	U	NA		NA		190	U	54	U	21	U	16	U	NA		16	U
g-BHC	61	U	42	U	NA		NA		190	U	54	U	21	U	16	U	NA		13	
Heptachlor	61	U	42	U	NA		NA		190	U	54	U	21	U	16	U	NA		12	
Aldrin	61	U	42	U	NA		NA		190	U	54	U	21	U	16	U	NA		13	
Heptachlor Epoxide	61	U	42	U	NA		NA		190	U	54	U	21	U	16	U	NA		16	U
Edosulfan I	61	U	42	U	NA		NA		190	U	54	U	21	U	16	U	NA		16	U
Dieldrin	120	U	84	U	NA		NA		390	U	110	U	41	U	32	U	NA		31	
4,4'-DDE	120	U	84	U	NA		NA		390	U	110	U	41	U	32	U	NA		32	U
Endrin	120	U	84	U	NA		NA		390	U	110	U	41	U	32	U	NA		31	
Endosulfan II	120	U	84	U	NA		NA		390	U	110	U	41	U	32	U	NA		32	U
4,4'-DDD	120	U	84	U	NA		NA		390	U	110	U	41	U	32	U	NA		32	U
Endosulfan Sulfate	120	U	84	U	NA		NA		390	U	110	U	41	U	32	U	NA		32	U
4,4'-DDT	120	U	84	U	NA		NA		390	U	110	U	41	U	32	U	NA		31	
Methoxychlor	610	U	420	U	NA		NA		1900	U	540	U	210	U	160	U	NA		160	U
Endrin Ketone	120	U	84	U	NA		NA		390	U	110	U	41	U	32	U	NA		32	U
Alpha-Chlordane	610	U	420	U	NA		NA		1900	U	540	U	210	U	160	U	NA		160	U
Gamma-Chlordane	610	U	420	U	NA		NA		1900	U	540	U	210	U	160	U	NA		160	U
Toxaphene	1200	U	840	U	NA		NA		3900	U	1100	U	410	U	320	U	NA		320	U

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Pesticide/PCB Analyses

Matrix Soil

SAMPLE LOCATION ---	CBSED1		CBSED1D		CBSED1		CBSED1		CBSED2		CBSED3		CBSED4		VBLK1		VBLK2		VBLK2	
TYPE ---			DUP		MS		MSD												MS	
DATE ANALYZED ---	5/29/91		5/29/91		5/29/91		5/29/91		5/30/91		5/30/91		5/30/91		5/29/91		5/30/91		5/30/91	
UNIT of MEASURE ---	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
SAMPLE NUMBER ---	BB6833		BB6836		BB6834		BB6835		BB6837		BB6838		BB6839		VB05293		VB0530		VSP0530	
COMPOUND																				
PCBs																				
PCB-(Aroclor)-1016	610	U	420	U	NA		NA		1900	U	540	U	210	U	160	U	NA		160	U
PCB-(Aroclor)-1221	610	U	420	U	NA		NA		1900	U	540	U	210	U	160	U	NA		160	U
PCB-(Aroclor)-1232	610	U	420	U	NA		NA		1900	U	540	U	210	U	160	U	NA		160	U
PCB-(Aroclor)-1242	610	U	420	U	NA		NA		1900	U	540	U	210	U	160	U	NA		160	U
PCB-(Aroclor)-1248	610	U	420	U	NA		NA		1900	U	540	U	210	U	160	U	NA		160	U
PCB-(Aroclor)-1254	1200	U	840	U	NA		NA		3900	U	1100	U	410	U	320	U	NA		320	U
PCB-(Aroclor)-1260	1200	U	840	U	NA		NA		3900	U	1100	U	410	U	320	U	NA		320	U

ppb - MG/KG

ppm - MG/KG

NA - Not Analyzed

U - Analyzed for but not detected. Reported value is quantation limit.

J - Reported value was estimated

X - Laboratory defined qualified, See original data package.

CATCH BASIN SAMPLES
GILL CREEK, MAY 1991
NIAGARA FALLS, NEW YORK

Inorganic Analyses

Matrix Soil

SAMPLE LOCATION ---	CBSED1		CBSED1D		CBSED1		CBSED1		CBSED2		CBSED3		CBSED4		VBLK1		VBLK2		VBLK2	
TYPE ---			DUP		MS		MSD												MS	
DATE ANALYZED ---	5/29/91		5/29/91		5/29/91		5/29/91		5/30/91		5/30/91		5/30/91		5/29/91		5/30/91		5/30/91	
UNIT of MEASURE ---	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
SAMPLE NUMBER ---	BB6833		BB6836		BB6834		BB6835		BB6837		BB6838		BB6839		VB05293		VB0530		VSP0530	
COMPOUND																				
Lead	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Mercury	4.4	J	7.5	J	NA		NA		0.24	J	0.39	J	1.0	J	0.2	U	NA		NA	

ppb - MG/KG

ppm - MG/KG

NA - Not Analyzed

U - Analyzed for but not detected. Reported value is quantation limit.

J - Reported value was estimated

X - Laboratory defined qualified, See original data package.

NYSDEC (RECRA) ANALYTICAL DATA FROM MAY 1991 CATCH BASIN SAMPLING

1A Catch Basins, C1 & C4 RESULTS

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: 1855C1

Lab Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C1

Sample wt/vol: 5.1 (g/mL) G Lab File ID: G8954

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 32 Date Analyzed: 05/25/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	0.8	BJ
67-64-1	Acetone	37	B
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	3	J
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	14	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	2	J
10061-02-6	trans-1,3-dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
108-88-3	Toluene	4	J
108-90-7	Chlorobenzene	1	J
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Total Xylenes	1	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

1855C1

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C1

Sample wt/vol: 5.1 (g/mL) G Lab File ID: G8954

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 32 Date Analyzed: 05/25/91

Column (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C2

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C2

Sample wt/vol: 5.1 (g/mL) G Lab File ID: G8960

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 17 Date Analyzed: 05/25/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	1	BJ
67-64-1	Acetone	42	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	1	J
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-dichloropropene	6	U
79-01-6	Trichloroethene	0.6	J
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	trans-1,3-dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	0.4	J
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Total Xylenes	6	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: RECRA ENVIRONMENTAL, INC.

Lab Code: RECNY Case No: SH991 SAS No.:

Matrix (Soil/Water): SOIL

Sample wt/vol: 5.1 (g/ml): G

Level (low/med): LOW

% Moisture not Dec: 17

Column (pack/cap): PACK

Number TICs Found: 1

EPA Sample No.: 1855C2

Contract: C002412

SDG No.: 0524

Lab Sample ID.: 1855C2

Lab File ID.: G8960

Date Received: 05/24/91

Date Analyzed: 05/25/91

Dilution Factor: 1.00

Concentration Units:

(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		UNKNOWN	28.52	12	J
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C3

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C3

Sample wt/vol: 5.0 (g/mL) G Lab File ID: G8958

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 24 Date Analyzed: 05/25/91

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	3	BJ
67-64-1	Acetone	55	B
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	8	J
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	1	J
10061-02-6	trans-1,3-dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	2	J
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Total Xylenes	3	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

1855C3

Lab Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C3

Sample wt/vol: 5.0 (g/mL) G Lab File ID: G8958

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 24 Date Analyzed: 05/25/91

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C4

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C4

Sample wt/vol: 5.1 (g/mL) G Lab File ID: G8959

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 20 Date Analyzed: 05/25/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	1	BJ
67-64-1	Acetone	32	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	5	J
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	trans-1,3-dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	0.8	J
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Total Xylenes	2	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA Sample No.: 1855C4

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: C002412

Lab Code: RECNY Case No: SH991 SAS No.:

SDG No.: 0524

Matrix (Soil/Water): SOIL

Lab Sample ID.: 1855C4

Sample wt/vol: 5.1 (g/ml): G

Lab File ID.: G8959

Level (low/med): LOW

Date Received: 05/24/91

% Moisture not Dec: 20

Date Analyzed: 05/25/91

Column (pack/cap): PACK

Dilution Factor: 1.00

Number TICs Found: 1

Concentration Units:

(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	110-54-3	HEXANE	17.20	8	J
2					
3					
4					
5					
6					
7					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C1

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C1

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 7433X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 16 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/13/91

GPC Cleanup: (Y/N) Y pH: 7.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	770	U
111-44-4	bis(2-Chloroethyl)Ether	770	U
95-57-8	2-Chlorophenol	770	U
541-73-1	1,3-Dichlorobenzene	770	U
106-46-7	1,4-Dichlorobenzene	770	U
100-51-6	Benzyl Alcohol	770	U
95-50-1	1,2-Dichlorobenzene	770	U
95-48-7	2-Methylphenol	770	U
108-60-1	bis(2-Chloroisopropyl)Ether	770	U
106-44-5	4-Methylphenol	**820**	
621-64-7	N-Nitroso-Di-n-Propylamine	770	U
67-72-1	Hexachloroethane	770	U
98-95-3	Nitrobenzene	770	U
78-59-1	Isophorone	770	U
88-75-5	2-Nitrophenol	770	U
105-67-9	2,4-Dimethylphenol	770	U
65-85-0	Benzoic Acid	3700	U
111-91-1	bis(2-Chloroethoxy)Methane	770	U
120-83-2	2,4-Dichlorophenol	770	U
120-82-1	1,2,4-Trichlorobenzene	33	J
91-20-3	Naphthalene	100	J
106-47-8	4-Chloroaniline	770	U
87-68-3	Hexachlorobutadiene	770	U
59-50-7	4-Chloro-3-Methylphenol	770	U
91-57-6	2-Methylnaphthalene	110	J
77-47-4	Hexachlorocyclopentadiene	770	U
88-06-2	2,4,6-Trichlorophenol	770	U
95-95-4	2,4,5-Trichlorophenol	3700	U
91-58-7	2-Chloronaphthalene	770	U
88-74-4	2-Nitroaniline	3700	U
131-11-3	Dimethyl Phthalate	770	U
208-96-8	Acenaphthylene	30	J
606-20-2	2,6-Dinitrotoluene	770	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

1855C1

Lab Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C1

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 7433X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 16 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/13/91

GPC Cleanup: (Y/N) Y pH: 7.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3700	U
83-32-9	Acenaphthene	340	J
51-28-5	2,4-Dinitrophenol	3700	U
100-02-7	4-Nitrophenol	3700	U
132-64-9	Dibenzofuran	200	J
121-14-2	2,4-Dinitrotoluene	770	U
84-66-2	Diethylphthalate	770	U
7005-72-3	4-Chlorophenyl-phenylether	770	U
86-73-7	Fluorene	360	J
100-01-6	4-Nitroaniline	3700	U
534-52-1	4,6-Dinitro-2-Methylphenol	3700	U
86-30-6	N-Nitrosodiphenylamine (1)	770	U
101-55-3	4-Bromophenyl-phenylether	770	U
118-74-1	Hexachlorobenzene	770	U
87-86-5	Pentachlorophenol	3700	U
85-01-8	Phenanthrene	4000	
120-12-7	Anthracene	630	J
84-74-2	Di-n-Butylphthalate	130	J
206-44-0	Fluoranthene	5900	
129-00-0	Pyrene	3800	
85-68-7	Butylbenzylphthalate	240	J
91-94-1	3,3'-Dichlorobenzidine	1500	U
56-55-3	Benzo(a)Anthracene	2100	
218-01-9	Chrysene	2100	
117-81-7	Bis(2-Ethylhexyl)Phthalate	3000	
117-84-0	Di-n-Octyl Phthalate	510	J
205-99-2	Benzo(b)Fluoranthene	3200	
207-08-9	Benzo(k)Fluoranthene	1200	
50-32-8	Benzo(a)Pyrene	1700	
193-39-5	Indeno(1,2,3-cd)Pyrene	420	J
53-70-3	Dibenz(a,h)Anthracene	770	U
191-24-2	Benzo(g,h,i)Perylene	290	J

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: RECRA ENVIRONMENTAL, INC.

Lab Code: RECNY Case No: SH991 SAS No.:

Matrix (Soil/Water): SOIL

Sample wt/vol: 30.6 (g/ml): G

Level (low/med): LOW

% Moisture not Dec: 16 Dec:

Extraction: (SepF/Cont/Sonc/Sox): SONC

GPC Cleanup: (Y/N): Y pH: 7.6

Number TICs Found: 20

EPA Sample No.: 1855C1

Contract: C002412

SDG No.: 0524

Lab Sample ID.: 1855C1

Lab File ID.: 7433X

Date Received: 05/24/91

Date Extracted: 05/29/91

Date Analyzed: 06/13/91

Dilution Factor: 1.0

Concentration Units: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		ALKYL SATURATED HYDROCARBON	24.68	1100	J
2		UNKNOWN ACID	25.67	17000	J
3		LONG CHAIN HYDROCARBON	25.98	1500	J
4		LONG CHAIN HYDROCARBON	27.22	1200	J
5		UNKNOWN	27.77	7000	J
6		UNKNOWN	27.90	7000	J
7		UNKNOWN ACID	28.07	5500	J
8		UNKNOWN	28.77	1800	J
9		LONG CHAIN HYDROCARBON	29.55	1500	J
10		UNKNOWN	30.67	2900	J
11		UNKNOWN	30.80	2300	J
12		UNKNOWN	32.77	6100	J
13		LONG CHAIN HYDROCARBON	33.82	6800	J
14		UNKNOWN	34.13	6000	J
15		LONG CHAIN HYDROCARBON	34.83	4500	J
16		UNKNOWN	35.20	4200	J
17		PAH DERIVATIVE	35.47	4200	J
18		LONG CHAIN HYDROCARBON	39.95	26000	J
19		LONG CHAIN HYDROCARBON	38.38	7600	J
20		UNKNOWN	38.68	2100	J
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C2

Lab Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C2

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 7445X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/91

GPC Cleanup: (Y/N) Y pH: 7.4 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	720	U
111-44-4	bis(2-Chloroethyl)Ether	720	U
95-57-8	2-Chlorophenol	720	U
541-73-1	1,3-Dichlorobenzene	720	U
106-46-7	1,4-Dichlorobenzene	720	U
100-51-6	Benzyl Alcohol	720	U
95-50-1	1,2-Dichlorobenzene	720	U
95-48-7	2-Methylphenol	720	U
108-60-1	bis(2-Chloroisopropyl)Ether	720	U
106-44-5	4-Methylphenol	81	J
621-64-7	N-Nitroso-Di-n-Propylamine	720	U
67-72-1	Hexachloroethane	720	U
98-95-3	Nitrobenzene	720	U
78-59-1	Isophorone	720	U
88-75-5	2-Nitrophenol	720	U
105-67-9	2,4-Dimethylphenol	720	U
65-85-0	Benzoic Acid	3500	U
111-91-1	bis(2-Chloroethoxy)Methane	720	U
120-83-2	2,4-Dichlorophenol	720	U
120-82-1	1,2,4-Trichlorobenzene	720	U
91-20-3	Naphthalene	77	J
106-47-8	4-Chloroaniline	720	U
87-68-3	Hexachlorobutadiene	720	U
59-50-7	4-Chloro-3-Methylphenol	720	U
91-57-6	2-Methylnaphthalene	59	J
77-47-4	Hexachlorocyclopentadiene	720	U
88-06-2	2,4,6-Trichlorophenol	720	U
95-95-4	2,4,5-Trichlorophenol	3500	U
91-58-7	2-Chloronaphthalene	720	U
88-74-4	2-Nitroaniline	3500	U
131-11-3	Dimethyl Phthalate	720	U
208-96-8	Acenaphthylene	720	U
606-20-2	2,6-Dinitrotoluene	720	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C2

Lab Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C2

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 7445X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/91

GPC Cleanup: (Y/N) Y pH: 7.4 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
99-09-2	3-Nitroaniline	3500	U
83-32-9	Acenaphthene	490	J
51-28-5	2,4-Dinitrophenol	3500	U
100-02-7	4-Nitrophenol	3500	U
132-64-9	Dibenzofuran	280	J
121-14-2	2,4-Dinitrotoluene	720	U
84-66-2	Diethylphthalate	720	U
7005-72-3	4-Chlorophenyl-phenylether	720	U
86-73-7	Fluorene	520	J
100-01-6	4-Nitroaniline	3500	U
534-52-1	4,6-Dinitro-2-Methylphenol	3500	U
86-30-6	N-Nitrosodiphenylamine (1)	720	U
101-55-3	4-Bromophenyl-phenylether	720	U
118-74-1	Hexachlorobenzene	720	U
87-86-5	Pentachlorophenol	3500	U
85-01-8	Phenanthrene	9700	
120-12-7	Anthracene	1000	
84-74-2	Di-n-Butylphthalate	150	J
206-44-0	Fluoranthene	16000	E
129-00-0	Pyrene	7800	
85-68-7	Butylbenzylphthalate	320	J
91-94-1	3,3'-Dichlorobenzidine	1400	U
56-55-3	Benzo(a)Anthracene	3300	
218-01-9	Chrysene	4300	
117-81-7	Bis(2-Ethylhexyl)Phthalate	14000	E
117-84-0	Di-n-Octyl Phthalate	550	J
205-99-2	Benzo(b)Fluoranthene	7900	
207-08-9	Benzo(k)Fluoranthene	2800	
50-32-8	Benzo(a)Pyrene	2900	
193-39-5	Indeno(1,2,3-cd)Pyrene	1200	
53-70-3	Dibenz(a,h)Anthracene	220	J
191-24-2	Benzo(g,h,i)Perylene	800	

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: RECRA ENVIRONMENTAL, INC.
Lab Code: RECNY Case No: SH991 SAS No.:
Matrix (Soil/Water): SOIL
Sample wt/vol: 30.4 (g/ml): G
Level (low/med): LOW
% Moisture not Dec: 10 Dec:
Extraction: (SepF/Cont/Sonc/Sox): SONC
GPC Cleanup: (Y/N): Y pH: 7.4
Number TICs Found: 20

EPA Sample No.: 1855C2
Contract: C002412
SDG No.: 0524
Lab Sample ID.: 1855C2
Lab File ID.: 7445X
Date Received: 05/24/91
Date Extracted: 05/29/91
Date Analyzed: 06/14/91
Dilution Factor: 1.0
Concentration Units: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		UNKNOWN ACID	25.32	1800	J
2		UNKNOWN	25.55	1700	J
3		UNKNOWN	27.77	2000	J
4		PAH DERIVATIVE	27.70	2000	J
5		UNKNOWN	28.53	3800	J
6		PAH DERIVATIVE	28.75	1600	J
7		PAH DERIVATIVE	29.08	2000	J
8		UNKNOWN	29.47	3200	J
9		UNKNOWN	30.10	4900	J
10		UNKNOWN	30.45	4500	J
11		UNKNOWN	30.57	3100	J
12		UNKNOWN	30.80	2900	J
13		UNKNOWN	32.07	8700	J
14		UNKNOWN	32.55	5800	J
15		UNKNOWN	32.65	1600	J
16		LONG CHAIN HYDROCARBON	33.57	3100	J
17		UNKNOWN	33.88	4500	J
18		UNKNOWN	34.15	3300	J
19		PAH DERIVATIVE	35.37	3200	J
20		UNKNOWN	35.60	6800	J
21					
22					
23					
24					
25					
26					
27					
28					
29					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C2DL

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C2DL

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 7471X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/17/91

GPC Cleanup: (Y/N) Y pH: 7.4 Dilution Factor: 5.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
108-95-2	Phenol	3600	U
111-44-4	bis(2-Chloroethyl)Ether	3600	U
95-57-8	2-Chlorophenol	3600	U
541-73-1	1,3-Dichlorobenzene	3600	U
106-46-7	1,4-Dichlorobenzene	3600	U
100-51-6	Benzyl Alcohol	3600	U
95-50-1	1,2-Dichlorobenzene	3600	U
95-48-7	2-Methylphenol	3600	U
108-60-1	bis(2-Chloroisopropyl)Ether	3600	U
106-44-5	4-Methylphenol	3600	U
621-64-7	N-Nitroso-Di-n-Propylamine	3600	U
67-72-1	Hexachloroethane	3600	U
98-95-3	Nitrobenzene	3600	U
78-59-1	Isophorone	3600	U
88-75-5	2-Nitrophenol	3600	U
105-67-9	2,4-Dimethylphenol	3600	U
65-85-0	Benzoic Acid	18000	U
111-91-1	bis(2-Chloroethoxy)Methane	3600	U
120-83-2	2,4-Dichlorophenol	3600	U
120-82-1	1,2,4-Trichlorobenzene	3600	U
91-20-3	Naphthalene	3600	U
106-47-8	4-Chloroaniline	3600	U
87-68-3	Hexachlorobutadiene	3600	U
59-50-7	4-Chloro-3-Methylphenol	3600	U
91-57-6	2-Methylnaphthalene	80	DJ
77-47-4	Hexachlorocyclopentadiene	3600	U
88-06-2	2,4,6-Trichlorophenol	3600	U
95-95-4	2,4,5-Trichlorophenol	18000	U
91-58-7	2-Chloronaphthalene	3600	U
88-74-4	2-Nitroaniline	18000	U
131-11-3	Dimethyl Phthalate	3600	U
208-96-8	Acenaphthylene	3600	U
606-20-2	2,6-Dinitrotoluene	3600	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 39

1855C2DL

b Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C2DL

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 7471X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/17/91

GPC Cleanup: (Y/N) Y pH: 7.4 Dilution Factor: 5.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	18000	U
83-32-9	Acenaphthene	670	DJ
51-28-5	2,4-Dinitrophenol	18000	U
100-02-7	4-Nitrophenol	18000	U
132-64-9	Dibenzofuran	340	DJ
121-14-2	2,4-Dinitrotoluene	3600	U
84-66-2	Diethylphthalate	3600	U
7005-72-3	4-Chlorophenyl-phenylether	3600	U
86-73-7	Fluorene	710	DJ
100-01-6	4-Nitroaniline	18000	U
534-52-1	4,6-Dinitro-2-Methylphenol	18000	U
86-30-6	N-Nitrosodiphenylamine (1)	3600	U
101-55-3	4-Bromophenyl-phenylether	3600	U
118-74-1	Hexachlorobenzene	3600	U
87-86-5	Pentachlorophenol	18000	U
85-01-8	Phenanthrene	9000	D
120-12-7	Anthracene	1100	DJ
84-74-2	Di-n-Butylphthalate	3600	U
206-44-0	Fluoranthene	8500	D
129-00-0	Pyrene	8400	D
85-68-7	Butylbenzylphthalate	430	DJ
91-94-1	3,3'-Dichlorobenzidine	7200	U
56-55-3	Benzo(a)Anthracene	3900	D
218-01-9	Chrysene	5000	D
117-81-7	Bis(2-Ethylhexyl)Phthalate	13000	D
117-84-0	Di-n-Octyl Phthalate	350	DJ
205-99-2	Benzo(b)Fluoranthene	5300	D
207-08-9	Benzo(k)Fluoranthene	2700	DJ
50-32-8	Benzo(a)Pyrene	3600	DJ
193-39-5	Indeno(1,2,3-cd)Pyrene	1300	DJ
53-70-3	Dibenz(a,h)Anthracene	3600	U
191-24-2	Benzo(g,h,i)Perylene	930	DJ

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA Sample No.: 1855C2DL

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: C002412

Lab Code: RECNY Case No: SH991 SAS No.:

SDG No.: 0524

Matrix (Soil/Water): SOIL

Lab Sample ID.: 1855C2DL

Sample wt/vol: 30.4 (g/ml): G

Lab File ID.: 7471X

Level (low/med): LOW

Date Received: 05/24/91

% Moisture not Dec: 10 Dec:

Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc/Sox): SONC

Date Analyzed: 06/17/91

GPC Cleanup: (Y/N): Y pH: 7.4

Dilution Factor: 5.0

Number TICs Found: 1

Concentration Units: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		PAH DERIVATIVE	34.93	15000	J
2					
3					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C2RE

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C2RE

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 7469X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/17/91

GPC Cleanup: (Y/N) Y pH: 7.4 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	720	U
111-44-4	bis(2-Chloroethyl)Ether	720	U
95-57-8	2-Chlorophenol	720	U
541-73-1	1,3-Dichlorobenzene	720	U
106-46-7	1,4-Dichlorobenzene	720	U
100-51-6	Benzyl Alcohol	720	U
95-50-1	1,2-Dichlorobenzene	720	U
95-48-7	2-Methylphenol	720	U
108-60-1	bis(2-Chloroisopropyl)Ether	720	U
106-44-5	4-Methylphenol	170	J
621-64-7	N-Nitroso-Di-n-Propylamine	720	U
67-72-1	Hexachloroethane	720	U
98-95-3	Nitrobenzene	720	U
78-59-1	Isophorone	720	U
88-75-5	2-Nitrophenol	720	U
105-67-9	2,4-Dimethylphenol	720	U
65-85-0	Benzoic Acid	160	BJ
111-91-1	bis(2-Chloroethoxy)Methane	720	U
120-83-2	2,4-Dichlorophenol	720	U
120-82-1	1,2,4-Trichlorobenzene	720	U
91-20-3	Naphthalene	91	J
106-47-8	4-Chloroaniline	720	U
87-68-3	Hexachlorobutadiene	720	U
59-50-7	4-Chloro-3-Methylphenol	720	U
91-57-6	2-Methylnaphthalene	67	J
77-47-4	Hexachlorocyclopentadiene	720	U
88-06-2	2,4,6-Trichlorophenol	720	U
95-95-4	2,4,5-Trichlorophenol	3500	U
91-58-7	2-Chloronaphthalene	720	U
88-74-4	2-Nitroaniline	3500	U
131-11-3	Dimethyl Phthalate	720	U
208-96-8	Acenaphthylene	720	U
606-20-2	2,6-Dinitrotoluene	720	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C2RE

Lab Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C2RE

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 7469X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 10 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/17/91

GPC Cleanup: (Y/N) Y pH: 7.4 Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
99-09-2	3-Nitroaniline	3500	U
83-32-9	Acenaphthene	480	J
51-28-5	2,4-Dinitrophenol	3500	U
100-02-7	4-Nitrophenol	3500	U
132-64-9	Dibenzofuran	270	J
121-14-2	2,4-Dinitrotoluene	720	U
84-66-2	Diethylphthalate	720	U
7005-72-3	4-Chlorophenyl-phenylether	720	U
86-73-7	Fluorene	560	J
100-01-6	4-Nitroaniline	3500	U
534-52-1	4,6-Dinitro-2-Methylphenol	3500	U
86-30-6	N-Nitrosodiphenylamine (1)	720	U
101-55-3	4-Bromophenyl-phenylether	720	U
118-74-1	Hexachlorobenzene	720	U
87-86-5	Pentachlorophenol	3500	U
85-01-8	Phenanthrene	9900	
120-12-7	Anthracene	1400	
84-74-2	Di-n-Butylphthalate	230	J
206-44-0	Fluoranthene	14000	E
129-00-0	Pyrene	8200	
85-68-7	Butylbenzylphthalate	720	U
91-94-1	3,3'-Dichlorobenzidine	1400	U
56-55-3	Benzo(a)Anthracene	3500	
218-01-9	Chrysene	4900	
117-81-7	Bis(2-Ethylhexyl)Phthalate	20000	E
117-84-0	Di-n-Octyl Phthalate	970	
205-99-2	Benzo(b)Fluoranthene	7300	
207-08-9	Benzo(k)Fluoranthene	3000	
50-32-8	Benzo(a)Pyrene	3900	
193-39-5	Indeno(1,2,3-cd)Pyrene	1000	
53-70-3	Dibenz(a,h)Anthracene	210	J
191-24-2	Benzo(g,h,i)Perylene	710	J

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA Sample No.: 1855CRE

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: C002412

Lab Code: RECNY Case No: SH991 SAS No.:

SDG No.: 0524

Matrix (Soil/Water): SOIL

Lab Sample ID.: 1855C2RE

Sample wt/vol: 30.4 (g/ml): G

Lab File ID.: 7469X

Level (low/med): LOW

Date Received: 05/24/91

% Moisture not Dec: 10 Dec:

Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc/Sox): SONC

Date Analyzed: 06/17/91

GPC Cleanup: (Y/N): Y pH: 7.4

Dilution Factor: 1.0

Number TICs Found: 20

Concentration Units: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		OXYGENATED COMPOUND	5.18	25000	J
2		UNKNOWN ACID	25.17	3300	J
3		UNKNOWN	27.42	1800	J
4		UNKNOWN ACID	27.62	2900	J
5		UNKNOWN	27.73	1900	J
6		UNKNOWN	28.03	1800	J
7		PAH DERIVATIVE	28.37	3800	J
8		UNKNOWN	29.02	2500	J
9		UNKNOWN	29.90	5100	J
10		UNKNOWN	30.38	3700	J
11		UNKNOWN	30.50	3200	J
12		UNKNOWN	30.62	1900	J
13		UNKNOWN	31.92	14000	J
14		LONG CHAIN HYDROCARBON	32.38	10000	J
15		LONG CHAIN HYDROCARBON	33.42	8200	J
16		LONG CHAIN HYDROCARBON	33.73	6800	J
17		UNKNOWN	34.42	7100	J
18		UNKNOWN	34.52	4200	J
19		UNKNOWN	35.03	7300	J
20		LONG CHAIN HYDROCARBON	35.43	16000	J
21					
22					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C3

Lab Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C3

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 7446X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 23 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/91

GPC Cleanup: (Y/N) Y pH: 8.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	840	U
111-44-4	bis(2-Chloroethyl)Ether	840	U
95-57-8	2-Chlorophenol	840	U
541-73-1	1,3-Dichlorobenzene	840	U
106-46-7	1,4-Dichlorobenzene	840	U
100-51-6	Benzyl Alcohol	840	U
95-50-1	1,2-Dichlorobenzene	840	U
95-48-7	2-Methylphenol	840	U
108-60-1	bis(2-Chloroisopropyl)Ether	840	U
106-44-5	4-Methylphenol	150	J
621-64-7	N-Nitroso-Di-n-Propylamine	840	U
67-72-1	Hexachloroethane	840	U
98-95-3	Nitrobenzene	840	U
78-59-1	Isophorone	840	U
88-75-5	2-Nitrophenol	840	U
105-67-9	2,4-Dimethylphenol	840	U
65-85-0	Benzoic Acid	4100	U
111-91-1	bis(2-Chloroethoxy)Methane	840	U
120-83-2	2,4-Dichlorophenol	840	U
120-82-1	1,2,4-Trichlorobenzene	840	U
91-20-3	Naphthalene	840	U
106-47-8	4-Chloroaniline	840	U
87-68-3	Hexachlorobutadiene	840	U
59-50-7	4-Chloro-3-Methylphenol	840	U
91-57-6	2-Methylnaphthalene	64	J
77-47-4	Hexachlorocyclopentadiene	840	U
88-06-2	2,4,6-Trichlorophenol	840	U
95-95-4	2,4,5-Trichlorophenol	4100	U
91-58-7	2-Chloronaphthalene	840	U
88-74-4	2-Nitroaniline	4100	U
131-11-3	Dimethyl Phthalate	840	U
208-96-8	Acenaphthylene	840	U
606-20-2	2,6-Dinitrotoluene	840	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C3

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C3

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 7446X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 23 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/91

GPC Cleanup: (Y/N) Y pH: 8.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	4100	U
83-32-9	Acenaphthene	840	U
51-28-5	2,4-Dinitrophenol	4100	U
100-02-7	4-Nitrophenol	4100	U
132-64-9	Dibenzofuran	78	J
121-14-2	2,4-Dinitrotoluene	840	U
84-66-2	Diethylphthalate	840	U
7005-72-3	4-Chlorophenyl-phenylether	840	U
86-73-7	Fluorene	140	J
100-01-6	4-Nitroaniline	4100	U
534-52-1	4,6-Dinitro-2-Methylphenol	4100	U
86-30-6	N-Nitrosodiphenylamine (1)	840	U
101-55-3	4-Bromophenyl-phenylether	840	U
118-74-1	Hexachlorobenzene	840	U
87-86-5	Pentachlorophenol	4100	U
85-01-8	Phenanthrene	1600	
120-12-7	Anthracene	640	J
84-74-2	Di-n-Butylphthalate	840	U
206-44-0	Fluoranthene	3200	
129-00-0	Pyrene	1800	
85-68-7	Butylbenzylphthalate	220	J
91-94-1	3,3'-Dichlorobenzidine	1700	U
56-55-3	Benzo(a)Anthracene	1100	
218-01-9	Chrysene	1400	
117-81-7	Bis(2-Ethylhexyl)Phthalate	3600	
117-84-0	Di-n-Octyl Phthalate	410	J
205-99-2	Benzo(b)Fluoranthene	2300	
207-08-9	Benzo(k)Fluoranthene	680	J
50-32-8	Benzo(a)Pyrene	930	
193-39-5	Indeno(1,2,3-cd)Pyrene	370	J
53-70-3	Dibenz(a,h)Anthracene	840	U
191-24-2	Benzo(g,h,i)Perylene	240	J

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: RECRA ENVIRONMENTAL, INC.

Lab Code: RECNY Case No: SH991 SAS No.:

Matrix (Soil/Water): SOIL

Sample wt/vol: 30.6 (g/ml): G

Level (low/med): LOW

% Moisture not Dec: 23 Dec:

Extraction: (SepF/Cont/Sonc/Sox): SONC

GPC Cleanup: (Y/N): Y pH: 8.1

Number TICs Found: 18

EPA Sample No.: 1855C3

Contract: C002412

SDG No.: 0524

Lab Sample ID.: 1855C3

Lab File ID.: 7446X

Date Received: 05/24/91

Date Extracted: 05/29/91

Date Analyzed: 06/14/91

Dilution Factor: 1.0

Concentration Units: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		ALKYL SATURATED HYDROCARBON	18.65	470	J
2		ALKYL SATURATED HYDROCARBON	20.27	730	J
3		UNKNOWN ACID	25.40	4900	J
4		ALKYL SATURATED HYDROCARBON	25.78	890	J
5		LONG CHAIN HYDROCARBON	27.02	1200	J
6		UNKNOWN ACID	27.85	6200	J
7		UNKNOWN	28.15	4400	J
8		UNKNOWN	28.62	550	J
9		LONG CHAIN HYDROCARBON	29.35	1100	J
10		UNKNOWN	30.45	3100	J
11		UNKNOWN	31.52	6600	J
12		UNKNOWN	32.05	4800	J
13		LONG CHAIN HYDROCARBON	32.55	3900	J
14		LONG CHAIN HYDROCARBON	33.57	2500	J
15		UNKNOWN	34.13	1700	J
16		UNKNOWN	34.93	2100	J
17		UNKNOWN	35.33	1300	J
18		UNKNOWN	35.67	1800	J
19					
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28	—	—			
29					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C4

Lab Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C4

Sample wt/vol: 30.9 (g/mL) G Lab File ID: 7447X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 18 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/91

GPC Cleanup: (Y/N) Y pH: 7.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	780	U
111-44-4	bis(2-Chloroethyl)Ether	780	U
95-57-8	2-Chlorophenol	780	U
541-73-1	1,3-Dichlorobenzene	780	U
106-46-7	1,4-Dichlorobenzene	780	U
100-51-6	Benzyl Alcohol	780	U
95-50-1	1,2-Dichlorobenzene	780	U
95-48-7	2-Methylphenol	780	U
108-60-1	bis(2-Chloroisopropyl)Ether	780	U
106-44-5	4-Methylphenol	42	J
621-64-7	N-Nitroso-Di-n-Propylamine	780	U
67-72-1	Hexachloroethane	780	U
98-95-3	Nitrobenzene	780	U
78-59-1	Isophorone	780	U
88-75-5	2-Nitrophenol	780	U
105-67-9	2,4-Dimethylphenol	780	U
65-85-0	Benzoic Acid	3800	U
111-91-1	bis(2-Chloroethoxy)Methane	780	U
120-83-2	2,4-Dichlorophenol	780	U
120-82-1	1,2,4-Trichlorobenzene	780	U
91-20-3	Naphthalene	780	U
106-47-8	4-Chloroaniline	780	U
87-68-3	Hexachlorobutadiene	780	U
59-50-7	4-Chloro-3-Methylphenol	780	U
91-57-6	2-Methylnaphthalene	780	U
77-47-4	Hexachlorocyclopentadiene	780	U
88-06-2	2,4,6-Trichlorophenol	780	U
95-95-4	2,4,5-Trichlorophenol	3800	U
91-58-7	2-Chloronaphthalene	780	U
88-74-4	2-Nitroaniline	3800	U
131-11-3	Dimethyl Phthalate	780	U
208-96-8	Acenaphthylene	780	U
606-20-2	2,6-Dinitrotoluene	780	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1855C4

Lab Name: RECRA ENVIRON Contract: CO02412

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: 1855C4

Sample wt/vol: 30.9 (g/mL) G Lab File ID: 7447X

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 18 dec. ____ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/14/91

GPC Cleanup: (Y/N) Y pH: 7.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	3800	U
83-32-9	Acenaphthene	140	J
51-28-5	2,4-Dinitrophenol	3800	U
100-02-7	4-Nitrophenol	3800	U
132-64-9	Dibenzofuran	86	J
121-14-2	2,4-Dinitrotoluene	780	U
84-66-2	Diethylphthalate	780	U
7005-72-3	4-Chlorophenyl-phenylether	780	U
86-73-7	Fluorene	780	U
100-01-6	4-Nitroaniline	3800	U
534-52-1	4,6-Dinitro-2-Methylphenol	3800	U
86-30-6	N-Nitrosodiphenylamine (1)	780	U
101-55-3	4-Bromophenyl-phenylether	780	U
118-74-1	Hexachlorobenzene	780	U
87-86-5	Pentachlorophenol	3800	U
85-01-8	Phenanthrene	1700	
120-12-7	Anthracene	780	U
84-74-2	Di-n-Butylphthalate	130	J
206-44-0	Fluoranthene	3700	
129-00-0	Pyrene	2000	
85-68-7	Butylbenzylphthalate	480	J
91-94-1	3,3'-Dichlorobenzidine	1600	U
56-55-3	Benzo(a)Anthracene	1000	
218-01-9	Chrysene	1200	
117-81-7	Bis(2-Ethylhexyl)Phthalate	7700	
117-84-0	Di-n-Octyl Phthalate	770	J
205-99-2	Benzo(b)Fluoranthene	2200	
207-08-9	Benzo(k)Fluoranthene	860	
50-32-8	Benzo(a)Pyrene	940	
193-39-5	Indeno(1,2,3-cd)Pyrene	780	U
53-70-3	Dibenz(a,h)Anthracene	780	U
191-24-2	Benzo(g,h,i)Perylene	780	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA Sample No.: 1855C4

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: C002412

Lab Code: RECNY Case No: SH991 SAS No.:

SDG No.: 0524

Matrix (Soil/Water): SOIL

Lab Sample ID.: 1855C4

Sample wt/vol: 30.9 (g/ml): G

Lab File ID.: 7447X

Level (low/med): LOW

Date Received: 05/24/91

% Moisture not Dec: 18 Dec:

Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc/Sox): SONC

Date Analyzed: 06/14/91

GPC Cleanup: (Y/N): Y pH: 7.6

Dilution Factor: 1.0

Number TICs Found: 20

Concentration Units: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		ALKYL SATURATED HYDROCARBON	20.20	930	J
2		ALKYL SATURATED HYDROCARBON	20.87	730	J
3		ALKYL SATURATED HYDROCARBON	21.75	2000	J
4		ALKYL SATURATED HYDROCARBON	23.20	1600	J
5		ALKYL SATURATED HYDROCARBON	24.32	770	J
6		UNKNOWN ACID	25.28	1600	J
7		UNKNOWN	25.55	1200	J
8		ALKYL SATURATED HYDROCARBON	25.77	1200	J
9		ALKYL SATURATED HYDROCARBON	26.65	1300	J
10		UNKNOWN	27.77	2600	J
11		UNKNOWN	27.90	1600	J
12		UNKNOWN HYDROCARBON	28.20	1900	J
13		UNKNOWN	28.55	3900	J
14		ALKYL SATURATED HYDROCARBON	29.35	1900	J
15		UNKNOWN	30.45	5600	J
16		UNKNOWN	31.52	15000	J
17		UNKNOWN	32.08	6200	J
18		LONG CHAIN HYDROCARBON	32.55	7100	J
19		UNKNOWN HYDROCARBON	33.57	6000	J
20		PAH DERIVATIVE	35.33	1000	J
21					
22					
23					
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1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: C1

Lab Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: SS4171

Sample wt/vol: 30.6 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 16 dec. __ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/19/91

GPC Cleanup: (Y/N) Y pH: 7.6 Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	6.7	J
319-85-7	beta-BHC	38	
319-86-8	delta-BHC	19	U
58-89-9	gamma-BHC(Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	19	U
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	37	U
72-55-9	4,4'-DDE	37	U
72-20-8	Endrin	37	U
33213-65-9	Endosulfan II	37	U
72-54-8	4,4'-DDD	37	U
1031-07-8	Endosulfan sulfate	37	U
50-29-3	4,4'-DDT	37	U
72-43-5	Methoxychlor	190	U
53494-70-5	Endrin ketone	37	U
5103-71-9	alpha-chlordane	190	U
5103-74-2	gamma-chlordane	190	U
8001-35-2	Toxaphene	370	U
12674-11-2	Aroclor-1016	190	U
11104-28-2	Aroclor-1221	190	U
11141-16-5	Aroclor-1232	190	U
53469-21-9	Aroclor-1242	190	U
12672-29-6	Aroclor-1248	190	U
11097-69-1	Aroclor-1254	370	U
11096-82-5	Aroclor-1260	370	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

C2

Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: SS4174

Sample wt/vol: 30.4 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 10 dec. __ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/19/91

GPC Cleanup: (Y/N) Y pH: 7.4 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	25	
319-85-7	beta-BHC	210	
319-86-8	delta-BHC	18	U
58-89-9	gamma-BHC(Lindane)	18	U
76-44-8	Heptachlor	18	U
309-00-2	Aldrin	19	
1024-57-3	Heptachlor epoxide	18	U
959-98-8	Endosulfan I	18	U
60-57-1	Dieldrin	35	U
72-55-9	4,4'-DDE	35	U
72-20-8	Endrin	35	U
33213-65-9	Endosulfan II	35	U
72-54-8	4,4'-DDD	35	U
1031-07-8	Endosulfan sulfate	35	U
50-29-3	4,4'-DDT	35	U
72-43-5	Methoxychlor	180	U
53494-70-5	Endrin ketone	35	U
5103-71-9	alpha-chlordane	180	U
5103-74-2	gamma-chlordane	180	U
8001-35-2	Toxaphene	350	U
12674-11-2	Aroclor-1016	180	U
11104-28-2	Aroclor-1221	180	U
11141-16-5	Aroclor-1232	180	U
53469-21-9	Aroclor-1242	180	U
12672-29-6	Aroclor-1248	180	U
11097-69-1	Aroclor-1254	350	U
11096-82-5	Aroclor-1260	350	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

C3

b Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: SS4175

Sample wt/vol: 30.6 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 23 dec. __ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/19/91

GPC Cleanup: (Y/N) Y pH: 8.1 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	340	
319-85-7	beta-BHC	21	
319-86-8	delta-BHC	20	U
58-89-9	gamma-BHC(Lindane)	20	U
76-44-8	Heptachlor	20	U
309-00-2	Aldrin	20	U
1024-57-3	Heptachlor epoxide	20	U
959-98-8	Endosulfan I	20	U
60-57-1	Dieldrin	41	U
72-55-9	4,4'-DDE	41	U
72-20-8	Endrin	41	U
33213-65-9	Endosulfan II	41	U
72-54-8	4,4'-DDD	41	U
1031-07-8	Endosulfan sulfate	41	U
50-29-3	4,4'-DDT	41	U
72-43-5	Methoxychlor	200	U
53494-70-5	Endrin ketone	41	U
5103-71-9	alpha-chlordane	200	U
5103-74-2	gamma-chlordane	200	U
8001-35-2	Toxaphene	410	U
12674-11-2	Aroclor-1016	200	U
11104-28-2	Aroclor-1221	200	U
11141-16-5	Aroclor-1232	200	U
53469-21-9	Aroclor-1242	200	U
12672-29-6	Aroclor-1248	200	U
11097-69-1	Aroclor-1254	410	U
11096-82-5	Aroclor-1260	410	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

C4

Name: RECRA ENVIRON Contract: _____

Lab Code: RECNY Case No.: SH991 SAS No.: _____ SDG No.: 0524

Matrix: (soil/water) SOIL Lab Sample ID: SS4176

Sample wt/vol: 30.9 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 05/24/91

% Moisture: not dec. 18 dec. __ Date Extracted: 05/29/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/19/91

GPC Cleanup: (Y/N) Y pH: 7.5 Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	10	J
319-85-7	beta-BHC	42	
319-86-8	delta-BHC	19	U
58-89-9	gamma-BHC(Lindane)	19	U
76-44-8	Heptachlor	19	U
309-00-2	Aldrin	25	
1024-57-3	Heptachlor epoxide	19	U
959-98-8	Endosulfan I	19	U
60-57-1	Dieldrin	38	U
72-55-9	4,4'-DDE	38	U
72-20-8	Endrin	38	U
33213-65-9	Endosulfan II	38	U
72-54-8	4,4'-DDD	38	U
1031-07-8	Endosulfan sulfate	38	U
50-29-3	4,4'-DDT	38	U
72-43-5	Methoxychlor	190	U
53494-70-5	Endrin ketone	38	U
5103-71-9	alpha-chlordane	190	U
5103-74-2	gamma-chlordane	190	U
8001-35-2	Toxaphene	380	U
12674-11-2	Aroclor-1016	190	U
11104-28-2	Aroclor-1221	190	U
11141-16-5	Aroclor-1232	190	U
53469-21-9	Aroclor-1242	190	U
12672-29-6	Aroclor-1248	190	U
11097-69-1	Aroclor-1254	380	U
11096-82-5	Aroclor-1260	380	U

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: RECRA_ENVIRONMENTAL_INC._ Contract: C002412___

Lab Code: RECNY_ Case No.: SH991 SAS No.: _____ SDG No.:0524__

SOW No.: 7/88_

EPA Sample No.	Lab Sample ID
_1855C1_____	__7103,7103___
_1855C1_D____	__7104,7104___
_1855C1_S____	__7105,7105___
_1855C2_____	__7106,7106___
_1855C3_____	__7107,7107___
_1855C4_____	__7108,7108___

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Deborah J Kinecki Name: DEBORAH J. KINECKI_____

Date: 6/24/91 Title: VICE PRESIDENT NEW YORK ENV. TESTING OPERATIONS

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

1855C1

Lab Name: RECRA_ENVIRONMENTAL_INC._ Contract: C002412___

Lab Code: RECNY_ Case No.: SH991 SAS No.: _____ SDG No.: 0524__

Matrix (soil/water): SOIL_ Lab Sample ID: 7103,6729_

Level (low/med): LOW__ Date Received: 05/24/91

% Solids: _84.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3290		E	P
7440-36-0	Antimony	1.2	B	NW	F
7440-38-2	Arsenic	5.3		N	F
7440-39-3	Barium	545		EN*	P
7440-41-7	Beryllium	1.2	U	N	P
7440-43-9	Cadmium	1.2	U	N	P
7440-70-2	Calcium	130000		E	P
7440-47-3	Chromium	87.6		N	P
7440-48-4	Cobalt	11.7	U	N	A
7440-50-8	Copper	61.6		EN	P
7439-89-6	Iron	31200		E	P
7439-92-1	Lead	470		EN*	P
7439-95-4	Magnesium	59300		E	P
7439-96-5	Manganese	918		E	P
7439-97-6	Mercury	2.2			CV
7440-02-0	Nickel	47.2		N*	P
7440-09-7	Potassium	680	B		A
7782-49-2	Selenium	1.2	U	N	F
7440-22-4	Silver	4.0		N	A
7440-23-5	Sodium	1150	B		P
7440-28-0	Thallium	1.2	U	NW	F
7440-62-2	Vanadium	14.9		N*	P
7440-66-6	Zinc	317		EN*	P
	Cyanide	1.79			C

Color Before: BLACK____ Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

1855C2

Lab Name: RECRA_ENVIRONMENTAL_INC._ Contract: C002412___

Lab Code: RECNY_ Case No.: SH991 SAS No.: _____ SDG No.: 0524__

Matrix (soil/water): SOIL_ Lab Sample ID: 7106_____

Level (low/med): LOW__ Date Received: 05/24/91

% Solids: _90.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16100		E	P
7440-36-0	Antimony	1.1	U	N	F
7440-38-2	Arsenic	3.1		W	F
7440-39-3	Barium	570		EN*	P
7440-41-7	Beryllium	2.4		N	P
7440-43-9	Cadmium	1.1	U	N	P
7440-70-2	Calcium	134000		E	P
7440-47-3	Chromium	47.4		N	P
7440-48-4	Cobalt	11.1	U	N	A
7440-50-8	Copper	34.5		EN	P
7439-89-6	Iron	16300		E	P
7439-92-1	Lead	93.9		EN*	P
7439-95-4	Magnesium	40000		E	P
7439-96-5	Manganese	1910		E	P
7439-97-6	Mercury	1.1			CV
7440-02-0	Nickel	38.3		N*	P
7440-09-7	Potassium	596	B		A
7782-49-2	Selenium	1.1	U	W	F
7440-22-4	Silver	3.8		N	A
7440-23-5	Sodium	883	B		P
7440-28-0	Thallium	1.1	U	NW	F
7440-62-2	Vanadium	9.0	B	N*	P
7440-66-6	Zinc	259		EN*	P
	Cyanide	2.44			C

Color Before: BLACK____ Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

1855C3

Lab Name: RECRA_ENVIRONMENTAL_INC._ Contract: C002412___

Lab Code: RECNY_ Case No.: SH991 SAS No.: _____ SDG No.: 0524__

Matrix (soil/water): SOIL_ Lab Sample ID: 7107_____

Level (low/med): LOW__ Date Received: 05/24/91

% Solids: _77.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3170		E	P
7440-36-0	Antimony	1.3	U	NW	F
7440-38-2	Arsenic	4.8		N	F
7440-39-3	Barium	520		EN*	P
7440-41-7	Beryllium	1.3	U	N	P
7440-43-9	Cadmium	1.3	U	N	P
7440-70-2	Calcium	149000		E	P
7440-47-3	Chromium	97.1		N	P
7440-48-4	Cobalt	13.0	U	N	A
7440-50-8	Copper	160		EN	P
7439-89-6	Iron	27000		E	P
7439-92-1	Lead	741		EN*	P
7439-95-4	Magnesium	67400		E	P
7439-96-5	Manganese	1700		E	P
7439-97-6	Mercury	0.71			CV
7440-02-0	Nickel	85.1		N*	P
7440-09-7	Potassium	649	B		A
7782-49-2	Selenium	1.3	U	N	F
7440-22-4	Silver	2.6		N	A
7440-23-5	Sodium	1030	B		P
7440-28-0	Thallium	1.3	U	NW	F
7440-62-2	Vanadium	21.3		N*	P
7440-66-6	Zinc	282		EN*	P
	Cyanide	1.69			C

Color Before: BLACK____ Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

1855C4

Lab Name: RECRA_ENVIRONMENTAL_INC._ Contract: C002412___

Lab Code: RECNY_ Case No.: SH991 SAS No.: _____ SDG No.: 0524__

Matrix (soil/water): SOIL_ Lab Sample ID: 7108_____

Level (low/med): LOW__ Date Received: 05/24/91

% Solids: _82.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2870		E	P
7440-36-0	Antimony	1.2	U	N	F
7440-38-2	Arsenic	4.4		N	F
7440-39-3	Barium	512		EN*	P
7440-41-7	Beryllium	1.2	U	N	P
7440-43-9	Cadmium	1.2	U	N	P
7440-70-2	Calcium	134000		E	P
7440-47-3	Chromium	71.3		N	P
7440-48-4	Cobalt	12.2	U	N	A
7440-50-8	Copper	70.7		EN	P
7439-89-6	Iron	17500		E	P
7439-92-1	Lead	180		EN*	P
7439-95-4	Magnesium	65400		E	P
7439-96-5	Manganese	643		E	P
7439-97-6	Mercury	1.4			CV
7440-02-0	Nickel	40.5		N*	P
7440-09-7	Potassium	576	B		A
7782-49-2	Selenium	1.2	U	N	F
7440-22-4	Silver	3.4		N	A
7440-23-5	Sodium	600	B		P
7440-28-0	Thallium	1.2	U	NW	F
7440-62-2	Vanadium	25.1		N*	P
7440-66-6	Zinc	414		EN*	P
	Cyanide	2.44			C

Color Before: BLACK____ Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

Comments:

APPENDIX C

NYSDEC ANALYTICAL DATA FOR NOVEMBER 1990 OUTFALL SEDIMENT SAMPLES

NYSDEC GILL CREEK SAMPLING
NOVEMBER 15, 1990

PARAMETER UNITS	Outfall #1 ug/kg	Outfall #3 ug/kg
METALS		
Chromium		
Lead		296000
Mercury		6000
BNA		
1,4-Dichlorobenzene	680	
Acenaphthene		650
Fluorene		
Hexachlorobenzene		
Phenanthrene	1700	7400
Anthracene	460	1600
Fluoranthene	4000	11000
Pyrene	4000	12000
Butylbenzylphthalate		900
Benzo(a)anthracene	3300	6200
Chrysene	3300	7100
bis(2-Ethlhexyl)phthalate		1300
Benzo(b)fluoranthene	5200	6700
Benzo(k)fluoranthene	4300	6000
Benzo(a)pyrene	3300	6800
Indeno(1,2,3-cd)pyrene	1000	2500
Dibenz(a,h)anthracene		640
Benzo(g,h,i)perylene	800	2300

NYSDEC GILL CREEK SAMPLING
NOVEMBER 15, 1990

PARAMETER UNITS	Outfall #1 ug/kg	Outfall #3 ug/kg
Pesticide/PCB		
alpha-BHC	510	220
beta-BHC	140	120
delta-BHC	500	640
Lindane		
Dieldrin		
4,4'-DDE		
Endrin		
Endosulfan II		
4,4'-DDD		
4,4'-DDT		
Methoxychlor		
Aroclor-1242		800
VOA		
Methylene chloride		3
Acetone	17	33
Carbon Disulfide		9
2-Butanone		
Benzene	7	7
Chlorobenzene	130	440

NYSDEC GILL CREEK SAMPLING
NOVEMBER 15, 1990

PARAMETER UNITS	Outfall #5 ug/kg
METALS	
Chromium	
Lead	260000
Mercury	3400
BNA	
1,4-Dichlorobenzene	
Acenaphthene	510
Fluorene	
Hexachlorobenzene	
Phenanthrene	4400
Anthracene	760
Fluoranthene	7000
Pyrene	8100
Butylbenzylphthalate	
Benzo(a)anthracene	3300
Chrysene	3700
bis(2-Ethlhexyl)phthalate	1500
Benzo(b)fluoranthene	4500
Benzo(k)fluoranthene	3900
Benzo(a)pyrene	3400
Indeno(1,2,3-cd)pyrene	2100
Dibenz(a,h)anthracene	
Benzo(g,h,i)perylene	1600

NYSDEC GILL CREEK SAMPLING
NOVEMBER 15, 1990

PARAMETER UNITS	Outfall #5 ug/kg
Pesticide/PCB	
alpha-BHC	77
beta-BHC	78
delta-BHC	67
Lindane	
Dieldrin	
4,4'-DDE	
Endrin	
Endosulfan II	
4,4'-DDD	
4,4'-DDT	
Methoxychlor	
Aroclor-1242	
VOA	
Methylene chloride	
Acetone	19
Carbon Disulfide	
2-Butanone	
Benzene	4
Chlorobenzene	14

APPENDIX D

OLIN (IT) AND NYSDEC (VERSAR) ANALYTICAL DATA FOR NOVEMBER 1990 GILL CREEK SEDIMENT SAMPLES

PANEL : Volatile Organics Analyses
MATRIX: Soil

Results of Split Sample Analyses
OLIN - GILL CREEK SAMPLING/NIAGARA FALLS

29-Jan-93

SAMPLE LOCATION ---	STA1C	STA1C	STA2D	STA2DS	STA2SS	STA2SS	STA2C	STA2C	STA3C	STA3C	STA4D	STA4DS	STA4SS	STA4SS	STA4C	STA4C	STA5DS	STA5DS	STA5SS	STA5SS	STA5C	STA5C
COMPANY ---	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR
UNITS of MEASURE ---	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
SAMPLE NUMBER ---	PP2694	185511	PP2695	185523	PP2698	185521	PP2699	185522	PP2700	185531	PP2701	185543	PP2702	185541	PP2703	185542	PP2704	185553	PP2705	185551	PP2706	185552
COMPOUND																						
Chloromethane	33U	45U	13U	18U	17U	27U	24U	29U	23U	26U	24U	20U	18U	25U	23U	27U	30U	22U	19UJ	30U	25U	29U
Bromomethane	33U	45U	13U	18U	17U	27U	24U	29U	23U	26U	24U	20U	18U	25U	23U	27U	30U	22U	19UJ	30U	25U	29U
Vinyl Chloride	33U	45U	13U	18U	17U	27U	24U	29U	23U	26U	24U	20U	18U	25U	23U	27U	30U	22U	19UJ	30U	25U	29U
Chloroethane	33U	45U	13U	18U	17U	27U	24U	29U	23U	26U	24U	20U	18U	25U	23U	27U	30U	22U	19UJ	30U	25U	29U
Methylene Chloride	130	23U	5J	9	12	17	13J	11J	19	8J	10J	7J	51	12U	12U	11J	15U	15	21J	21	13U	12J
Acetone	120J	45U	8J	37	29	81	50	46	40	41	40	61	18U	54	31	45	60	68	23J	45	35	100
Carbon Disulfide	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
1,1-Dichloroethene	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
1,1-Dichloroethane	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
1,2-Dichlorothene (total)	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Chloroform	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
1,2-Dichloroethane	17U	23U	7U	9U	6J	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
2-Butanone	33UJ	45U	13U	18U	17U	15J	24U	29U	23U	26U	24U	21	18U	25U	23U	27U	30U	20J	19UJ	30U	25U	32
1,1,1-Trichloroethane	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Carbon Tetrachloride	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Vinyl Acetate	33U	45U	13U	18U	17U	27U	24U	29U	23U	26U	24U	20U	18U	25U	23U	27U	30U	22U	19UJ	30U	25U	29U
Bromodichloromethane	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
1,2-Dichloropropane	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
cis-1,3-Dichloropropene	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Trichloroethene	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Dibromochloromethane	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
1,1,2-Trichloroethane	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Benzene	9J	33	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	4J	11U	10UJ	15U	13U	15U
Trans-1,3-Dichloropropene	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Bromoform	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
4-Methyl-2-Pentanone	33U	45U	13U	18U	17U	27U	24U	29U	23U	26U	24U	20U	4J	25U	23U	27U	30U	22U	19UJ	30U	25U	29U
2-Hexanone	33U	45U	13U	18U	17U	27U	24U	29U	23U	26U	24U	20U	18U	25U	23U	27U	30U	22U	19UJ	30U	25U	29U
Tetrachloroethene	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
1,1,2,2-Tetrachloroethane	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Toluene	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	3J	11U	10UJ	15U	13U	15U
Chlorobenzene	44	130	7U	9U	31	69	24	76	33	70	58	56	59	110	31	100	35	76	21J	56	35	65
Ethylbenzene	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Styrene	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U
Xylenes (total)	17U	23U	7U	9U	9U	14U	12U	15U	11U	13U	12U	10U	9U	12U	12U	14U	15U	11U	10UJ	15U	13U	15U

Legend for sample locations:
STA - Station
STA1 through STA5 - Station number
C - Center of creek
SS- Shallow Sediment

Legend for Qualifiers:
B - Compound found in method blank.
J - Compound detected but below contract required detection limits. Value provided is an estimate.
S - Spiked compound.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

PANEL : Semi-volatile Organics Analyses
MATRIX: Soil

Results of Split Sample Analyses
OLIN - GILL CREEK SAMPLING/NIAGARA FALLS

SAMPLE LOCATION ---	STA1C	STA1C	STA2D	STA2DS	STA2SS	STA2SS	STA2C	STA2C	STA3C	STA3C	STA4D	STA4DS	STA4SS	STA4SS	STA4C	STA4C	STA5D	STA5DS	STA5SS	STA5SS	STA5C	STA5C
COMPANY ---	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR
UNITS of MEASURE ---	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SAMPLE NUMBER ---	PP2719	185511	PP2720	185523	PP2723	185521	PP2724	185522	PP2725	185531	PP2726	185543	PP2727	185541	PP2728	185542	PP2729	185553	PP2730	185551	PP2731	185552
COMPOUND																						
Phenol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
bis(2-Chloroethyl)Ether	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
2-Chlorophenol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
1,3-Dichlorobenzene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
1,4-Dichlorobenzene	4400U	960U	880U	530U	2300U	1600U	3200U	510J	R	690U	680J	770U	2400U	660J	350J	900J	310J	560U	1300U	1000U	300J	1400U
Benzyl Alcohol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
1,2-Dichlorobenzene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	580JX	1600U	1400U
2-Methylphenol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
bis(2-Chloroisopropyl)Ether	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
4-Methylphenol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
N-Nitroso-Di-n-Propylamine	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Hexachloroethane	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Nitrobenzene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Isophorone	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
2-Nitrophenol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
2,4-Dimethylphenol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Benzoic Acid	21000U	4700U	4200U	2500U	11000U	7600U	15000U	2900U	R	3300U	7800U	3700U	12000U	4000U	7400U	7900U	9600U	2700U	6100U	4900U	7900U	6700U
bis(2-Chloroethoxy)Methane	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
2,4-Dichlorophenol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
1,2,4-Trichlorobenzene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Naphthalene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
4-Chloroaniline	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Hexachlorobutadiene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
4-Chloro-3-Methylphenol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
2-Methylnaphthalene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	450J	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Hexachlorocyclopentadiene	4400UJ	960U	880UJ	530U	2300UJ	1600U	3200UJ	610U	R	690U	1600UJ	770U	2400UJ	820U	1500UJ	1600U	2000UJ	560U	1300UJ	1000U	1600UJ	1400U
2,4,6-Trichlorophenol	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
2,4,5-Trichlorophenol	21000U	4700U	4200U	2500U	11000U	7600U	15000U	2900U	R	3300U	7800U	3700U	12000U	4000U	7400U	7900U	9600U	2700U	6100U	4900U	7900U	6700U
2-Chloronaphthalene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
2-Nitroaniline	21000U	4700U	4200U	2500U	11000U	7600U	15000U	2900U	R	3300U	7800U	3700U	12000U	4000U	7400U	7900U	9600U	2700U	6100U	4900U	7900U	6700U
Dimethyl Phthalate	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Acenaphthylene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	170J	770U	2400U	820U	1500U	1600U	2000U	560U	150J	1000U	1600U	1400U
2,6-Dinitrotoluene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
3-Nitroaniline	21000U	4700U	4200U	2500U	11000U	7600U	15000U	2900U	R	3300U	7800U	3700U	12000U	4000U	7400U	7900U	9600U	2700U	6100U	4900U	7900U	6700U
Acenaphthene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600J	770U	2400U	820U	1500U	860J	2000U	560U	1300U	1000U	1600U	1400U
2,4-Dinitrophenol	21000UJ	4700U	4200UJ	2500U	11000UJ	7600U	15000UJ	2900U	R	3300U	7800UJ	3700U	12000UJ	4000U	7400UJ	7900U	9600UJ	2700U	6100UJ	4900U	7900UJ	6700U
4-Nitrophenol	21000U	4700U	4200U	2500U	11000U	7600U	15000U	2900U	R	3300U	7800U	3700U	12000U	4000U	7400U	7900U	9600U	2700U	6100U	4900U	7900U	6700U
Dibenzofuran	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	850J	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U

PANEL : Semi-volatile Organics Analyses
MATRIX: Soil

Results of Split Sample Analyses
OLIN - GILL CREEK SAMPLING/NIAGARA FALLS

SAMPLE LOCATION ---	STA1C	STA1C	STA2D	STA2DS	STA2SS	STA2SS	STA2C	STA2C	STA3C	STA3C	STA4D	STA4DS	STA4SS	STA4SS	STA4C	STA4C	STA5D	STA5DS	STA5SS	STA5SS	STA5C	STA5C
COMPANY ---	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR
UNITS of MEASURE ---	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SAMPLE NUMBER ---	PP2719	185511	PP2720	185523	PP2723	185521	PP2724	185522	PP2725	185531	PP2726	185543	PP2727	185541	PP2728	185542	PP2729	185553	PP2730	185551	PP2731	185552
COMPOUND																						
2,4-Dinitrotoluene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Diethylphthalate	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
4-Chlorophenyl-phenylether	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Fluorene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1300J	770U	2400U	820U	1500U	820J	2000U	560U	1300U	1000U	1600U	1400U
4-Nitroaniline	21000U	4700U	4200U	2500U	11000U	7600U	15000U	2900U	R	3300U	7800U	3700U	12000U	4000U	7400U	7900U	9600U	2700U	6100U	4900U	7900U	6700U
4,6-Dinitro-2-Methylphenol	21000U	4700U	4200U	2500U	11000U	7600U	15000U	2900U	R	3300U	7800U	3700U	12000U	4000U	7400U	7900U	9600U	2700U	6100U	4900U	7900U	6700U
N-Nitrosodiphenylamine (1)	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
4-Bromophenyl-phenylether	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Hexachlorobenzene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Pentachlorophenol	21000U	4700U	4200U	2500U	4900S	7600U	15000U	2900U	R	3300U	7800U	3700U	12000U	4000U	7400U	7900U	9600U	2700U	6100U	4900U	7900U	6700U
Phenanthrene	650J	1600	200J	530U	640J	1600U	3200U	460J	220J	700	10000	770U	1100J	870	780J	7300	1500J	430J	810J	1000J	830J	2300
Anthracene	4400U	450J	880U	530U	2300U	1600U	3200U	610U	R	690U	3000	770U	410J	820U	220J	1900	420J	560U	280J	1000U	250J	590JX
Di-n-Butylphthalate	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Fluoranthene	1400J	2200	380J	530U	1000J	1100JX	390J	1100	500J	1500	9900	770U	2700	2000	1600	11000	2400	880	1900	2700	1600J	4800
Pyrene	1400J	3100	380J	230J	970J	1500J	390J	1400	480J	2200	10000	770U	2900	2200X	1600	14000	2300	830	1800	2400X	1500J	4600X
Butylbenzylphthalate	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
3,3'-Dichlorobenzidine	8700U	1900U	1800U	1100U	4500U	3100U	6400U	1200U	R	1400U	3200U	1500U	4800U	1600U	3100U	3200U	3900U	1100U	2500U	2000U	3300U	2800U
Benzo(a)Anthracene	770J	1400	260J	530U	540J	690J	3200U	710	250J	940	6200	770U	1800J	1100	890J	6200	1400J	470J	1000J	1300	890J	2600
Chrysene	1100J	1700	290J	530U	690J	940J	3200U	890	330J	1200	6200	770U	2000J	1300	1100J	6600	1600J	510J	1200J	1600	1100J	2700
bis(2-Ethylhexyl)Phthalate	4400U	1700	880U	530U	2300U	920J	3200U	770	660J	930	1600U	770U	2400U	1300	1800U	920J	2000U	560U	1300U	1100	3800	990J
Di-n-Octyl Phthalate	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	1600U	770U	2400U	820U	1500U	1600U	2000U	560U	1300U	1000U	1600U	1400U
Benzo(b)Fluoranthene	660J	1900	140J	530U	400J	1100J	3200U	890	160J	1400	4000	770U	1600J	1500	900J	6600	1300J	630	950J	2000	890J	3100
Benzo(k)Fluoranthene	1000J	1800	260J	530U	720J	1100J	3200U	1200	220J	1200	7200	770U	1800J	1300	1300J	8400	1700J	550J	1200J	2100	1300J	3100
Benzo(a)Pyrene	870J	1500	230J	530U	570J	720J	3200U	760	250J	1000	5900	770U	1500J	1200	930J	6600	1400J	450J	920J	1500	960J	2600
Indeno(1,2,3-cd)Pyrene	4400U	970X	100J	530U	270J	1600U	3200U	530J	R	690	1700	770U	700J	750J	350J	3600	530J	270J	380J	1100	340J	1500X
Dibenz(a,h)Anthracene	4400U	960U	880U	530U	2300U	1600U	3200U	610U	R	690U	780J	770U	310J	820U	1500U	1600U	220J	560U	150J	1000U	1600U	1400U
Benzo(g,h,i)Perylene	4400U	720J	140J	530U	350J	1600U	3200U	410J	R	540J	1600J	770U	740J	650J	400J	2600	590J	560U	420J	800J	380J	1200J

Legend for sample locations:
- STA - Station
- STA1 through STA5 - Station number
- C - Center of creek
- SS- Shallow Sediment
- DS - Deeper Sediment

Legend for Qualifiers:
- A - Suspected aldol condensation product.
- B - Compound was found in method blank.
- C - Analyte presence was confirmed on a secondary column.
- J - Compound detected but below CRDL; value given is an estimate.
- S - Spike
- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- X - Matrix interference present, result may be inflated.

PANEL : Pesticides and PCBs Analyses

27-Jan-93

MATRIX: Soil

Results of Split Sample Analyses

OLIN - GILL CREEK SAMPLING/NIAGARA FALLS

SAMPLE LOCATION ---	STA1C	STA1C	STA2D	STA2DS	STA2SS	STA2SS	STA2C	STA2C	STA3C	STA3C	STA4D	STA4DS	STA4SS	STA4SS	STA4C	STA4C	STA5D	STA5DS	STA5SS	STA5SS	STA5C	STA5C
COMPANY ---	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR
UNITS of MEASURE ---	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SAMPLE NUMBER ---	PP2719	185511	PP2720	185523	PP2723	185521	PP2724	185522	PP2725	185531	PP2726	185543	PP2727	185541	PP2728	185542	PP2729	185553	PP2730	185551	PP2731	185552
COMPOUND																						
a-BHC	210C	1200	6C	61U	110C	140	24C	210	54C	240	120C	8.9U	2C	290	64C	470	49C	6.5U	5C	140	100C	190
B-BHC	120C	550	15U NC	61U	110C	45	2U	86	15U*	79U	150C	8.9U	15C	66	100U N	120	80U NC	6.5U	21U NC	50	90U NC	140
y-BHC	14U NC	460	1U	61U	15U NC	190	4U NC	370	17U NC	270	32	13	1U	500	19U NC	1400	17U NC	6.6	1U	180	25U NC	280
g-BHC	110C	110U	30C	61U	130C	38	39C	35	96C	79U	360C	8.9U	6U NC	64	120C	140	89C	6.5U	7U NC	28	120C	36
Heptachlor	11U+	110U	2C	61U	5U+	9.0U	51U+	7.0U	110U+	79U	35U+	8.9U	2U+	9.4U	36U+	9.3U	11U+	6.5U	4U+	12U	30U+	16U
Aldrin	76U*	110U	1U	61U	34U+	9.0U	94U NC	7.0U	190U N	79U	110U*	8.9U	3U*	9.4U	79U+	9.3U	45U*	6.5U	10U*	12U	72U*	16U
Heptachlor Epoxide	31U NC	110U	30U	61U	30U	9.0U	56U NC	7.0U	180U N	79U	47U NC	8.9U	30U	9.4U	68U+	9.3U	30U	6.5U	30U	12U	53U NC	16U
Edosulfan I	7U	110U	7U	61U	7U	9.0U	9U*	7.0U	14U*	79U	11U*	8.9U	7U	9.4U	7U	9.3U	7U	6.5U	7U	12U	7U	16U
Dieldrin	15U NC	220U	0.7U	120U	8U+	60	41U NC	14U	76U NC	160U	25U NC	18U	0.7U	56	35U NC	57	14U NC	13U	2.4U NC	33	31U NC	65
4,4'-DDE	19U NC	220U	2U NC	120U	11U*	18U	25U NC	14U	30U NC	160U	10U+	18U	2U+	47	18U NC	53	7U*	13U	5U*	24U	26U NC	32U
Endrin	12U+	220U	14U*	120U	29U+	35	82U+	26	40U+	160U	26U+	18U	13U+	37	23U+	38	16U+	13U	4U+	24U	24U+	38
Endosulfan II	14U NC	220U	4U NC	120U	11U NC	18U	23U NC	14U	47U NC	160U	22U NC	18U	2U+	19U	26U NC	19U	12U NC	13U	2U NC	84	23U NC	140
4,4'-DDD	8U NC	220U	5U*	120U	5U NC	41	6U NC	21	11U NC	380	9U NC	18U	4U	39	8U NC	36	4U	13U	4U	24U	8U NC	32U
Endosulfan Sulfate	20U	220U	27U NC	120U	31U NC	18U	20U	14U	20U	160U	42U NC	18U	24U NC	19U	20U	19U	24U NC	13U	20U	24U	21U*	32U
4,4'-DDT	23U+	220U	4U	120U	24U+	18U	31U+	52	47U+	160U	4U	18U	4U	19U	24U+	19U	4U	13U	4U	24U	29U+	32U
Methoxychlor	60U	1100U	60U	610U	71U*	90U	60U	70U	60U	790U	60U	89U	60U	94U	60U	93U	60U	65U	60U	120U	60U	200
Endrin Ketone	60U	20U	60U	120U	60U	18U	60U	14U	60U	160U	60U	18U	60U	19U	60U	19U	60U	13U	60U	24U	60U	32U
Chlordane	190U+	1100U	6U*	610U	40U NC	90U	170U+	70U	530U*	790U	96NC*	89U	28U*	94U	380U+	93U	88U*	65U	17U*	120U	290U*	160U
Toxaphene	80U	2200U	80U	1200U	110U+	180U	80U	140U	80U	1600U	80U	180U	80U	100U	80U	190U	80U	130U	80U	240U	80U	320U
PCB-(Aroclor)-1016	2OOU+	1100U	20U	610U	40U+	90U	2OOU+	70U	2OOU+	790U	200U+	89U	74U*	94U	200U+	93U	200U+	65U	40U+	120U	200U+	160U
PCB-(Aroclor)-1221	2OOU+	1100U	220*	610U	460U*	90U	450U*	70U	490U*	790U	490U*	89U	20U	94U	960U*	93U	430U*	65U	180U*	120U	480U*	160U
PCB-(Aroclor)-1232	2OOU+	1100U	20U	610U	40U+	90U	2OOU+	70U	2OOU+	790U	200U+	89U	74U*	94U	200U+	93U	200U+	65U	40U+	120U	200U+	160U
PCB-(Aroclor)-1242	2OOU+	1100U	20U	610U	40U+	3700	2OOU+	700Y	2OOU+	8900	200U+	89U	74U*	6100X	200U+	6800	200U+	65U	40U+	3100XY	200U+	5500XY
PCB-(Aroclor)-1248	600C**	1100U	20U	610U	540C**	90U	1900C*	70U	3900C*	790U	1200C*	89U	74U*	94U	1900C*	93U	1600C*	65U	130C**	120U	1300**	160U
PCB-(Aroclor)-1254	400U+	2200U	48U*	1200U	300U+	180U	400U+	140U	680U+	1600U	400U+	180U	80U	190U	400U+	190U	400U+	130U	80U+	240U	400U+	320U
PCB-(Aroclor)-1260	400U+	2200U	40U	1200U	230C**	180U	400U+	140U	400U+	1600U	400U+	180U	80U	190U	400U+	190U	400U+	130U	80U+	240U	400U+	320U

Legend for sample location:

ST - Station

STA1 through STA5 - Station number

C - Center of creek

SS - Shallow Sediment

DS - Deeper Sediment

Legend for Qualifiers:

C - Analyte presence was confirmed on a secondary column.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

+ - Elevated due to presence of an Aroclor.

* - Elevated detection limit due to matrix interference.

** - Altered Aroclor pattern.

NC -Sample analysis on the primary column exhibited a positive for the compound. Further analyses did not confirm the positive result; therefore, elevated detection limits were reported.

Y - Qualitative Verification

X - Matrix interference present, result may be inflated.

PANEL : Inorganics Analyses

MATRIX: Soil

Results of Split Sample Analyses

OLIN - GILL CREEK SAMPLING

NIAGARA FALLS

SAMPLE LOCATION ---	STA1C	STA1C	STA2D	STA2DS	STA2SS	STA2SS	STA2C	STA2C	STA3C	STA3C	STA4DS	STA4DS	STA4SS	STA4SS	STA4C	STA4C	STA5DS	STA5DS	STA5SS	STA5SS	STA5C	STA5C
COMPANY ---	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSAR	IT	VERSA
UNIT of MEASURE ---	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
SAMPLE NUMBER ---	PP2719	185511	PP2707	185523	PP2710	185521	PP2711	185522	PP2712	185531	PP2713	185543	PP2714	185541	PP2715	185542	PP2716	185553	PP2717	185551	PP2718	185552
COMPOUND																						
Aluminum		13700		16400		11400		5570		11600		12500		10600		12500		16100		10900		11800
Antimony		22.8B		7.7U		11.6U		15.4B		11.2U		8.6U		11.2U		13.7B		9.5U		13.2U		12.5U
Arsenic		5.2B		2.1B		6.3		8.1		6.1		3.0B		5.2		8.6		32.2		46.9		14.6
Barium		190		120		120		74.5B		132		96.5		132		147		126		134		152
Beryllium		0.89U		1.8		3.4		2		4.3		3.1		4.0		4.2		3.3		4.8		4.5
Cadmium		4.5U		1.7U		2.5U		1.9U		2.4U		1.9U		2.4U		2.5U		4.6		2.9U		2.7U
Calcium		44500		8070		54300		34300		63800		8820		60800		46500		15500		50600		29600
Chromium		72.8		18.2		46.2		87.3		47.6		15.2		63.7		92.0		98.4		78.4		322
Cobalt		10.2B		12.8B		9.1B		5.9B		9.7B		11.8B		10.8B		12.8B		13.8B		10.5B		10.2B
Copper		49.5		17.6		31.6		23.9		45.8		18.7		63.9		721		56		59.1		75.7
Iron		22900		21500		18600		10200		19600		18800		18600		23900		39200		18100		2600
Lead		134		31.8		137		85.3		123		14.5		127		143		1310		246		1660
Magnesium		15000		6730		14000		12500		16100		5940		16200		12300		7230		13400		8400
Manganese		384		246		405		251		456		207		377		324		345		371		262
Mercury	2.1J	1.7	1.4J	6.2	1.8J	1.9	1.8J	2.8	2.5J	6.1	5.2J	0.20U	4.8J	4	3.4J	6.7	10.5J	1.2	6.0J	5.9	3.2J	13.4
Nickel		27.7B		23.3		22.4		12.3B		31.5		23.5		25.9		28.3		31.4		20.9B		23.7
Potassium		2050B		1540B		1570B		777B		1710B		1460B		1300B		1570B		1690B		1490B		1440B
Selenium		2.5U		1.0U		1.6U		1.1U		1.5U		1.2U		1.5B		1.6U		1.3U		1.7U		1.8U
Silver		4.6B		3.2B		3.0B		1.5B		3.8U		3.0B		4.1B		4.1B		6.2		3.2B		5.3B
Sodium		357B		1400B		237B		184B		331B		424B		265B		290B		270B		275B		240B
Thallium		0.82U		0.35U		0.52U		0.37B		0.48U		0.40U		0.47U		0.53U		0.42U		0.58U		0.59U
Vanadium		34.4B		28.9		24.4B		12.1B		24.9		21.8		24.0B		29.2		29.9		24.4B		27.9
Zinc		328		146		290		164		267		174		326		363		971		320		595
Cyanide		2.0U		0.89U		1.3U		1.0U		1.3U		1.0U		1.3U		1.3U		1.1U		1.5U		1.5U

Legend for sample location:
- STA - Station
- STA1 through STA5 - Station number
- C - Center of creek
- SS - Shallow Sediment
- DS - Deeper Sediment

Legend for Qualifiers:
- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- B - Estimate

APPENDIX E

NYSDEC ANALYTICAL DATA FOR OCTOBER 1992 GILL CREEK SEDIMENT SAMPLES

INORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Inorganic Data Qualifiers:

B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 100).

E - Indicates a value estimated or not reported due to the presence of interference.

S - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

M - Indicates duplicate injection results exceeded control limits.

W - Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

18

EPA SAMPLE NO.

185501

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019104

Sample wt/vol: 5.0 (g/mL) G Lab File ID: H9740

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 49 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	20	U
74-83-9	Bromomethane	20	U
75-01-4	Vinyl Chloride	20	U
75-00-3	Chloroethane	20	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	93	
75-15-0	Carbon Disulfide	20	U
75-35-4	1,1-Dichloroethene	20	U
75-34-3	1,1-Dichloroethane	20	U
540-59-0	1,2-Dichloroethene (total)	20	U
67-66-3	Chloroform	20	U
107-06-2	1,2-Dichloroethane	20	U
78-93-3	2-Butanone	35	
71-55-6	1,1,1-Trichloroethane	20	U
56-23-5	Carbon Tetrachloride	20	U
75-27-4	Bromodichloromethane	20	U
78-87-5	1,2-Dichloropropane	20	U
10061-01-5	cis-1,3-dichloropropene	20	U
79-01-6	Trichloroethene	20	U
124-48-1	Dibromochloromethane	20	U
79-00-5	1,1,2-Trichloroethane	20	U
71-43-2	Benzene	2	J
10061-02-6	trans-1,3-dichloropropene	20	U
75-25-2	Bromoform	20	U
108-10-1	4-Methyl-2-Pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	20	U
79-34-5	1,1,2,2-Tetrachloroethane	20	U
108-88-3	Toluene	20	U
108-90-7	Chlorobenzene	27	
100-41-4	Ethylbenzene	20	U
100-42-5	Styrene	20	U
1330-20-7	Total Xylenes	20	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

19

EPA SAMPLE NO.

185501

I Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019104

Sample wt/vol: 5.0 (g/mL) G Lab File ID: H9740

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 49 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185502

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019105

Sample wt/vol: 5.0 (g/mL) G Lab File ID: H9749

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 59 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	24	U
74-83-9	Bromomethane	24	U
75-01-4	Vinyl Chloride	24	U
75-00-3	Chloroethane	24	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	100	
75-15-0	Carbon Disulfide	24	U
75-35-4	1,1-Dichloroethene	24	U
75-34-3	1,1-Dichloroethane	24	U
540-59-0	1,2-Dichloroethene (total)	24	U
67-66-3	Chloroform	24	U
107-06-2	1,2-Dichloroethane	24	U
78-93-3	2-Butanone	20	J
71-55-6	1,1,1-Trichloroethane	24	U
56-23-5	Carbon Tetrachloride	24	U
75-27-4	Bromodichloromethane	24	U
78-87-5	1,2-Dichloropropane	24	U
10061-01-5	cis-1,3-dichloropropene	24	U
79-01-6	Trichloroethene	24	U
124-48-1	Dibromochloromethane	24	U
79-00-5	1,1,2-Trichloroethane	24	U
71-43-2	Benzene	23	J
10061-02-6	trans-1,3-dichloropropene	24	U
75-25-2	Bromoform	24	U
108-10-1	4-Methyl-2-Pentanone	24	U
591-78-6	2-Hexanone	24	U
127-18-4	Tetrachloroethene	24	U
79-34-5	1,1,2,2-Tetrachloroethane	24	U
108-88-3	Toluene	24	U
108-90-7	Chlorobenzene	840	E
100-41-4	Ethylbenzene	24	U
100-42-5	Styrene	24	U
1330-20-7	Total Xylenes	24	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

21

EPA SAMPLE NO.

185502

b Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019105

Sample wt/vol: 5.0 (g/mL) G Lab File ID: H9749

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 59 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 3

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	541-73-1	1,3-Dichlorobenzene	23.57	43	JN
2.	106-46-7	1,4-Dichlorobenzene	23.70	160	JN
3.	95-50-1	1,2-Dichlorobenzene	24.30	31	JN

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185502DL

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019105DL

Sample wt/vol: 1.1 (g/mL) G Lab File ID: H9748

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 59 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	110	U
74-83-9	Bromomethane	110	U
75-01-4	Vinyl Chloride	110	U
75-00-3	Chloroethane	110	U
75-09-2	Methylene Chloride	4	DJ
67-64-1	Acetone	110	U
75-15-0	Carbon Disulfide	110	U
75-35-4	1,1-Dichloroethene	110	U
75-34-3	1,1-Dichloroethane	110	U
540-59-0	1,2-Dichloroethene (total)	110	U
67-66-3	Chloroform	110	U
107-06-2	1,2-Dichloroethane	110	U
78-93-3	2-Butanone	40	DJ
71-55-6	1,1,1-Trichloroethane	110	U
56-23-5	Carbon Tetrachloride	110	U
75-27-4	Bromodichloromethane	110	U
78-87-5	1,2-Dichloropropane	110	U
10061-01-5	cis-1,3-dichloropropene	110	U
79-01-6	Trichloroethene	110	U
124-48-1	Dibromochloromethane	110	U
79-00-5	1,1,2-Trichloroethane	110	U
71-43-2	Benzene	27	DJ
10061-02-6	trans-1,3-dichloropropene	110	U
75-25-2	Bromoform	110	U
108-10-1	4-Methyl-2-Pentanone	110	U
591-78-6	2-Hexanone	110	U
127-18-4	Tetrachloroethene	110	U
79-34-5	1,1,2,2-Tetrachloroethane	110	U
108-88-3	Toluene	2	DJ
108-90-7	Chlorobenzene	350	D
100-41-4	Ethylbenzene	110	U
100-42-5	Styrene	110	U
1330-20-7	Total Xylenes	110	U

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

185502DL

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019105DL

Sample wt/vol: 1.1 (g/mL) G Lab File ID: H9748

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 59 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 3

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	11.03	140	J
2.	106-46-7	1,4-Dichlorobenzene	23.67	120	JN
3.		Siloxane Derivative	24.75	110	J

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106

Sample wt/vol: 5.2 (g/mL) G Lab File ID: H9745

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 55 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	21	U
74-83-9	Bromomethane	21	U
75-01-4	Vinyl Chloride	21	U
75-00-3	Chloroethane	21	U
75-09-2	Methylene Chloride	21	U
67-64-1	Acetone	88	
75-15-0	Carbon Disulfide	21	U
75-35-4	1,1-Dichloroethene	21	U
75-34-3	1,1-Dichloroethane	21	U
540-59-0	1,2-Dichloroethene (total)	21	U
67-66-3	Chloroform	21	U
107-06-2	1,2-Dichloroethane	21	U
78-93-3	2-Butanone	23	
71-55-6	1,1,1-Trichloroethane	21	U
56-23-5	Carbon Tetrachloride	21	U
75-27-4	Bromodichloromethane	21	U
78-87-5	1,2-Dichloropropane	21	U
10061-01-5	cis-1,3-dichloropropene	21	U
79-01-6	Trichloroethene	21	U
124-48-1	Dibromochloromethane	21	U
79-00-5	1,1,2-Trichloroethane	21	U
71-43-2	Benzene	17	J
10061-02-6	trans-1,3-dichloropropene	21	U
75-25-2	Bromoform	21	U
108-10-1	4-Methyl-2-Pentanone	21	U
591-78-6	2-Hexanone	21	U
127-18-4	Tetrachloroethene	21	U
79-34-5	1,1,2,2-Tetrachloroethane	21	U
108-88-3	Toluene	21	U
108-90-7	Chlorobenzene	620	E
100-41-4	Ethylbenzene	21	U
100-42-5	Styrene	21	U
1330-20-7	Total Xylenes	21	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

185503

b Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106

Sample wt/vol: 5.2 (g/mL) G Lab File ID: H9745

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 55 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	541-73-1	1,3-Dichlorobenzene	23.43	31	JN
2.	106-46-7	1,4-Dichlorobenzene	23.57	130	JN
3.	95-50-1	1,2-Dichlorobenzene	24.15	22	JN
4.		Siloxane Derivative	24.67	24	J

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503DL

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106DL

Sample wt/vol: 1.0 (g/mL) G Lab File ID: H9747

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 55 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	110	U
74-83-9	Bromomethane	110	U
75-01-4	Vinyl Chloride	110	U
75-00-3	Chloroethane	110	U
75-09-2	Methylene Chloride	7	DJ
67-64-1	Acetone	200	D
75-15-0	Carbon Disulfide	110	U
75-35-4	1,1-Dichloroethene	110	U
75-34-3	1,1-Dichloroethane	110	U
540-59-0	1,2-Dichloroethene (total)	110	U
67-66-3	Chloroform	48	DJ
107-06-2	1,2-Dichloroethane	110	U
78-93-3	2-Butanone	63	DJ
71-55-6	1,1,1-Trichloroethane	110	U
56-23-5	Carbon Tetrachloride	110	U
75-27-4	Bromodichloromethane	110	U
78-87-5	1,2-Dichloropropane	110	U
10061-01-5	cis-1,3-dichloropropene	110	U
79-01-6	Trichloroethene	110	U
124-48-1	Dibromochloromethane	110	U
79-00-5	1,1,2-Trichloroethane	110	U
71-43-2	Benzene	27	DJ
10061-02-6	trans-1,3-dichloropropene	110	U
75-25-2	Bromoform	110	U
108-10-1	4-Methyl-2-Pentanone	110	U
591-78-6	2-Hexanone	110	U
127-18-4	Tetrachloroethene	110	U
79-34-5	1,1,2,2-Tetrachloroethane	110	U
108-88-3	Toluene	110	U
108-90-7	Chlorobenzene	860	D
100-41-4	Ethylbenzene	110	U
100-42-5	Styrene	110	U
1330-20-7	Total Xylenes	110	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

185503DL

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106DL

Sample wt/vol: 1.0 (g/mL) G Lab File ID: H9747

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: not dec. 55 Date Analyzed: 10/07/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	106-46-7	1,4-Dichlorobenzene	23.60	170	JN

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185501

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019104

Sample wt/vol: 30.40 (g/mL) G Lab File ID: 12376Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 44 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/22/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	580	U
111-44-4	bis(2-Chloroethyl)Ether	580	U
95-57-8	2-Chlorophenol	580	U
541-73-1	1,3-Dichlorobenzene	1000	
106-46-7	1,4-Dichlorobenzene	3200	
95-50-1	1,2-Dichlorobenzene	230	J
95-48-7	2-Methylphenol	580	U
108-60-1	2,2'-oxybis(1-Chloropropane)	580	U
106-44-5	4-Methylphenol	580	U
621-64-7	N-Nitroso-Di-n-Propylamine	580	U
67-72-1	Hexachloroethane	580	U
98-95-3	Nitrobenzene	580	U
78-59-1	Isophorone	580	U
88-75-5	2-Nitrophenol	580	U
105-67-9	2,4-Dimethylphenol	580	U
111-91-1	bis(2-Chloroethoxy)Methane	580	U
120-83-2	2,4-Dichlorophenol	580	U
120-82-1	1,2,4-Trichlorobenzene	840	
91-20-3	Naphthalene	75	J
106-47-8	4-Chloroaniline	580	U
87-68-3	Hexachlorobutadiene	580	U
59-50-7	4-Chloro-3-Methylphenol	580	U
91-57-6	2-Methylnaphthalene	66	J
77-47-4	Hexachlorocyclopentadiene	580	U
88-06-2	2,4,6-Trichlorophenol	580	U
95-95-4	2,4,5-Trichlorophenol	1400	U
91-58-7	2-Chloronaphthalene	580	U
88-74-4	2-Nitroaniline	1400	U
131-11-3	Dimethyl Phthalate	580	U
208-96-8	Acenaphthylene	73	J
606-20-2	2,6-Dinitrotoluene	580	U
99-09-2	3-Nitroaniline	1400	U
83-32-9	**Acenaphthene**	**100**	**J**

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185501

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019104

Sample wt/vol: 30.40 (g/mL) G Lab File ID: 12376Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 44 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/22/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1400	U
100-02-7	4-Nitrophenol	1400	U
132-64-9	Dibenzofuran	580	U
121-14-2	2,4-Dinitrotoluene	580	U
84-66-2	Diethylphthalate	580	U
7005-72-3	4-Chlorophenyl-phenylether	580	U
86-73-7	Fluorene	580	U
100-01-6	4-Nitroaniline	1400	U
534-52-1	4,6-Dinitro-2-Methylphenol	1400	U
86-30-6	N-Nitrosodiphenylamine (1)	580	U
101-55-3	4-Bromophenyl-phenylether	580	U
118-74-1	Hexachlorobenzene	580	U
87-86-5	Pentachlorophenol	1400	U
85-01-8	Phenanthrene	1200	
120-12-7	Anthracene	370	J
86-74-8	Carbazole	97	J
84-74-2	Di-n-Butylphthalate	580	U
206-44-0	Fluoranthene	2200	
129-00-0	Pyrene	3100	
85-68-7	Butylbenzylphthalate	580	U
91-94-1	3,3'-Dichlorobenzidine	580	U
56-55-3	Benzo(a)Anthracene	1200	
218-01-9	Chrysene	1400	
117-81-7	Bis(2-Ethylhexyl)Phthalate	530	J
117-84-0	Di-n-Octyl Phthalate	580	U
205-99-2	Benzo(b)Fluoranthene	2200	
207-08-9	Benzo(k)Fluoranthene	950	
50-32-8	Benzo(a)Pyrene	1200	
193-39-5	Indeno(1,2,3-cd)Pyrene	330	J
53-70-3	Dibenz(a,h)Anthracene	43	J
191-24-2	Benzo(g,h,i)Perylene	150	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

30

EPA SAMPLE NO.

185501

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019104

Sample wt/vol: 30.40 (g/mL) G Lab File ID: 12376Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 44 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/22/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	8.43	2000	J
2.		UNKNOWN	27.13	1100	J
3.		UNKNOWN	27.35	3300	J
4.		UNKNOWN	27.42	2900	J
5.		UNKNOWN	28.33	3700	J
6.		UNKNOWN	29.28	870	J
7.		PAH DERIVATIVE	29.35	400	J
8.		PAH DERIVATIVE	29.55	470	J
9.		LONG CHAIN SATURATED HYDROCA	30.02	1400	J
10.		UNKNOWN	30.68	1000	J
11.		UNKNOWN	30.83	1600	J
12.		UNKNOWN	31.32	4200	J
13.		UNKNOWN	31.62	2200	J
14.		UNKNOWN	33.17	2500	J
15.		UNKNOWN	33.32	900	J
16.		LONG CHAIN SATURATED HYDROCA	34.15	3700	J
17.		UNKNOWN	34.40	1000	J
18.		UNKNOWN	35.07	740	J
19.		UNKNOWN	35.45	1000	J
20.		LONG CHAIN SATURATED HYDROCA	36.00	4400	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185502

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019105

Sample wt/vol: 30.50 (g/mL) G Lab File ID: 12381Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 53 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/23/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	690	U
111-44-4	bis(2-Chloroethyl)Ether	690	U
95-57-8	2-Chlorophenol	690	U
541-73-1	1,3-Dichlorobenzene	450	J
106-46-7	1,4-Dichlorobenzene	1400	
95-50-1	1,2-Dichlorobenzene	690	U
95-48-7	2-Methylphenol	690	U
108-60-1	2,2'-oxybis(1-Chloropropane)	690	U
106-44-5	4-Methylphenol	690	U
621-64-7	N-Nitroso-Di-n-Propylamine	690	U
67-72-1	Hexachloroethane	690	U
98-95-3	Nitrobenzene	690	U
78-59-1	Isophorone	690	U
88-75-5	2-Nitrophenol	690	U
105-67-9	2,4-Dimethylphenol	690	U
111-91-1	bis(2-Chloroethoxy)Methane	690	U
120-83-2	2,4-Dichlorophenol	690	U
120-82-1	1,2,4-Trichlorobenzene	390	J
91-20-3	Naphthalene	88	J
106-47-8	4-Chloroaniline	690	U
87-68-3	Hexachlorobutadiene	690	U
59-50-7	4-Chloro-3-Methylphenol	690	U
91-57-6	2-Methylnaphthalene	93	J
77-47-4	Hexachlorocyclopentadiene	690	U
88-06-2	2,4,6-Trichlorophenol	690	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	690	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	690	U
208-96-8	Acenaphthylene	63	J
606-20-2	2,6-Dinitrotoluene	690	U
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	160	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185502

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019105

Sample wt/vol: 30.50 (g/mL) G Lab File ID: 12381Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 53 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/23/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	93	J
121-14-2	2,4-Dinitrotoluene	690	U
84-66-2	Diethylphthalate	690	U
7005-72-3	4-Chlorophenyl-phenylether	690	U
86-73-7	Fluorene	200	J
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	690	U
101-55-3	4-Bromophenyl-phenylether	690	U
118-74-1	Hexachlorobenzene	61	J
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	1600	
120-12-7	Anthracene	460	J
86-74-8	Carbazole	170	J
84-74-2	Di-n-Butylphthalate	690	U
206-44-0	Fluoranthene	3200	
129-00-0	Pyrene	3600	
85-68-7	Butylbenzylphthalate	260	J
91-94-1	3,3'-Dichlorobenzidine	690	U
56-55-3	Benzo(a)Anthracene	2200	
218-01-9	Chrysene	2600	
117-81-7	Bis(2-Ethylhexyl)Phthalate	1800	
117-84-0	Di-n-Octyl Phthalate	690	U
205-99-2	Benzo(b)Fluoranthene	2700	
207-08-9	Benzo(k)Fluoranthene	1900	
50-32-8	Benzo(a)Pyrene	2100	
193-39-5	Indeno(1,2,3-cd)Pyrene	550	J
53-70-3	Dibenz(a,h)Anthracene	140	J
191-24-2	Benzo(g,h,i)Perylene	290	J

1F

EPA SAMPLE NO.

185502

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019105

Sample wt/vol: 30.50 (g/mL) G Lab File ID: 12381Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 53 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/23/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN HYDROCARBON	26.98	3100	J
2.		UNKNOWN HYDROCARBON	27.20	5400	J
3.		PAH DERIVATIVE	29.17	270	J
4.		PAH DERIVATIVE	29.37	290	J
5.		PAH DERIVATIVE	29.47	540	J
6.		PAH DERIVATIVE	29.73	170	J
7.		UNKNOWN	30.98	290	J
8.		UNKNOWN	31.10	440	J
9.		UNKNOWN	31.23	480	J
10.		UNKNOWN	31.42	160	J
11.		UNKNOWN	32.22	290	J
12.		UNKNOWN	32.53	390	J
13.		UNKNOWN	33.05	410	J
14.		PAH DERIVATIVE	33.20	340	J
15.		UNKNOWN	33.57	400	J
16.		UNKNOWN	33.77	500	J
17.		UNKNOWN	34.03	3100	J
18.		UNKNOWN	34.32	1600	J
19.		UNKNOWN HYDROCARBON	34.95	670	J
20.		UNKNOWN	35.32	2500	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106

Sample wt/vol: 30.90 (g/mL) G Lab File ID: 12375Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 54 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/22/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	700	U
111-44-4	bis(2-Chloroethyl)Ether	700	U
95-57-8	2-Chlorophenol	700	U
541-73-1	1,3-Dichlorobenzene	3300	
106-46-7	1,4-Dichlorobenzene	12000	E
95-50-1	1,2-Dichlorobenzene	910	
95-48-7	2-Methylphenol	700	U
108-60-1	2,2'-oxybis(1-Chloropropane)	700	U
106-44-5	4-Methylphenol	700	U
621-64-7	N-Nitroso-Di-n-Propylamine	700	U
67-72-1	Hexachloroethane	700	U
98-95-3	Nitrobenzene	700	U
78-59-1	Isophorone	700	U
88-75-5	2-Nitrophenol	700	U
105-67-9	2,4-Dimethylphenol	700	U
111-91-1	bis(2-Chloroethoxy)Methane	700	U
120-83-2	2,4-Dichlorophenol	700	U
120-82-1	1,2,4-Trichlorobenzene	1300	
91-20-3	Naphthalene	170	J
106-47-8	4-Chloroaniline	700	U
87-68-3	Hexachlorobutadiene	700	U
59-50-7	4-Chloro-3-Methylphenol	700	U
91-57-6	2-Methylnaphthalene	150	J
77-47-4	Hexachlorocyclopentadiene	700	U
88-06-2	2,4,6-Trichlorophenol	700	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	700	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	700	U
208-96-8	Acenaphthylene	700	U
606-20-2	2,6-Dinitrotoluene	700	U
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	180	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106

Sample wt/vol: 30.90 (g/mL) G Lab File ID: 12375Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 54 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/22/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	140	J
121-14-2	2,4-Dinitrotoluene	700	U
84-66-2	Diethylphthalate	700	U
7005-72-3	4-Chlorophenyl-phenylether	700	U
86-73-7	Fluorene	250	J
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	700	U
101-55-3	4-Bromophenyl-phenylether	700	U
118-74-1	Hexachlorobenzene	180	J
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	1600	
120-12-7	Anthracene	440	J
86-74-8	Carbazole	210	J
84-74-2	Di-n-Butylphthalate	700	U
206-44-0	Fluoranthene	3000	
129-00-0	Pyrene	3700	
85-68-7	Butylbenzylphthalate	700	U
91-94-1	3,3'-Dichlorobenzidine	700	U
56-55-3	Benzo(a)Anthracene	1300	
218-01-9	Chrysene	1800	
117-81-7	Bis(2-Ethylhexyl)Phthalate	1000	
117-84-0	Di-n-Octyl Phthalate	700	U
205-99-2	Benzo(b)Fluoranthene	2400	
207-08-9	Benzo(k)Fluoranthene	1000	
50-32-8	Benzo(a)Pyrene	1100	
193-39-5	Indeno(1,2,3-cd)Pyrene	700	U
53-70-3	Dibenz(a,h)Anthracene	700	U
191-24-2	Benzo(g,h,i)Perylene	700	U

1F

EPA SAMPLE NO.

185503

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106

Sample wt/vol: 30.90 (g/mL) G Lab File ID: 12375Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 54 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/22/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		POLYCHLORINATED COMPOUND	25.85	580	J
2.		UNKNOWN	26.02	430	J
3.		POLYCHLORINATED COMPOUND	26.35	890	J
4.		UNKNOWN	26.62	570	J
5.		UNKNOWN HYDROCARBON	27.17	770	J
6.		UNKNOWN	27.38	2500	J
7.		UNKNOWN	27.87	320	J
8.		UNKNOWN	28.07	290	J
9.		UNKNOWN	28.50	210	J
10.		UNKNOWN	29.05	220	J
11.		PAH DERIVATIVE	29.38	640	J
12.		PAH DERIVATIVE	29.58	850	J
13.		UNKNOWN	30.73	660	J
14.		HEXANEDIOIC ACID DERIVATIVE	31.02	1600	J
15.		UNKNOWN	32.83	2200	J
16.		UNKNOWN	33.20	1400	J
17.		UNKNOWN	33.93	1600	J
18.		LONG CHAIN SATURATED HYDROCA	34.17	890	J
19.		UNKNOWN	35.10	360	J
20.		UNKNOWN	35.80	1700	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503DL

b Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106DL

Sample wt/vol: 30.90 (g/mL) G Lab File ID: 12393Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 54 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	3500	U
111-44-4	bis(2-Chloroethyl)Ether	3500	U
95-57-8	2-Chlorophenol	3500	U
541-73-1	1,3-Dichlorobenzene	3000	DJ
106-46-7	1,4-Dichlorobenzene	11000	D
95-50-1	1,2-Dichlorobenzene	790	DJ
95-48-7	2-Methylphenol	3500	U
108-60-1	2,2'-oxybis(1-Chloropropane)	3500	U
106-44-5	4-Methylphenol	3500	U
621-64-7	N-Nitroso-Di-n-Propylamine	3500	U
67-72-1	Hexachloroethane	3500	U
98-95-3	Nitrobenzene	3500	U
78-59-1	Isophorone	3500	U
88-75-5	2-Nitrophenol	3500	U
105-67-9	2,4-Dimethylphenol	3500	U
111-91-1	bis(2-Chloroethoxy)Methane	3500	U
120-83-2	2,4-Dichlorophenol	3500	U
120-82-1	1,2,4-Trichlorobenzene	930	DJ
91-20-3	Naphthalene	150	DJ
106-47-8	4-Chloroaniline	3500	U
87-68-3	Hexachlorobutadiene	3500	U
59-50-7	4-Chloro-3-Methylphenol	3500	U
91-57-6	2-Methylnaphthalene	110	DJ
77-47-4	Hexachlorocyclopentadiene	3500	U
88-06-2	2,4,6-Trichlorophenol	3500	U
95-95-4	2,4,5-Trichlorophenol	8400	U
91-58-7	2-Chloronaphthalene	3500	U
88-74-4	2-Nitroaniline	8400	U
131-11-3	Dimethyl Phthalate	3500	U
208-96-8	Acenaphthylene	3500	U
606-20-2	2,6-Dinitrotoluene	3500	U
99-09-2	3-Nitroaniline	8400	U
83-32-9	Acenaphthene	140	DJ

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503DL

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106DL

Sample wt/vol: 30.90 (g/mL) G Lab File ID: 12393Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 54 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	8400	U
100-02-7	4-Nitrophenol	8400	U
132-64-9	Dibenzofuran	3500	U
121-14-2	2,4-Dinitrotoluene	3500	U
84-66-2	Diethylphthalate	3500	U
7005-72-3	4-Chlorophenyl-phenylether	3500	U
86-73-7	Fluorene	3500	U
100-01-6	4-Nitroaniline	8400	U
534-52-1	4,6-Dinitro-2-Methylphenol	8400	U
86-30-6	N-Nitrosodiphenylamine (1)	3500	U
101-55-3	4-Bromophenyl-phenylether	3500	U
118-74-1	Hexachlorobenzene	160	DJ
87-86-5	Pentachlorophenol	8400	U
85-01-8	Phenanthrene	1400	DJ
120-12-7	Anthracene	330	DJ
86-74-8	Carbazole	190	DJ
84-74-2	Di-n-Butylphthalate	3500	U
206-44-0	Fluoranthene	2800	DJ
129-00-0	Pyrene	2600	DJ
85-68-7	Butylbenzylphthalate	3500	U
91-94-1	3,3'-Dichlorobenzidine	3500	U
56-55-3	Benzo(a)Anthracene	980	DJ
218-01-9	Chrysene	1400	DJ
117-81-7	Bis(2-Ethylhexyl)Phthalate	770	DJ
117-84-0	Di-n-Octyl Phthalate	3500	U
205-99-2	Benzo(b)Fluoranthene	1600	DJ
207-08-9	Benzo(k)Fluoranthene	720	DJ
50-32-8	Benzo(a)Pyrene	750	DJ
193-39-5	Indeno(1,2,3-cd)Pyrene	3500	U
53-70-3	Dibenz(a,h)Anthracene	3500	U
191-24-2	Benzo(g,h,i)Perylene	3500	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

39 EPA SAMPLE NO.

185503DL

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106DL

Sample wt/vol: 30.90 (g/mL) G Lab File ID: 12393Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 54 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.6

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	8.17	750	J
2.		UNKNOWN	9.22	900	J
3.		TRICHLOROBENZENAMINE ISOMER	17.55	1300	J
4.		UNKNOWN	17.80	940	J
5.		HEXACHLOROCYCLOHEXANE ISOMER	22.15	2000	J
6.		HEXACHLOROCYCLOHEXANE ISOMER	23.90	1300	J
7.		UNKNOWN	25.68	1300	J
8.		POLYCHLORINATED COMPOUND	26.07	1200	J
9.		UNKNOWN HYDROCARBON	26.90	1300	J
10.		UNKNOWN	27.10	3500	J
11.		UNKNOWN	28.17	740	J
12.		UNKNOWN	29.25	920	J
13.		UNKNOWN	30.73	1300	J
14.		UNKNOWN	31.92	1600	J
15.		UNKNOWN	32.52	2500	J
16.		UNKNOWN	32.88	930	J
17.		UNKNOWN HYDROCARBON	33.90	3000	J
18.		UNKNOWN	35.18	1400	J
19.		UNKNOWN HYDROCARBON	35.83	2000	J
20.		UNKNOWN HYDROCARBON	37.78	1100	J

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503RE

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106RI

Sample wt/vol: 30.90 (g/mL) G Lab File ID: 12382Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 54 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/23/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	700	U
111-44-4	bis(2-Chloroethyl)Ether	700	U
95-57-8	2-Chlorophenol	700	U
541-73-1	1,3-Dichlorobenzene	3400	
106-46-7	1,4-Dichlorobenzene	12000	E
95-50-1	1,2-Dichlorobenzene	900	
95-48-7	2-Methylphenol	700	U
108-60-1	2,2'-oxybis(1-Chloropropane)	700	U
106-44-5	4-Methylphenol	700	U
621-64-7	N-Nitroso-Di-n-Propylamine	700	U
67-72-1	Hexachloroethane	700	U
98-95-3	Nitrobenzene	700	U
78-59-1	Isophorone	700	U
88-75-5	2-Nitrophenol	700	U
105-67-9	2,4-Dimethylphenol	700	U
111-91-1	bis(2-Chloroethoxy)Methane	700	U
120-83-2	2,4-Dichlorophenol	700	U
120-82-1	1,2,4-Trichlorobenzene	1200	
91-20-3	Naphthalene	170	J
106-47-8	4-Chloroaniline	700	U
87-68-3	Hexachlorobutadiene	700	U
59-50-7	4-Chloro-3-Methylphenol	700	U
91-57-6	2-Methylnaphthalene	150	J
77-47-4	Hexachlorocyclopentadiene	700	U
88-06-2	2,4,6-Trichlorophenol	700	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	700	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	700	U
208-96-8	Acenaphthylene	700	U
606-20-2	2,6-Dinitrotoluene	700	U
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	180	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503RE

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106RI

Sample wt/vol: 30.90 (g/mL) G Lab File ID: 12382Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 54 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/23/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	140	J
121-14-2	2,4-Dinitrotoluene	700	U
84-66-2	Diethylphthalate	700	U
7005-72-3	4-Chlorophenyl-phenylether	700	U
86-73-7	Fluorene	240	J
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	700	U
101-55-3	4-Bromophenyl-phenylether	700	U
118-74-1	Hexachlorobenzene	160	J
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	1600	
120-12-7	Anthracene	390	J
86-74-8	Carbazole	220	J
84-74-2	Di-n-Butylphthalate	700	U
206-44-0	Fluoranthene	3500	
129-00-0	Pyrene	2900	
85-68-7	Butylbenzylphthalate	700	U
91-94-1	3,3'-Dichlorobenzidine	700	U
56-55-3	Benzo(a)Anthracene	1400	
218-01-9	Chrysene	1800	
117-81-7	Bis(2-Ethylhexyl)Phthalate	1100	
117-84-0	Di-n-Octyl Phthalate	700	U
205-99-2	Benzo(b)Fluoranthene	3100	
207-08-9	Benzo(k)Fluoranthene	1100	
50-32-8	Benzo(a)Pyrene	1200	
193-39-5	Indeno(1,2,3-cd)Pyrene	700	U
53-70-3	Dibenz(a,h)Anthracene	700	U
191-24-2	Benzo(g,h,i)Perylene	700	U

1F

EPA SAMPLE NO.

185503RE

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106RI

Sample wt/vol: 30.90 (g/mL) G Lab File ID: 12382Y

Level: (low/med) LOW Date Received: 10/06/92

% Moisture: 54 decanted: (Y/N) N Date Extracted: 10/09/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/23/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	27.22	5100	J
2.		PAH DERIVATIVE	29.20	670	J
3.		UNKNOWN	29.40	660	J
4.		UNKNOWN HYDROCARBON	29.92	1200	J
5.		UNKNOWN	30.03	2000	J
6.		UNKNOWN	30.50	1300	J
7.		UNKNOWN	30.57	1000	J
8.		HEXANEDIOIC ACID DERIVATIVE	30.87	2600	J
9.		UNKNOWN	31.25	1800	J
10.		UNKNOWN	31.48	2000	J
11.		UNKNOWN	32.25	1100	J
12.		UNKNOWN	32.68	6100	J
13.		UNKNOWN	32.90	1100	J
14.		UNKNOWN	33.07	3200	J
15.		UNKNOWN	33.22	1500	J
16.		UNKNOWN	33.58	2500	J
17.		UNKNOWN HYDROCARBON	34.05	5700	J
18.		UNKNOWN	34.98	1200	J
19.		UNKNOWN	35.35	1800	J
20.		LONG CHAIN SATURATED HYDROCA	35.90	6800	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185501

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019104

Sample wt/vol: 31.0 (g/mL) G Lab File ID: _____

% Moisture: 44 decanted: (Y/N) N Date Received: 10/06/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/09/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/28/92

Injection Volume: 1.00 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	400	
319-85-7	beta-BHC	29	U
319-86-8	delta-BHC	520	P
58-89-9	gamma-BHC (Lindane)	29	U
76-44-8	Heptachlor	29	U
309-00-2	Aldrin	29	U
1024-57-3	Heptachlor epoxide	29	U
959-98-8	Endosulfan I	29	U
60-57-1	Dieldrin	57	U
72-55-9	4,4'-DDE	57	U
72-20-8	Endrin	57	U
33213-65-9	Endosulfan II	57	U
72-54-8	4,4'-DDD	57	U
1031-07-8	Endosulfan sulfate	57	U
50-29-3	4,4'-DDT	57	U
72-43-5	Methoxychlor	290	U
53494-70-5	Endrin ketone	57	U
7421-93-4	Endrin aldehyde	57	U
5103-71-9	alpha-Chlordane	29	U
5103-74-2	gamma-Chlordane	29	U
8001-35-2	Toxaphene	2900	U
12674-11-2	Aroclor-1016	570	U
11104-28-2	Aroclor-1221	1200	U
11141-16-5	Aroclor-1232	570	U
53469-21-9	Aroclor-1242	570	U
12672-29-6	Aroclor-1248	4400	
11097-69-1	Aroclor-1254	570	U
11096-82-5	Aroclor-1260	570	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

44

EPA SAMPLE NO.

185502

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019105

Sample wt/vol: 30.3 (g/mL) G Lab File ID: _____

% Moisture: 53 decanted: (Y/N) N Date Received: 10/06/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/09/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/28/92

Injection Volume: 1.00 (uL) Dilution Factor: 4.00

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	570	
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	580	
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	28	U
72-55-9	4,4'-DDE	28	U
72-20-8	Endrin	28	U
33213-65-9	Endosulfan II	28	U
72-54-8	4,4'-DDD	28	U
1031-07-8	Endosulfan sulfate	28	U
50-29-3	4,4'-DDT	28	U
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	28	U
7421-93-4	Endrin aldehyde	28	U
5103-71-9	alpha-Chlordane	14	U
5103-74-2	gamma-Chlordane	14	U
8001-35-2	Toxaphene	1400	U
12674-11-2	Aroclor-1016	280	U
11104-28-2	Aroclor-1221	560	U
11141-16-5	Aroclor-1232	280	U
53469-21-9	Aroclor-1242	280	U
12672-29-6	Aroclor-1248	5300	
11097-69-1	Aroclor-1254	280	U
11096-82-5	Aroclor-1260	280	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185502DL

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019105DL

Sample wt/vol: 30.3 (g/mL) G Lab File ID: _____

% Moisture: 53 decanted: (Y/N) N Date Received: 10/06/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/09/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/28/92

Injection Volume: 1.00 (uL) Dilution Factor: 40.0

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	740	
319-85-7	beta-BHC	140	U
319-86-8	delta-BHC	550	P
58-89-9	gamma-BHC (Lindane)	140	U
76-44-8	Heptachlor	140	U
309-00-2	Aldrin	140	U
1024-57-3	Heptachlor epoxide	140	U
959-98-8	Endosulfan I	140	U
60-57-1	Dieldrin	280	U
72-55-9	4,4'-DDE	280	U
72-20-8	Endrin	280	U
33213-65-9	Endosulfan II	280	U
72-54-8	4,4'-DDD	280	U
1031-07-8	Endosulfan sulfate	280	U
50-29-3	4,4'-DDT	280	U
72-43-5	Methoxychlor	1400	U
53494-70-5	Endrin ketone	280	U
7421-93-4	Endrin aldehyde	280	U
5103-71-9	alpha-Chlordane	140	U
5103-74-2	gamma-Chlordane	140	U
8001-35-2	Toxaphene	14000	U
12674-11-2	Aroclor-1016	2800	U
11104-28-2	Aroclor-1221	5600	U
11141-16-5	Aroclor-1232	2800	U
53469-21-9	Aroclor-1242	2800	U
12672-29-6	Aroclor-1248	7700	P
11097-69-1	Aroclor-1254	2800	U
11096-82-5	Aroclor-1260	2800	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106

Sample wt/vol: 30.1 (g/mL) G Lab File ID: _____

% Moisture: 54 decanted: (Y/N) N Date Received: 10/06/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/09/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/28/92

Injection Volume: 1.00 (uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	1500	
319-85-7	beta-BHC	37	U
319-86-8	delta-BHC	2000	
58-89-9	gamma-BHC (Lindane)	37	U
76-44-8	Heptachlor	37	U
309-00-2	Aldrin	37	U
1024-57-3	Heptachlor epoxide	37	U
959-98-8	Endosulfan I	37	U
60-57-1	Dieldrin	72	U
72-55-9	4,4'-DDE	72	U
72-20-8	Endrin	72	U
33213-65-9	Endosulfan II	72	U
72-54-8	4,4'-DDD	72	U
1031-07-8	Endosulfan sulfate	72	U
50-29-3	4,4'-DDT	72	U
72-43-5	Methoxychlor	370	U
53494-70-5	Endrin ketone	72	U
7421-93-4	Endrin aldehyde	72	U
5103-71-9	alpha-Chlordane	37	U
5103-74-2	gamma-Chlordane	37	U
8001-35-2	Toxaphene	3700	U
12674-11-2	Aroclor-1016	720	U
11104-28-2	Aroclor-1221	1500	U
11141-16-5	Aroclor-1232	720	U
53469-21-9	Aroclor-1242	720	U
12672-29-6	Aroclor-1248	8200	P
11097-69-1	Aroclor-1254	720	U
11096-82-5	Aroclor-1260	720	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

185503DL

Lab Name: RECRA ENVIRON Contract: C002412

Lab Code: RECNY Case No.: SH992 SAS No.: _____ SDG No.: 1006

Matrix: (soil/water) SOIL Lab Sample ID: AS019106DL

Sample wt/vol: 30.1 (g/mL) G Lab File ID: _____

% Moisture: 54 decanted: (Y/N) N Date Received: 10/06/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/09/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/28/92

Injection Volume: 1.00 (uL) Dilution Factor: 100

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2100	
319-85-7	beta-BHC	370	U
319-86-8	delta-BHC	3300	
58-89-9	gamma-BHC (Lindane)	370	U
76-44-8	Heptachlor	370	U
309-00-2	Aldrin	370	U
1024-57-3	Heptachlor epoxide	370	U
959-98-8	Endosulfan I	370	U
60-57-1	Dieldrin	720	U
72-55-9	4,4'-DDE	720	U
72-20-8	Endrin	720	U
33213-65-9	Endosulfan II	720	U
72-54-8	4,4'-DDD	720	U
1031-07-8	Endosulfan sulfate	720	U
50-29-3	4,4'-DDT	720	U
72-43-5	Methoxychlor	3700	U
53494-70-5	Endrin ketone	720	U
7421-93-4	Endrin aldehyde	720	U
5103-71-9	alpha-Chlordane	370	U
5103-74-2	gamma-Chlordane	370	U
8001-35-2	Toxaphene	37000	U
12674-11-2	Aroclor-1016	7200	U
11104-28-2	Aroclor-1221	15000	U
11141-16-5	Aroclor-1232	7200	U
53469-21-9	Aroclor-1242	7200	U
12672-29-6	Aroclor-1248	11000	P
11097-69-1	Aroclor-1254	7200	U
11096-82-5	Aroclor-1260	7200	U

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: RECRA_ENVIRONMENTAL_INC._ Contract: C002412___

Lab Code: RECNY_ Case No.: SH992_ SAS No.: _____ SDG No.:1006__

Version: ASP91

NYSDEC Sample No.	Lab Sample ID
_185501_____	__0569_____
_185501D____	__0570_____
_185501S____	__0571_____
_185502_____	__0572_____
_185503_____	__0573_____

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Deborah J. Kinecki Name: DEBORAH J. KINECKI

Date: 11/5/92 Title: VICE PRESIDENT, LABORATORY OPERATIONS

1

INORGANIC ANALYSES DATA SHEET

NYSDEC SAMPLE NO.

185501

Lab Name: RECRA_ENVIRONMENTAL_INC._ Contract: C002412___

Lab Code: RECNY_ Case No.: SH992 SAS No.: _____ SDG No.: 1006__

Matrix (soil/water): SOIL_ Lab Sample ID: 0569_____

Level (low/med): LOW__ Date Received: 10/06/92

% Solids: _51.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8590		E*	P
7440-36-0	Antimony	20.2	U	N	P
7440-38-2	Arsenic	1.9	B		F
7440-39-3	Barium	68.9	B		P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	6880		*	P
7440-47-3	Chromium	23.8			A
7440-48-4	Cobalt	8.1	U		P
7440-50-8	Copper	34.1			P
7439-89-6	Iron	15200		*	P
7439-92-1	Lead	33.7		+	F
7439-95-4	Magnesium	3690			P
7439-96-5	Manganese	114		N*	P
7439-97-6	Mercury	1.2		N*	CV
7440-02-0	Nickel	15.2	B		P
7440-09-7	Potassium	1490	B		P
7782-49-2	Selenium	1.9	U	WN	F
7440-22-4	Silver	4.0	U	N	P
7440-23-5	Sodium	940	B		A
7440-28-0	Thallium	2.2	U		F
7440-62-2	Vanadium	16.6	B		P
7440-66-6	Zinc	224		*	P
	Cyanide				NR

Color Before: BROWN____ Clarity Before: _____ Texture: COARSE

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: ___

Comments:

LAB_SAMPLE_ID: AS019104

CLIENT_SAMPLE_ID: SH992-1006-0569

RE-DIGESTION_ID#__1015

NYSDEC-ASP

1

INORGANIC ANALYSES DATA SHEET

NYSDEC SAMPLE NO.

185502

Lab Name: RECRA_ENVIRONMENTAL_INC._ Contract: C002412___

Lab Code: RECNY_ Case No.: SH992 SAS No.: _____ SDG No.: 1006__

Matrix (soil/water): SOIL_ Lab Sample ID: 0572_____

Level (low/med): LOW__ Date Received: 10/06/92

% Solids: _41.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13300		E*	P
7440-36-0	Antimony	23.0	U	N	P
7440-38-2	Arsenic	8.4			F
7440-39-3	Barium	261			P
7440-41-7	Beryllium	2.3	U		P
7440-43-9	Cadmium	2.3	U		P
7440-70-2	Calcium	79200		*	P
7440-47-3	Chromium	62.6			A
7440-48-4	Cobalt	11.2	B		P
7440-50-8	Copper	93.9			P
7439-89-6	Iron	27100		*	P
7439-92-1	Lead	261		N*	P
7439-95-4	Magnesium	19600			P
7439-96-5	Manganese	519		N*	P
7439-97-6	Mercury	10.1		N*	CV
7440-02-0	Nickel	33.4			P
7440-09-7	Potassium	2450			P
7782-49-2	Selenium	2.5	U	WN	F
7440-22-4	Silver	4.6	U	N	P
7440-23-5	Sodium	1920	B		A
7440-28-0	Thallium	3.0	U	W	F
7440-62-2	Vanadium	33.7			P
7440-66-6	Zinc	482		*	P
	Cyanide				NR

Color Before: BROWN____ Clarity Before: _____ Texture: COARSE

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: ___

Comments:

LAB_SAMPLE_ID:_AS019105

CLIENT_SAMPLE_ID:_SH992-1006-0572

RE-DIGESTION_ID_#__1017

NYSDEC-ASP

1
INORGANIC ANALYSES DATA SHEET

NYSDEC SAMPLE NO.
185503

Lab Name: RECRA_ENVIRONMENTAL_INC._ Contract: C002412___

Lab Code: RECNY_ Case No.: SH992 SAS No.: _____ SDG No.: 1006__

Matrix (soil/water): SOIL_ Lab Sample ID: 0573_____

Level (low/med): LOW__ Date Received: 10/06/92

% Solids: _45.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6370		E*	P
7440-36-0	Antimony	24.2	U	N	P
7440-38-2	Arsenic	10.2			F
7440-39-3	Barium	139			P
7440-41-7	Beryllium	2.4	U		P
7440-43-9	Cadmium	2.4	U		P
7440-70-2	Calcium	26600		*	P
7440-47-3	Chromium	26.1			A
7440-48-4	Cobalt	9.7	U		P
7440-50-8	Copper	62.8			P
7439-89-6	Iron	11800		*	P
7439-92-1	Lead	219		S	F
7439-95-4	Magnesium	6130			P
7439-96-5	Manganese	168		N*	P
7439-97-6	Mercury	10.6		N*	CV
7440-02-0	Nickel	14.8	B		P
7440-09-7	Potassium	1200	B		P
7782-49-2	Selenium	2.3	U	WN	F
7440-22-4	Silver	4.8	U	N	P
7440-23-5	Sodium	938	B		A
7440-28-0	Thallium	2.8	U	W	F
7440-62-2	Vanadium	14.0	B		P
7440-66-6	Zinc	213		*	P
	Cyanide				NR

Color Before: BROWN____ Clarity Before: _____ Texture: COARSE

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: ___

Comments:
LAB_SAMPLE_ID:_AS019106
CLIENT_SAMPLE_ID:_SH992-1006-0573
RE-DIGESTION_ID_#_1018

APPENDIX F

GILL CREEK RCRA CHARACTERISTICS DATA

Table F-1

Gill Creek Composite Sediment
TCLP Analyses - September 1992[a]/April 1993[b]
Niagara Falls, New York

TCLP Parameters	RCRA Criterion	Transect A 0'-1'		Transect A 1'-2'		Transect B 0'-1'		Transect B 1'-2'		Transect C 0'-1'		Transect C 1'-2'		Transect D 0'-1'		Transect D 1'-2'	
		Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93
Volatile Organics (ug/L)																	
Vinyl chloride	200	10 U	100 U	10 U	100 U	10 U	100 U	10 U	100 U	10 U	100 U	10 U	100 U	10 U	100 U	10 U	100 U
1,1-Dichloroethene	700	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U
Chloroform	6,000	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U
1,2-Dichlorothane	500	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U
2-Butanone	200,000	R	100 U	R	100 U	R	100 U	R	100 U	R	100 U	R	100 U	R	100 U	R	100 U
Carbon Tetrachloride	500	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U
Trichloroethene	500	5 U	50 U	5 U	50 U	5 U	20 JT	5 U	7 JT	5 U	20 JT	5 U	10 JT	5 U	20 JT	5 U	20 JT
Benzene	500	5 U	50 U	5 U	50 U	5 U	50 U	5 U	100 T	5 U	50 U	5 U	50 U	5 U	50 U	5 U	50 U
Tetrachloroethene	700	5 U	30 JT	5 U	40 JT	5 U	200 T	5 U	70 T	5 U	100 T	5 U	100 T	5 U	100 T	5 U	100 T
Chlorobenzene	100,000	8	50 U	5 U	50 U	54	50 U	14	50 U	7	50 U	5 U	50 U	5	50 U	17	50 U
Semivolatile Organics (ug/L)																	
1,4-Dichlorobenzene	7,500	89 U	10 U	89 U	10 U	89 U	30 U	89 U	50 U	89 U	30 U	89 U	30 U	89 U	30 U	89 U	30 U
Hexachloroethane	300	96 U	10 U	96 U	10 U	96 U	30 U	96 U	50 U	96 U	30 U	96 U	30 U	96 U	30 U	96 U	30 U
Nitrobenzene	2,000	79 U	10 U	79 U	10 U	79 U	30 U	79 U	50 U	79 U	30 U	79 U	30 U	79 U	30 U	79 U	30 U
Hexachlorobutadiene	500	89 U	10 U	89 U	10 U	89 U	30 U	89 U	50 U	89 U	30 U	89 U	30 U	89 U	30 U	89 U	30 U

Table F-1

TCLP Parameters	RCRA Criterion	Transect A 0'-1'		Transect A 1'-2'		Transect B 0'-1'		Transect B 1'-2'		Transect C 0'-1'		Transect C 1'-2'		Transect D 0'-1'		Transect D 1'-2'	
		Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93
Semivolatile Organics (Continued)																	
2,4,6-Trichlorophenol	2,000	70 U	10 U	70 U	10 U	70 U	30 U	70 U	50 U	70 U	30 U	70 U	30 U	70 U	30 U	70 U	30 U
2,4,5-Trichlorophenol	400,000	340 U	60 U	340 U	60 U	340 U	200 U	340 U	200 U	340 U	200 U	340 U	200 U	340 U	200 U	340 U	200 U
2,4-Dinitrotoluene	130	50 U	10 U	50 U	10 U	50 U	30 U	50 U	50 U	50 U	30 U	50 U	30 U	50 U	30 U	50 U	30 U
Hexachlorobenzene	130	50 U	10 U	50 U	10 U	50 U	30 U	50 U	50 U	50 U	30 U	50 U	30 U	50 U	30 U	50 U	30 U
Pentachlorophenol	100,000	250 U	60 U	250 U	60 U	250 U	200 U	250 U	200 U	250 U	200 U	250 U	200 U	250 U	200 U	250 U	200 U
Total Methylphenol	200,000	100 U	10 U	100 U	10 U	100 U	30 U	100 U	50 U	100 U	30 U	100 U	30 U	100 U	30 U	100 U	30 U
Pyridine	5,000	540 U	10 U	540 U	10 U	540 U	30 U	540 U	50 U	540 U	30 U	540 U	30 U	540 U	30 U	540 U	30 U
Pesticides (ug/L)																	
gamma-BHC	400	0.4 UJ	1.4 U	0.4 UJ	1.5 U	0.4 UJ	3 U	0.4 UJ	3 U	0.4 UJ	3 U	0.4 UJ	3 U	0.4 UJ	3 U	0.4 UJ	3 U
Heptachlor	8	0.4 UJ	1.4 U	0.4 UJ	1.5 U	0.4 UJ	3 U	0.4 UJ	3 U	0.4 UJ	3 U	0.4 UJ	3 U	0.4 UJ	3 U	0.4 UJ	3 U
Heptachlor epoxide	8	8 UJ	1.4 U	8 UJ	1.5 U	8 UJ	3 U	8 UJ	3 U	8 UJ	3 U	8 UJ	3 U	8 UJ	3 U	8 UJ	3 U
Endrin	20	0.6 UJ	2.9 U	0.6 UJ	3 U	0.6 UJ	6 U	0.6 UJ	6 U	0.6 UJ	7 U	0.6 UJ	5 U	0.6 UJ	5 U	0.6 UJ	5 U
Methoxychlor	10,000	18 UJ	2.9 U	18 UJ	3 U	18 UJ	6 U	18 UJ	6 U	18 UJ	7 U	18 UJ	5 U	18 UJ	5 U	18 UJ	5 U
Chlordane	30	1.4 UJ	8.6 U	1.4 UJ	9 U	1.4 UJ	20 U	1.4 UJ	19 U	1.4 UJ	20 U	1.4 UJ	20 U	1.4 UJ	20 U	1.4 UJ	15 U
Toxaphene	500	38 UJ	29 U	38 UJ	30 U	38 UJ	60 U	38 UJ	60 U	38 UJ	70 U	38 UJ	50 U	38 UJ	50 U	38 UJ	50 U
Herbicides (ug/L)																	
2,4-D	10,000	190 U	1.5 U	190 U	1.4 U	190 U	3 U	190 U	3 U	190 U	3 U	190 U	3 U	190 U	2 U	190 U	3 U
Silvex	1,000	28 U	1.5 U	28 U	1.4 U	28 U	3 U	28 U	3 U	28 U	3 U	28 U	3 U	28 U	2 U	28 U	3 U

Table F-1

TCLP Parameters	RCRA Criterion	Transect A 0'-1'		Transect A 1'-2'		Transect B 0'-1'		Transect B 1'-2'		Transect C 0'-1'		Transect C 1'-2'		Transect D 0'-1'		Transect D 1'-2'	
		Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93	Sep.92	Apr.93
Metals (mg/L)																	
Arsenic	5.0	0.114	0.013	0.1 U	0.004	0.1 U	0.004 U	0.1 U	0.004 U	0.1 U	0.007	0.1 U	0.004 U	0.1 U	0.006	0.1 U	0.009
Barium	100.0	1.39	0.80	1.75	1.1	1.39	1.1	1.23	0.74	1.41	1.2	1.52	1.2	1.4	0.73	1.54	0.75
Cadmium	1.0	0.005 U	0.010 U	0.005 U	0.010 U	0.005 U	0.010 U	0.005 U	0.010 U	0.005 U	0.010 U	0.005 U	0.010 U	0.005 U	0.010 U	0.0321	0.010 U
Chromium	5.0	0.05 U	0.010 U	0.05 U	0.010 U	0.05 U	0.010 U	0.05 U	0.010 U	0.05 U	0.010 U	0.05 U	0.010 U	0.05 U	0.010 U	0.05 U	0.010 U
Lead	5.0	0.107	0.052	0.05 U	0.050 U	0.05 U	0.20	0.05U	0.050 U	0.0845	0.050 U	0.05 U	0.050 U	0.105	0.10	38.9	0.050 U
Mercury	0.2	0.0002 U	0.0006	0.0002 U	0.0002 U	0.0002 U	0.0004 U	0.0002 U	0.0004 U	0.0002 U	0.0004 U	0.0002 U	0.0004 U	0.0002 U	0.0004 U	0.0002 U	0.0004 U
Selenium	1.0	0.05 U	0.004 U	0.05 U	0.004 U	0.05 U	0.004 U	0.05 U	0.004 U	0.05 U	0.004 U	0.05 U	0.004 U	0.05 U	0.004 U	0.05 U	0.004 U
Silver	5.0	0.01 U	0.010 U	0.01 U	0.010 U	0.01 U	0.0003 U	0.01 U	0.0003 U	0.01 U	0.0003 U	0.01 U	0.0003 U	0.01 U	0.0003 U	0.01 U	0.0003 U

J: Estimated value.
U: Not detected at given quantitation limit.
R: Data rejected.
T: Analyte found in the TCLP extraction blank.

*From 40CFR 261.24, Table 1, "Maximum Concentration of Contaminants for the Toxicity Characterics."

Table F-2

Data for Reactivity
Gill Creek Composite Sediments
September 1992[a]/April 1993[b]
Niagara Falls, New York

Sample No.	Sulfide Reactivity[c] (mg/Kg)		Cyanide Reactivity[d] (mg/Kg)	
	Sep. '92	Apr. '93	Sep. '92	Apr. '93
Transect A (0-1ft)	<250	10U	<250	53.6
Transect A (1-2ft)	<250	10U	<250	10U
Transect B (0-1ft)	481	10U	<250	10U
Transect B (1-2ft)	<250	10U	<250	10U
Transect C (0-1ft)	328	10U	<250	10U
Transect C (1-2ft)	<250	10U	<250	10U
Transect D (0-1ft)	<250	10U	450	10U
Transect D (1-2ft)	<250	10U	<250	10U

[a]IT Corporation (IT).
[b]RECRA Environmental, Inc. (RECRA).

U: Not detected at given quantitation limit.

[c]RCRA criterion is 500 mg/kg.
[d]RCRA criterion is 250 mg/kg.

Table F-3
Gill Creek Transect D Analysis
Lead by TCLP
September 1992
Niagara Falls, New York

Parameter	Units	TD 1'-2' East	TD 1'-2' Center	TD 1'-2' West
Lead	mg/kg	54.4 UJ	0.05 U	0.05 U

J: Estimated value.
U: Not detected at given guantitation limit.