

**GILL CREEK POSTREMEDIATION MONITORING
THIRD INTERIM REPORT**

**DuPont/Olin Corporation
Niagara Falls, New York**

March 10, 1997

DERS Project No. 7072

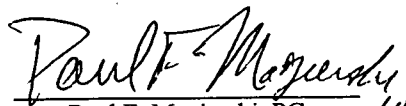
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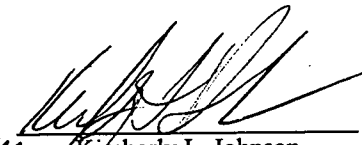
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Prepared by

DuPont Environmental Remediation Services
Barley Mill Plaza 27
P.O. Box 80027
Wilmington, Delaware 19880-0027


Paul F. Mazierski, PG
Senior Geologist


Kimberly L. Johnson
Project Scientist


William T. Murphy
Project Director

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EXECUTIVE SUMMARY

This report summarizes data collected during 1996 as part of the postremediation monitoring program for Gill Creek in Niagara Falls, New York. DuPont and Olin Corporation (the Companies) jointly remediated creek sediment in 1981 and 1992. Postremediation sampling has been conducted to characterize creek sediment following remediation in 1992. To date, the program has included periodic inspection of sediment traps and annual collection of sediment and surface-water samples from select areas of the creek. Annual sediment and surface-water sampling for 1996 was conducted on October 31, 1996. Sampling and analysis were conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved work plan as modified for this project (Woodward-Clyde Consultants [WCC] 1993a).

Analytical data for sediment samples collected during 1996 are similar to data reported for the previous two years of postremediation monitoring. Concentrations in sediment for several chemical groups, notably total polychlorinated biphenyls (PCBs) and mercury, were lower than those in 1995. A lack of any discernible spatial trends indicates that reported low concentrations of indicator parameters in accumulated creek sediment do not result from an identifiable source. Sediment concentrations of indicator parameters detected within the remediated portions of the creek are very similar to background concentrations.

Surface-water results indicate that a majority of volatile organic compounds (VOCs) detected in water column samples are being discharged to Gill Creek at a point upstream of sampling Location 2 (approximately 50 feet south of the Adams Avenue Bridge). However, because VOC concentrations in sediment are low and show no discernible trends, VOCs detected in water column samples do not appear to be acting as a source of sediment contamination. In accordance with the recommendations of the *Gill Creek First Interim Report* (WCC 1995), postremediation monitoring is scheduled to occur through 1998.

1.0 INTRODUCTION

DuPont and Olin Corporation (the Companies) jointly completed a remediation program in December 1992 involving the removal of sediment along a portion of Gill Creek near its confluence with the Niagara River (see Figure 1-1). The remediated area extends from approximately 30 feet north of Adams Avenue south to the Niagara River. Sediment accumulating in this reach of Gill Creek and surface-water quality will be monitored through 1998. Using the collected data, an evaluation will be conducted at the end of the five-year monitoring period to determine if Gill Creek sediment is being recontaminated. Surface-water samples are also collected to monitor creek water quality.

This report presents results for the third year of postremediation monitoring. Analytical results for sediment and surface-water samples collected from points within the remediated reach of Gill Creek are summarized. All sampling and analysis for 1996 were conducted in accordance with the approved Woodward-Clyde Consultants (WCC) *Final Work Plan, Gill Creek Remediation Project, Postremediation Monitoring Plan* (WCC 1993a), as modified by additional correspondence between the Companies and the New York State Department of Environmental Conservation (NYSDEC; the Companies 1995; 1996).

2.0 SITE DESCRIPTION

Gill Creek is a minor tributary to the Niagara River, flowing south from Hyde Park Lake into the Niagara River, approximately ½ mile downstream of the Robert Moses Power Project Niagara River water intakes. The section of Gill Creek south of DuPont Road crosses what was, in the past, a low marshy area bordering the Niagara River. This area was subsequently filled in, extending the creek and shoreline to the south.

Gill Creek flows in a generally southerly direction, traversing property owned by Olin between Buffalo Avenue and Adams Avenue, and property owned by DuPont between Adams Avenue and a Niagara Mohawk Power Corporation right-of-way (Figure 1-1). After passing under the Robert Moses Parkway Bridge, the creek then discharges to the Niagara River. The primary area of investigation for this study includes the reach of Gill Creek from Buffalo Avenue to its confluence with the Niagara River.

In 1981 and 1992, the Companies undertook programs to remediate contaminated sediment in the southern portion of Gill Creek. Contaminated sediment was excavated and removed from the creekbed and adjacent banks. Areas addressed in these two remediation efforts are presented in Figure 2-1.

Sediment has accumulated on the compacted clay, concrete, and crushed stone surfaces of the remediated areas since completion of the remedial work. Newly deposited sediment, collected within deployed sediment traps, is an important element of this postremediation monitoring program.

3.0 SAMPLING PROGRAM

3.1 Sampling Locations

3.1.1 Sediment Sampling Locations

Sediment collects within traps deployed at five locations in Gill Creek. Sampling points, numbered 1 through 5 moving in a downstream direction, are located between Buffalo Avenue and the Robert Moses Parkway (see Figure 3-1). Detailed descriptions of these sampling locations follow.

Location	Description
1	Gill Creek—near the western bank; approximately 100 feet south of Buffalo Avenue; background location; upstream from 1992 remediation area
2	Gill Creek—near the western bank; approximately 50 feet south of Adams Avenue
3	Gill Creek—near the western bank, approximately 10 feet south of the Railroad Bridge
4	Gill Creek—near the western bank; approximately 10 feet south of Staub Road
5	Gill Creek—near the west bank, just south of the Robert Moses Parkway eastbound lanes.

The five designated postremediation sampling locations are based on potential contamination sources and physical (sampling) constraints. Three of the locations (numbers 2, 3, and 4) are located in the vicinity (downstream) of groundwater seepage areas observed during the 1992 remediation. These sampling points are located to collect sediment that settled in the vicinity of these seepage areas.

3.1.2 Surface-Water Sampling Locations

In addition to sediment samples, water column samples are collected at Locations 1, 2, and 4. Surface-water sampling at Location 2 began following the first year of postremediation monitoring in accordance with comments from the NYSDEC regarding the *Gill Creek First Interim Report* (WCC 1995). Location 1 reflects water quality in the creek before it enters the 1992 remediated area. Location 2 provides information on water quality in the vicinity of groundwater seepage areas observed at and upstream of

Adams Avenue. Location 4 provides additional information on water quality further through the remediated area.

3.2 Sampling Collection and Analysis

3.2.1 Sediment Trap Inspections

In accordance with the February 6, 1996, correspondence between the Companies and the NYSDEC, one sediment trap inspection was conducted during 1996 following thaw of the Gill Creek ice pack. Quarterly sediment trap inspections and annual sediment sampling conducted during the first two years of postremediation monitoring indicated that sediment traps at Locations 3, 4, and 5 remained undisturbed between sampling events. Only traps at Locations 1 and 2 showed evidence of being disturbed from their original orientations, presumably as a result of the shallow water depth at these locations and ice pack movement in the creek.

During the annual inspection conducted on May 3, 1996, all sediment traps at Locations 1 and 2 appeared to be in their original positions (DuPont Environmental Remediation Services [DERS] 1996). Sediment traps at Location 3, 4, and 5 were obscured from view. However, historic observations have indicated that these traps remain undisturbed between sampling events.

3.2.2 Sediment Sampling Methods

Sediment traps were removed from the creek and composite sediment samples were collected on October 31, 1996, in accordance with the approved work plan. Subsequent to sampling, sediment traps were emptied, rinsed with creek water, and redeployed in the creek. Postremediation monitoring is currently planned for five years after initial placement of the sediment traps. Traps were originally deployed in October 1993 (WCC 1993b). To date, the traps have been deployed for three years.

3.2.3 Surface-Water Sampling Methods

Three water column grab samples were collected at Location 1, 2, and 4 in accordance with the approved work plan. Dedicated equipment was used during sampling to eliminate possible cross contamination between sampling locations. Surface-water samples at Locations 1 and 2 were collected near the center-line of the creek approximately 6 inches below the surface. The surface-water sample at Location 4 was collected adjacent to the gabions near the Staub Road bridge approximately 6 inches below the surface. Gill Creek is approximately 1½ feet, 2½ feet, and 5 feet deep at Locations 1, 2, and 4, respectively. All water samples were collected prior to removal and sampling of sediment traps to avoid disturbing sediment from the creek bottom.

Periodic reversal of flow has been documented (WCC 1990) throughout the reach of Gill Creek addressed in this report, which coincides with the regulated Niagara River water withdrawal schedule for hydroelectric power generation. However, postremediation surface-water sampling takes place during the "nonregulation" period when daily water withdrawal fluctuations are not required. Therefore, daily reversals of flow in Gill Creek are unlikely during the postremediation sampling round.

3.2.4 Sample Analysis

All primary investigative samples and quality assurance/quality control (QA/QC) samples (e.g., field duplicates, trip blank, sample volumes for laboratory matrix spike/matrix spike duplicate [MS/MSD] analyses) were delivered to a New York State Department of Health (NYSDOH) approved contract laboratory program (CLP) analytical laboratory (RECRA Environmental, Inc.). All samples were analyzed for the indicator compounds listed in Table 3-1 in accordance with the approved work plan, as modified by November 3, 1995, correspondence between the Companies and the NYSDEC. Samples collected for the 1996 sampling event and analytical procedures are presented in Table 3-2. The complete subcontract laboratory report and analytical data audit for the 1996 event are available for review by NYSDEC representatives on request.

4.0 RESULTS

4.1 Groundwater Flow

Groundwater flow in the vicinity of the 1992 Gill Creek remediation area was evaluated to estimate the amount of groundwater flow discharging to Gill Creek. This included an evaluation of groundwater-level data from the two groundwater monitor wells installed north of Adams Avenue during the remediation project and data collected from wells and piezometers installed to monitor the effectiveness of the DuPont Groundwater Remediation System (GWRS). Historically, estimated groundwater flow rates have been presented in reports submitted to the NYSDEC summarizing GWRS operations. Between 1992 and 1996, groundwater flow rates across 50-foot-long boundary segments of the DuPont Niagara plant were calculated, which included both sides of Gill Creek from south of Adams Avenue to south of Staub Road. Total estimated groundwater flow to Gill Creek was calculated as the sum of boundary segment flow that discharges to Gill Creek using measured water levels and Darcy's Law. Groundwater flow across each boundary segment is estimated by multiplying a calculated hydraulic gradient perpendicular to the segment by an estimated transmissivity. Total groundwater flow rates to the 1992 remediated portion of the creek, accounting for the effects of the compacted clay liner, were estimated at less than 0.1 gallons per minute (gpm). Groundwater and creek level elevations measured in October 1996 are presented in Table 4-1.

4.2 Chemical Distribution

To identify chemical distribution trends in Gill Creek, all detected indicator list constituents are grouped by chemical type and total concentrations for each chemical group calculated at each sampling location. Chemical groups identified include the following:

- C1-C4 chlorinated volatile organic compounds (C1-C4 CVOCs)
- Chlorinated aromatic hydrocarbons
- Aromatic hydrocarbons
- Phthalates

- Polychlorinated biphenyls (PCBs)
- Total BHCs (hexachlorocyclohexane)
- Inorganic constituents
- Other miscellaneous compounds (e.g., naphthalene, tetrahydrothiophene)

Specific compounds included in each chemical group are presented in Table 4-2.

Detected parameters and concentration totals by group for all sediment and surface-water sampling locations are summarized in Tables 4-3 and 4-4, respectively. Sediment concentration totals for each chemical group as a function of downstream distance from the Buffalo Avenue Bridge are presented graphically in Figures 4-1 through 4-7. Chemical group totals for data collected during the 1994, 1995, and 1996 sampling events are presented in each figure.

4.2.1 Sediment Data

Similar to previous sampling events in 1994 and 1995, sediment data indicate low total concentrations, generally less than 1 milligram per kilogram (mg/kg), at all sampling locations for most organic chemical groups, with the exception of phthalates and total PCBs. Total phthalate concentrations in sediment reported for the 1996 sampling event are similar to those observed in 1994 and 1995, ranging from 1 mg/kg to 5.2 mg/kg. Total PCB concentrations in sediment for the 1996 sampling event are very similar to concentrations observed during the first year of postremediation conducted in 1994, ranging from 1.3 mg/kg to 1.7 mg/kg. Background concentrations for phthalates and total PCBs were 1.1 mg/kg and 1.5 mg/kg, respectively. Mercury concentrations in sediment reported for 1996 were lower at all locations than those observed during 1994 and 1995 and range from 0.7 mg/kg to 2.2 mg/kg. Mercury was detected in the background sediment sample at 2 mg/kg. No clear spatial trends are indicated in concentration totals for any chemical group.

In general, sediment concentrations observed at the four sampling locations within the remediated portions of the creek are very similar to background concentration totals (see Table 4-3). With few exceptions, all chemical group totals reported for the 1996

sampling event are similar or lower than those reported for the 1994 and 1995 sampling events. Lower total PCB concentrations were detected at all sampling locations during 1996 than in 1995.

4.2.2 Surface-Water Data

Surface-water data (see Table 4-4) indicate that relatively low concentrations, less than 1 microgram per liter ($\mu\text{g/l}$), of total BHCs were detected at locations where surface-water samples were collected (Locations 1, 2, and 4). In addition, C1-C4 CVOC concentrations of $97.3 \mu\text{g/l}$ and $10.7 \mu\text{g/l}$ were detected at Locations 2 and 4, respectively. A total C1-C4 CVOC concentration of $1 \mu\text{g/l}$ was detected at the upstream background Location 1. As such, these results indicate that a majority of CVOCs detected at Locations 2 and 4 are discharged to Gill Creek upstream of Location 2. No mercury was detected in surface-water samples collected at all locations. Historic surface-water analytical data are summarized in Table 4-5.

5.0 SUMMARY

Analytical data for sediment samples collected during 1996 are similar to data reported for the previous two years of postremediation monitoring. Concentrations in sediment for several groups, notably total PCBs and mercury, were lower than those measured during 1995. A lack of any discernible spatial trends indicates that reported low concentrations of indicator parameters in accumulated creek sediment do not result from an identifiable source. Sediment concentrations of indicator parameters detected within the remediated portions of the creek are very similar to background concentrations.

Surface-water results indicate that BHC concentrations detected throughout the remediated portion of Gill Creek are similar to background concentrations. C1-C4 CVOCs were detected in surface-water samples collected at Locations 2 and 4.

Data collected over three years of postremediation monitoring consistently indicate that a specific source of sediment recontamination does not exist in the remediated area. In accordance with the recommendations of the *Gill Creek First Interim Report* (WCC 1995), postremediation monitoring is scheduled to occur through 1998.

6.0 REFERENCES

DuPont and Olin Corporation (the Companies). November 2, 1995. Letter to NYSDEC regarding analytical methods for sediment and surface-water analysis.

_____. February 6, 1996. Letter to NYSDEC regarding frequency of sediment trap inspections.

DuPont Environmental Remediation Services. May 10, 1996. *1996 Annual Sediment Trap Inspection Report.*

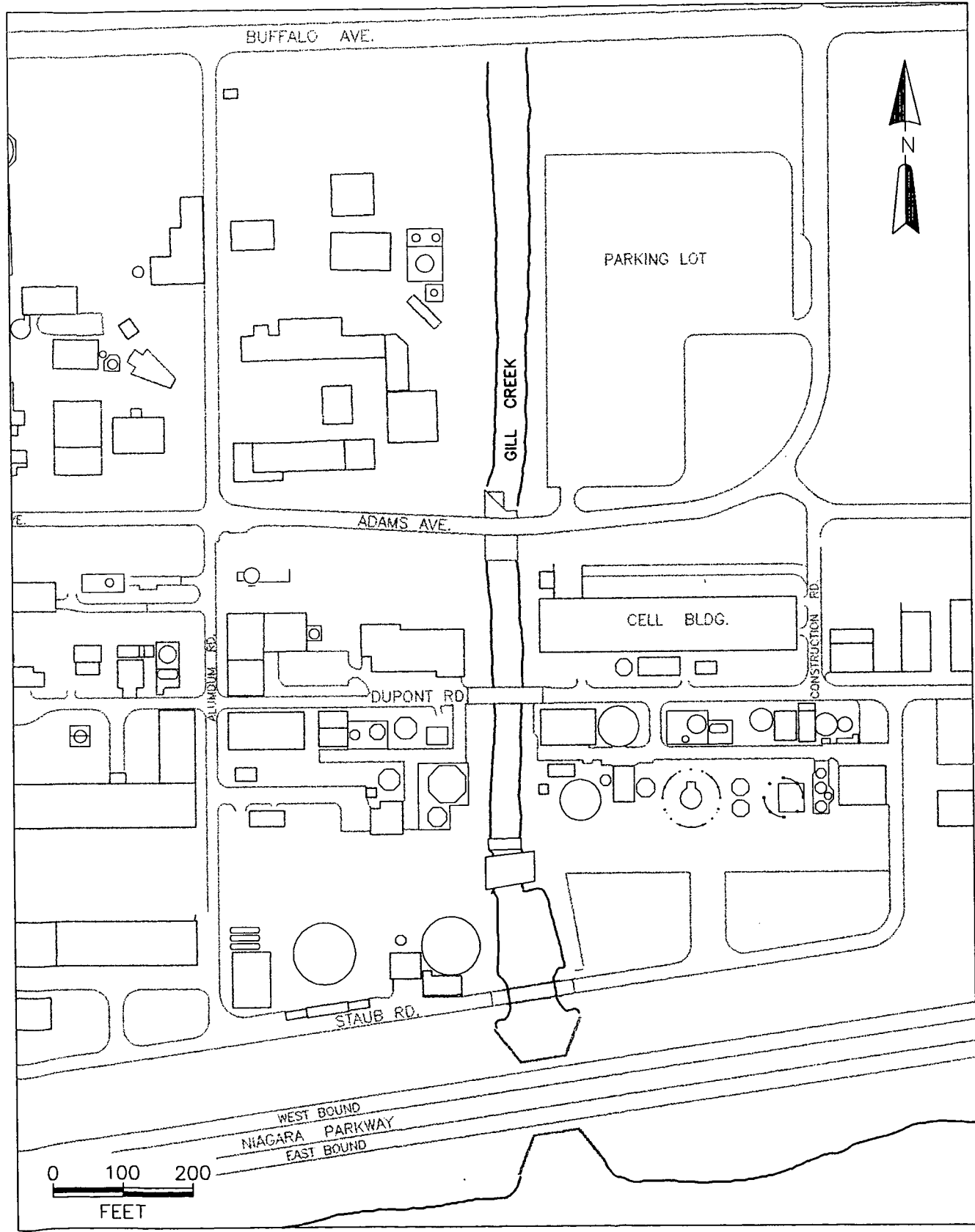
Woodward-Clyde Consultants. December 10, 1990. *Risk Assessment for Remedial Options, Gill Creek Sediment Project.*

_____. July 9, 1993a. *Final Work Plan, Gill Creek Remediation Project, Postremediation Monitoring Plan.*

_____. December 22, 1993b. *Gill Creek Remediation Project, Postremediation Monitoring, Sediment Trap Placement.*

_____. February 15, 1995. *Gill Creek Remediation Project, Postremediation Monitoring, First Interim Report.*

FIGURES



GCSLM.DWG



DuPont Environmental Remediation Services

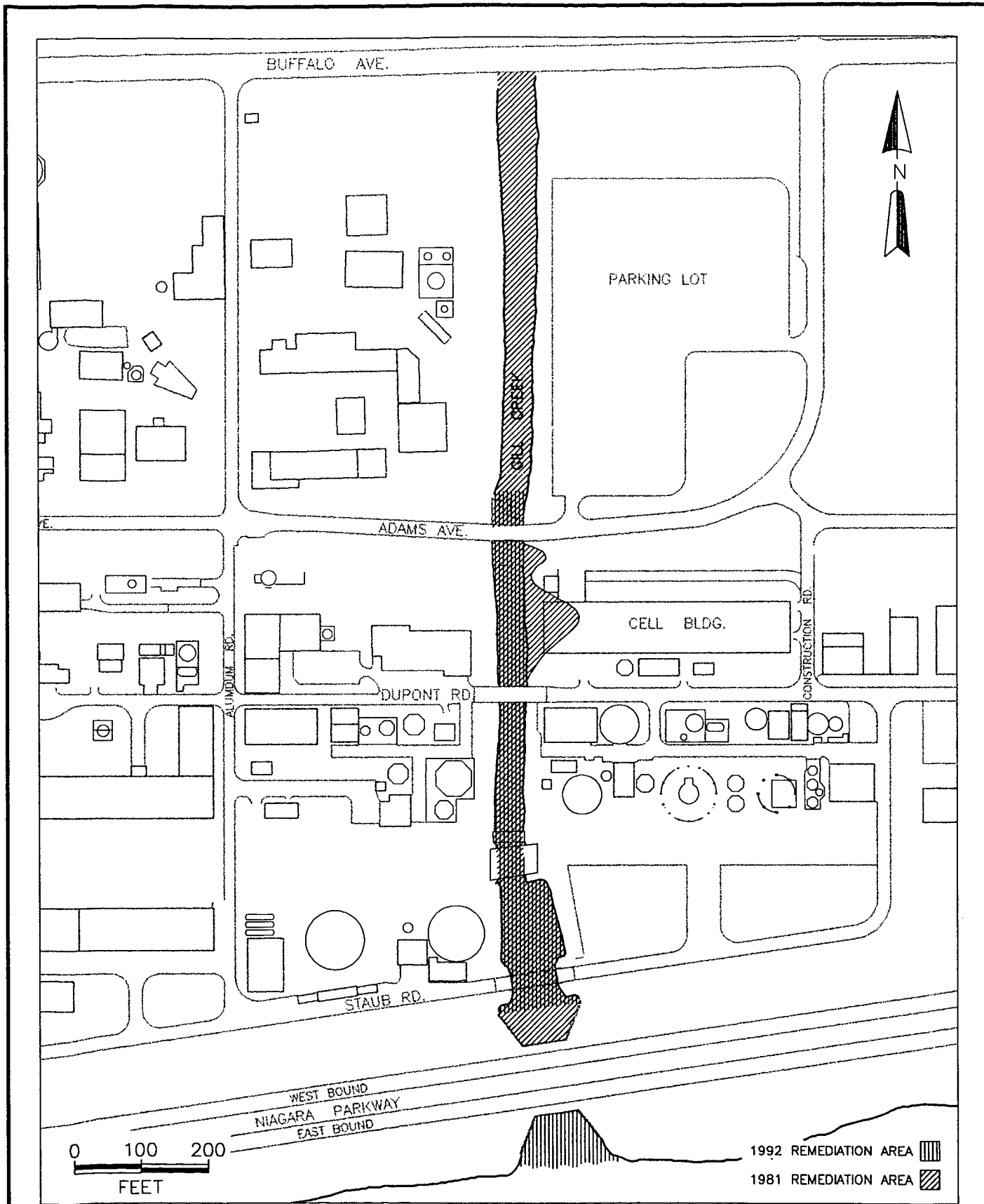
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 Gill Creek Postremediation Monitoring
 Site Location Map

DWN: SAG
 CHKD:
 DATE: 02/23/96

DES.:
 APPD.:
 REV.: 2

PROJECT NO.:
 3520-01

FIGURE NO.:
 1-1



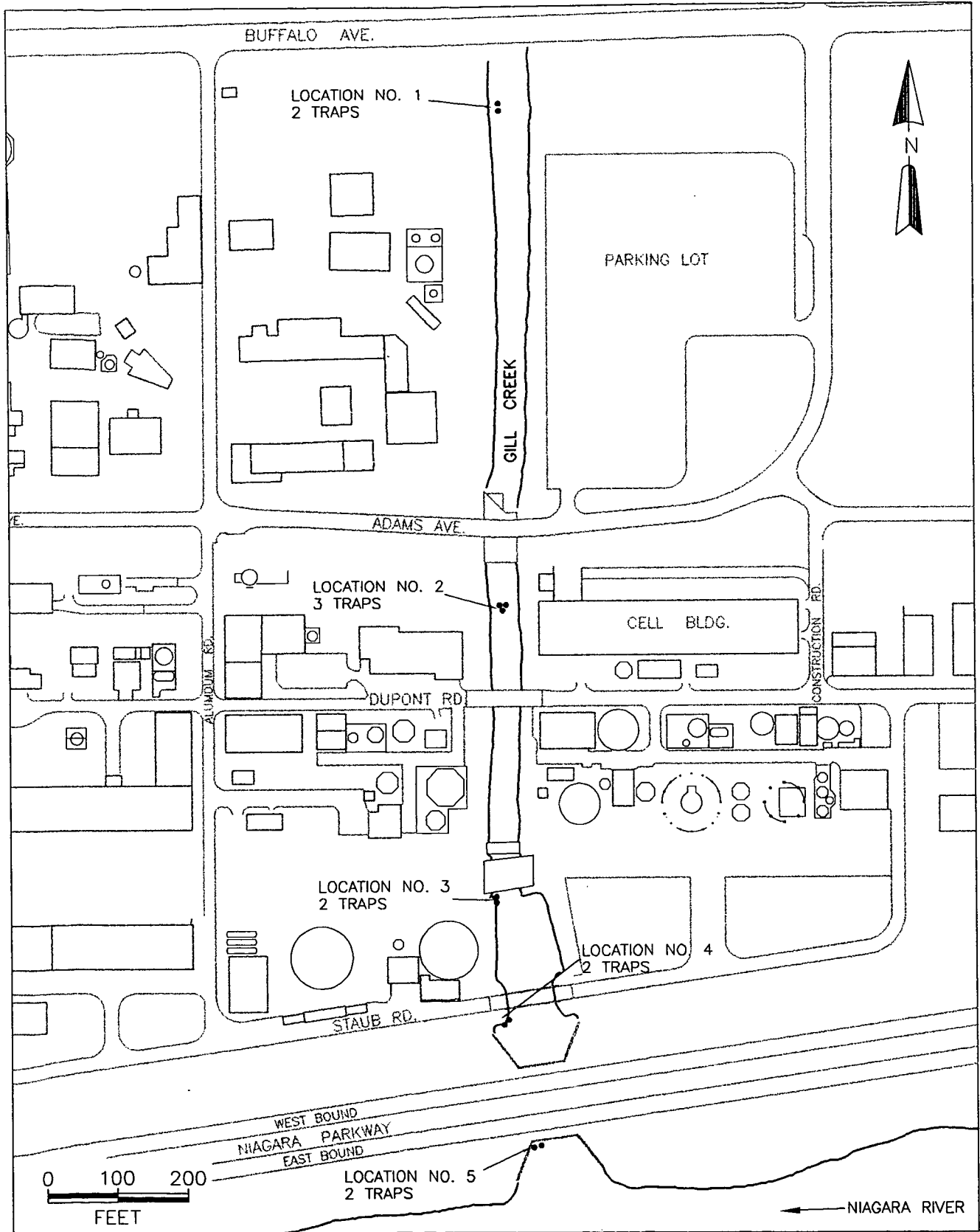
DuPont Environmental Remediation Services

TITLE:
Gill Creek Postremediation Monitoring
1981 and 1992 Remediation Areas


DWN: SAG
CHKD:
DATE: 02/23/96

DES.:
APPD.:
REV.: 2

PROJECT NO.: 3520-01
FIGURE NO.: 2-1



GCSTPLOC.DWG

 DuPont Environmental Remediation Services	TITLE: Gill Creek Postremediation Monitoring Sediment Trap Locations	DWN: SAG	DES.:	PROJECT NO.: 3520-01
		CHKD:	APPD:	FIGURE NO.: 3-1
		DATE: 02/23/96	REV.: 2	

GILL CREEK POSTREMEDIATION MONITORING SEDIMENT

Concentrations vs Downstream Distance

C1-C4 Chlorinated Organics

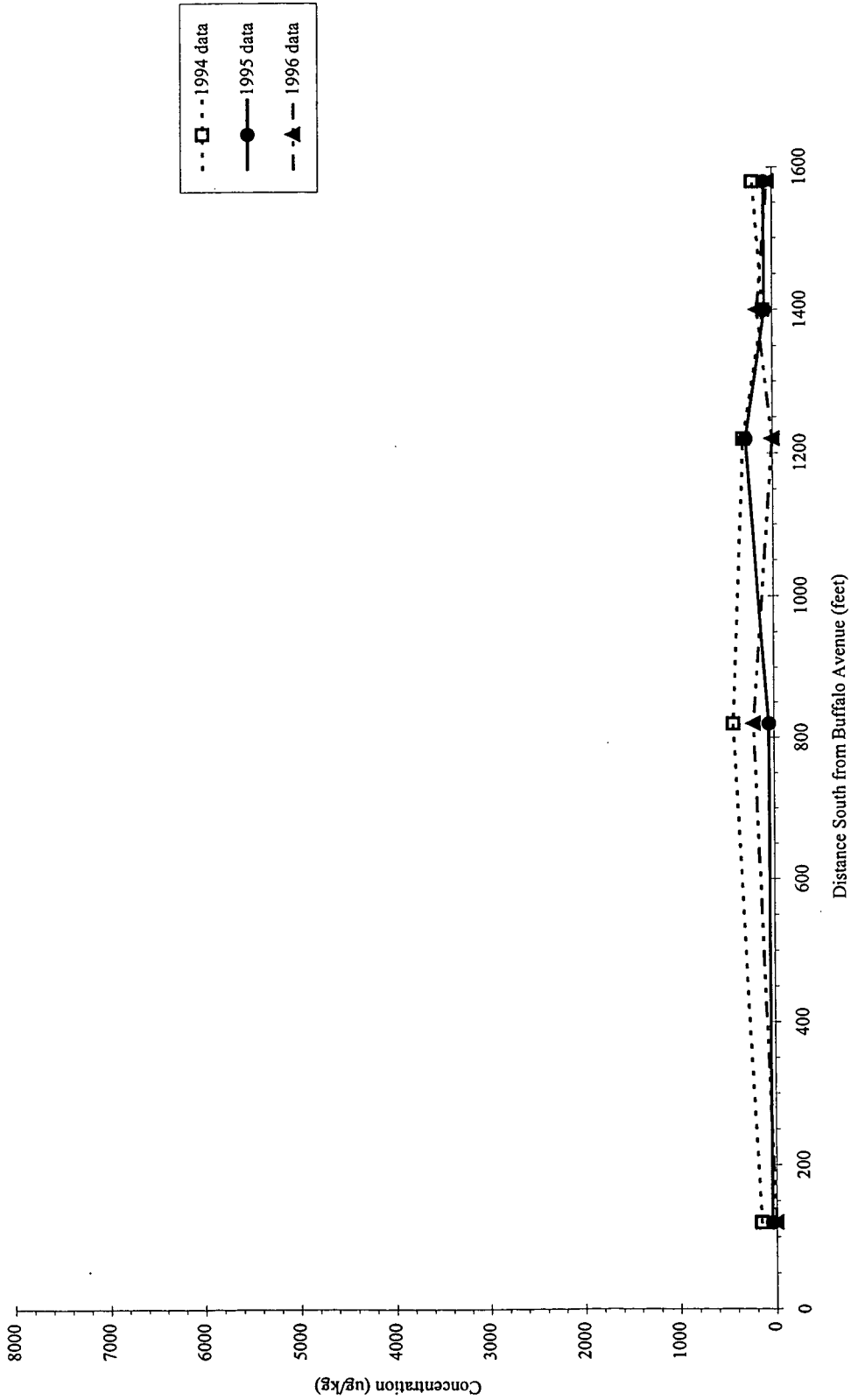
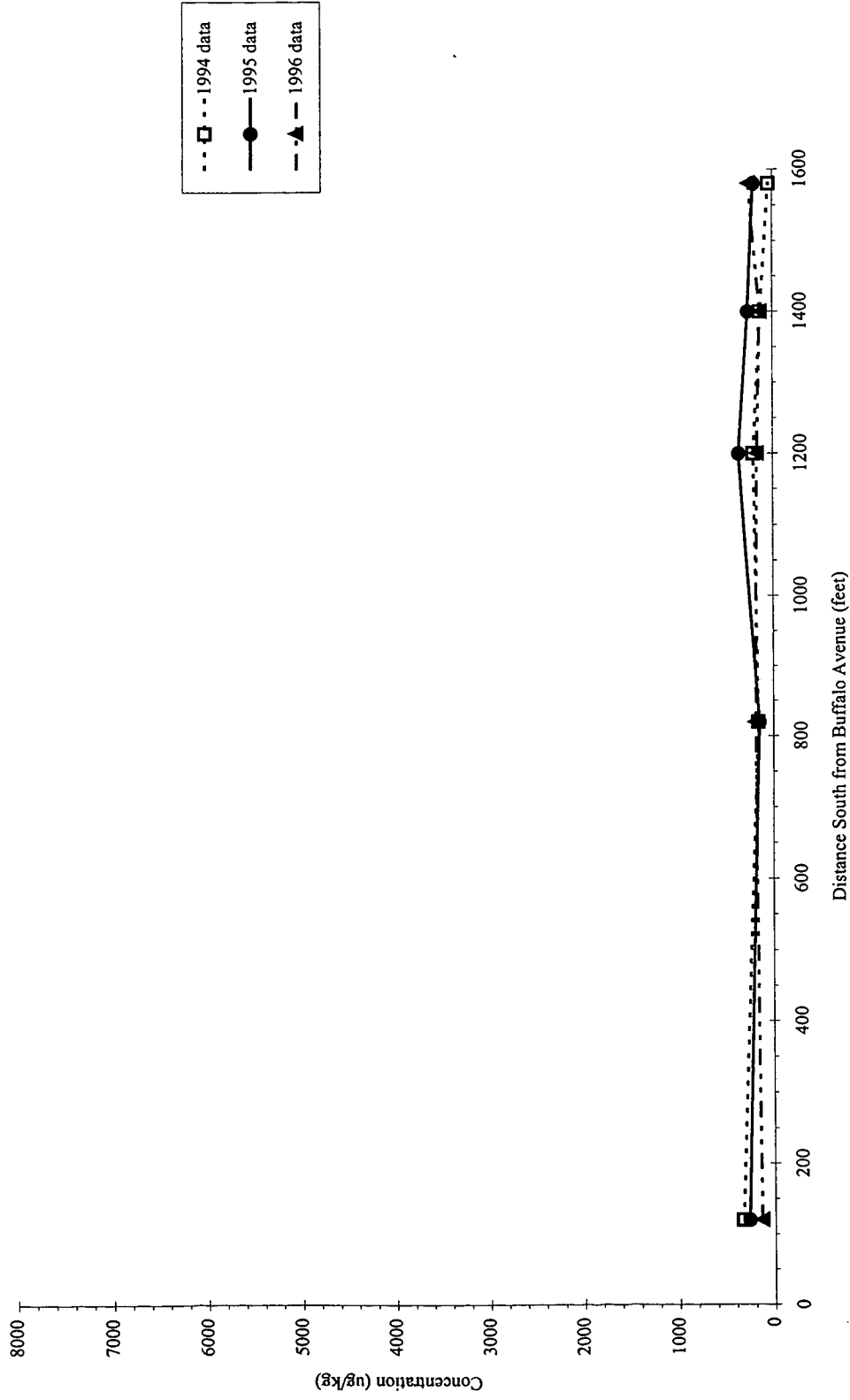


Figure 4-2

GILL CREEK POSTREMEDIATION MONITORING SEDIMENT

Concentrations vs Downstream Distance

Chlorinated Aromatic Hydrocarbons



GILL CREEK POSTREMEDIATION MONITORING
Sediment Concentrations vs Downstream Distance
Aromatic Hydrocarbons

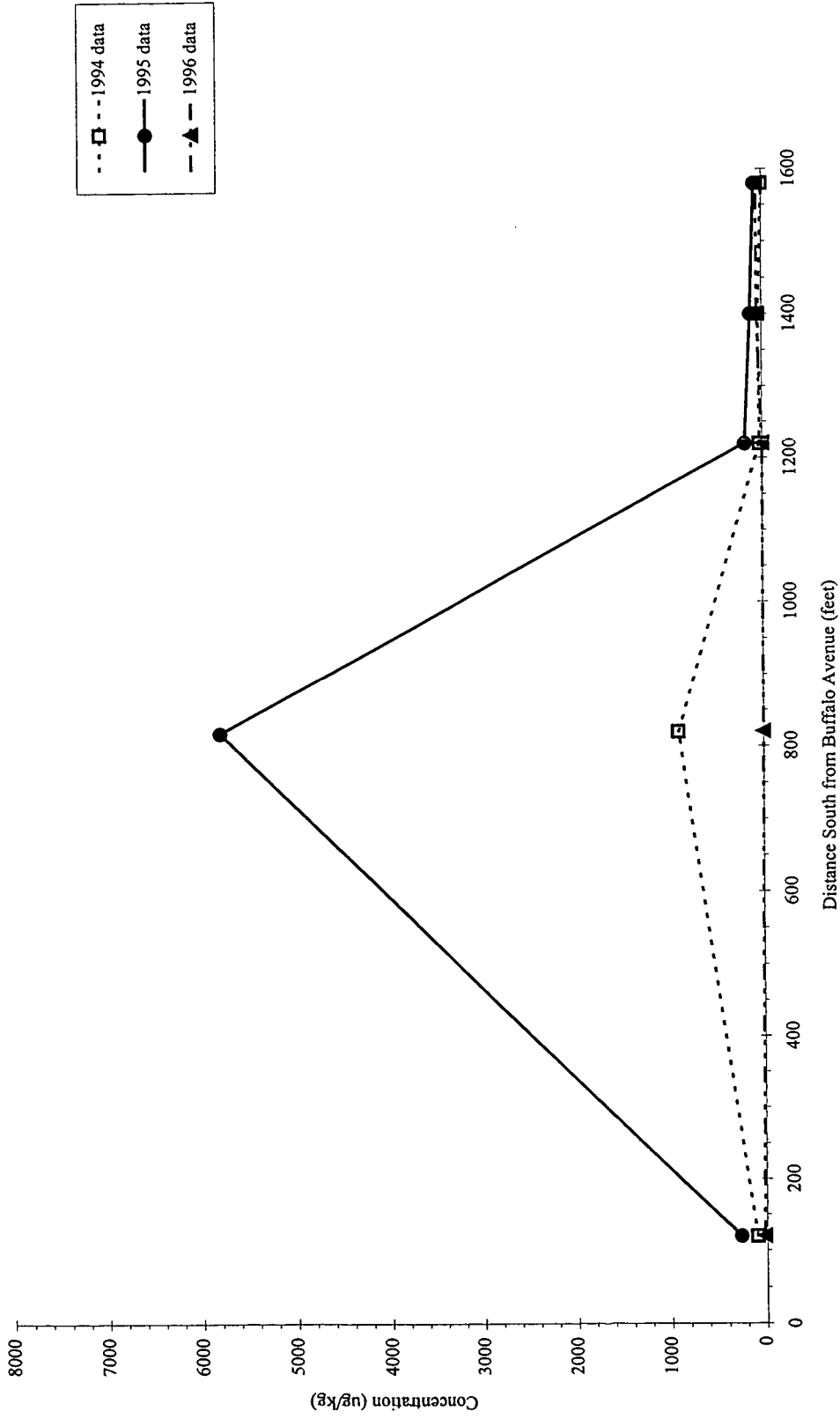
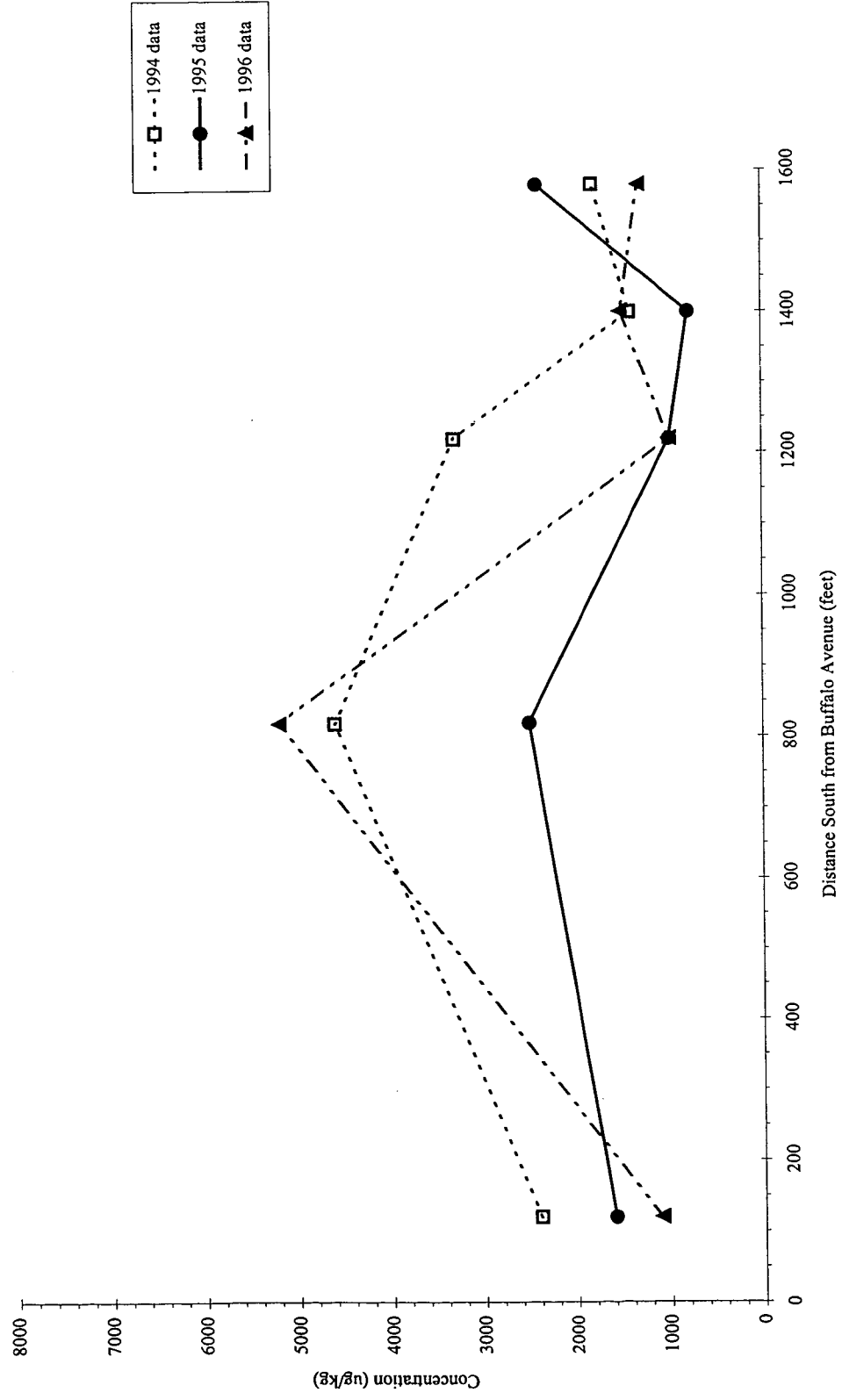


Figure 4-3

GILL CREEK POSTREMEDIATION MONITORING Sediment Concentrations vs Downstream Distance Phthalates



GILL CREEK POSTREMEDIATION MONITORING Sediment Concentrations vs Downstream Distance PCBs

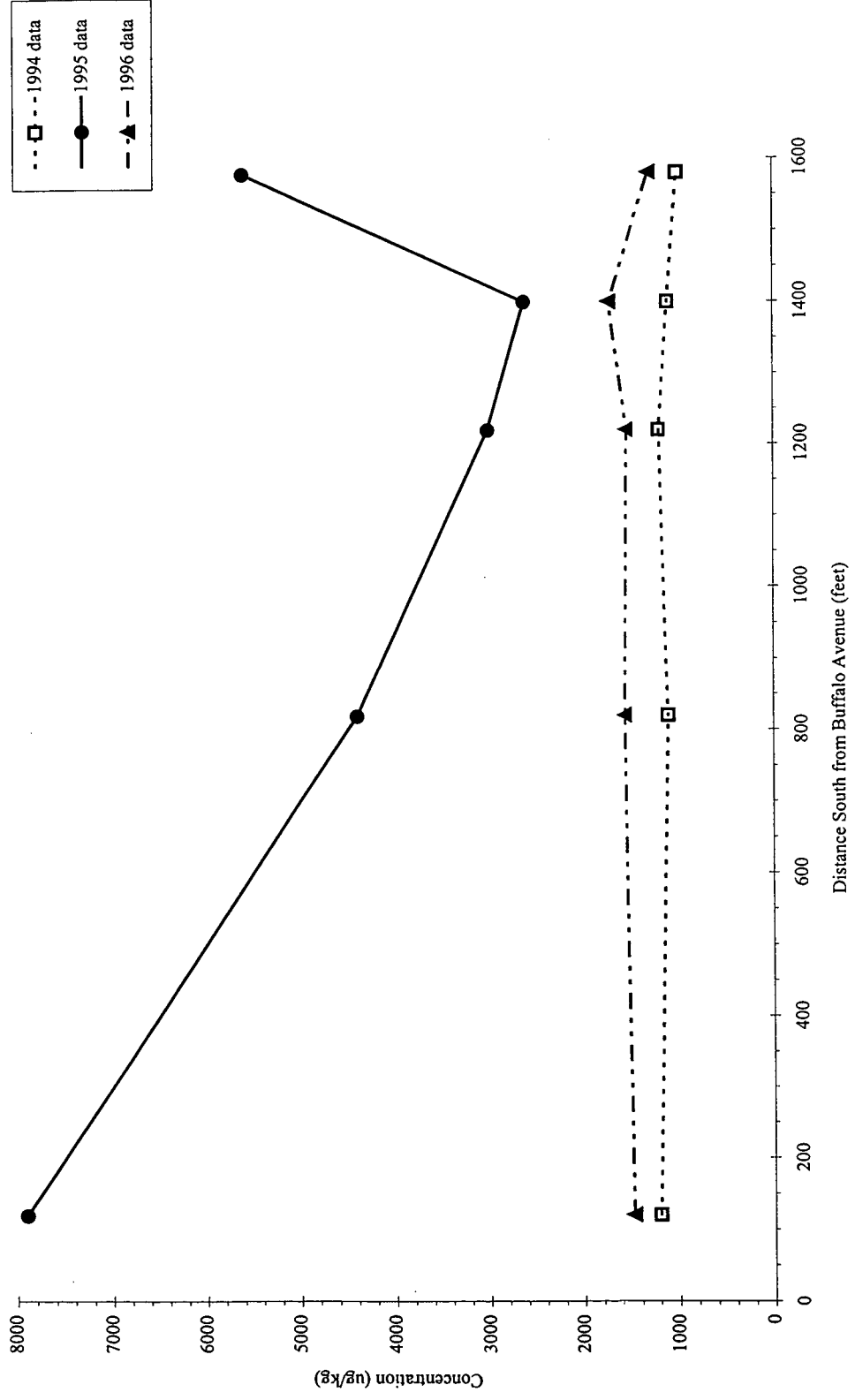
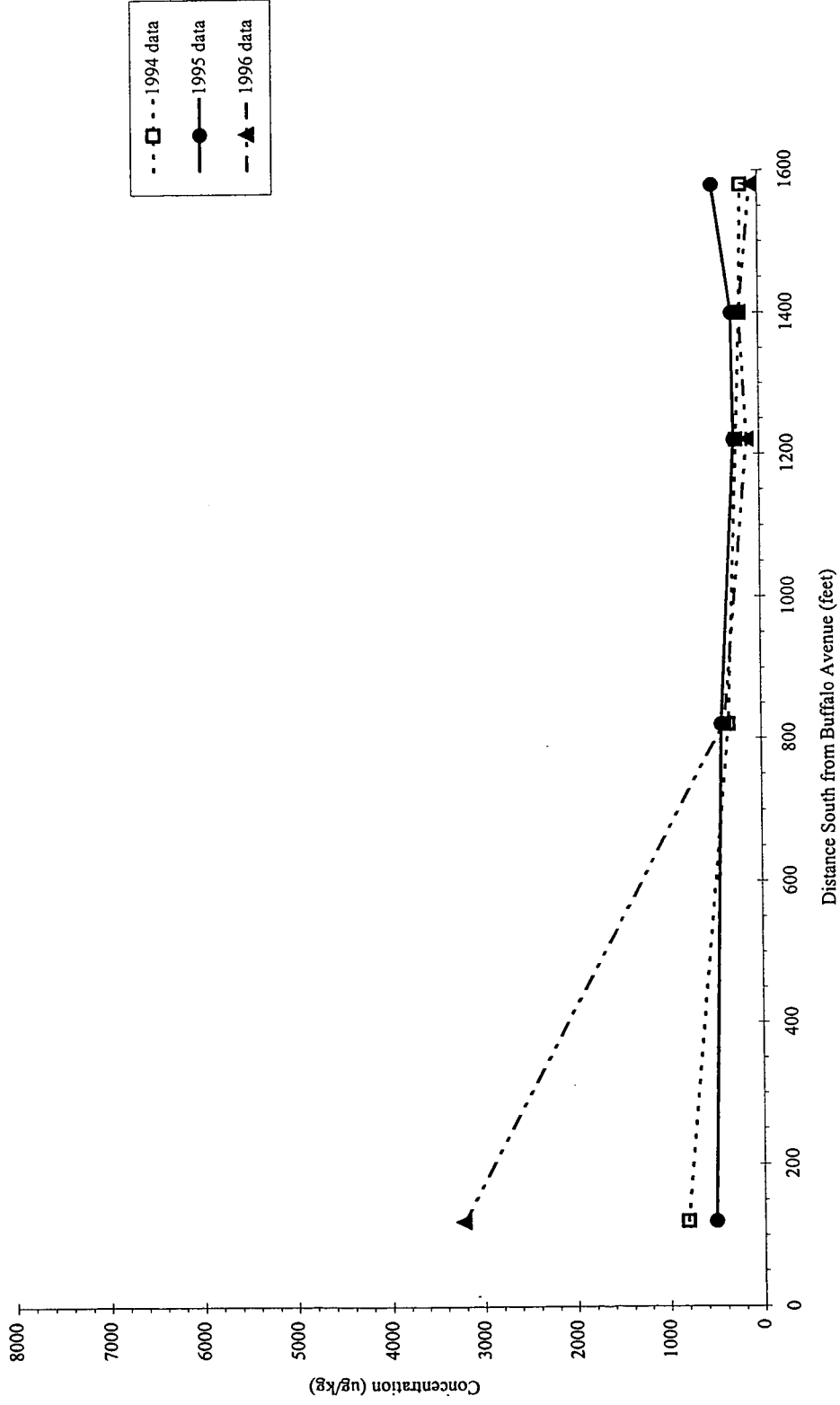
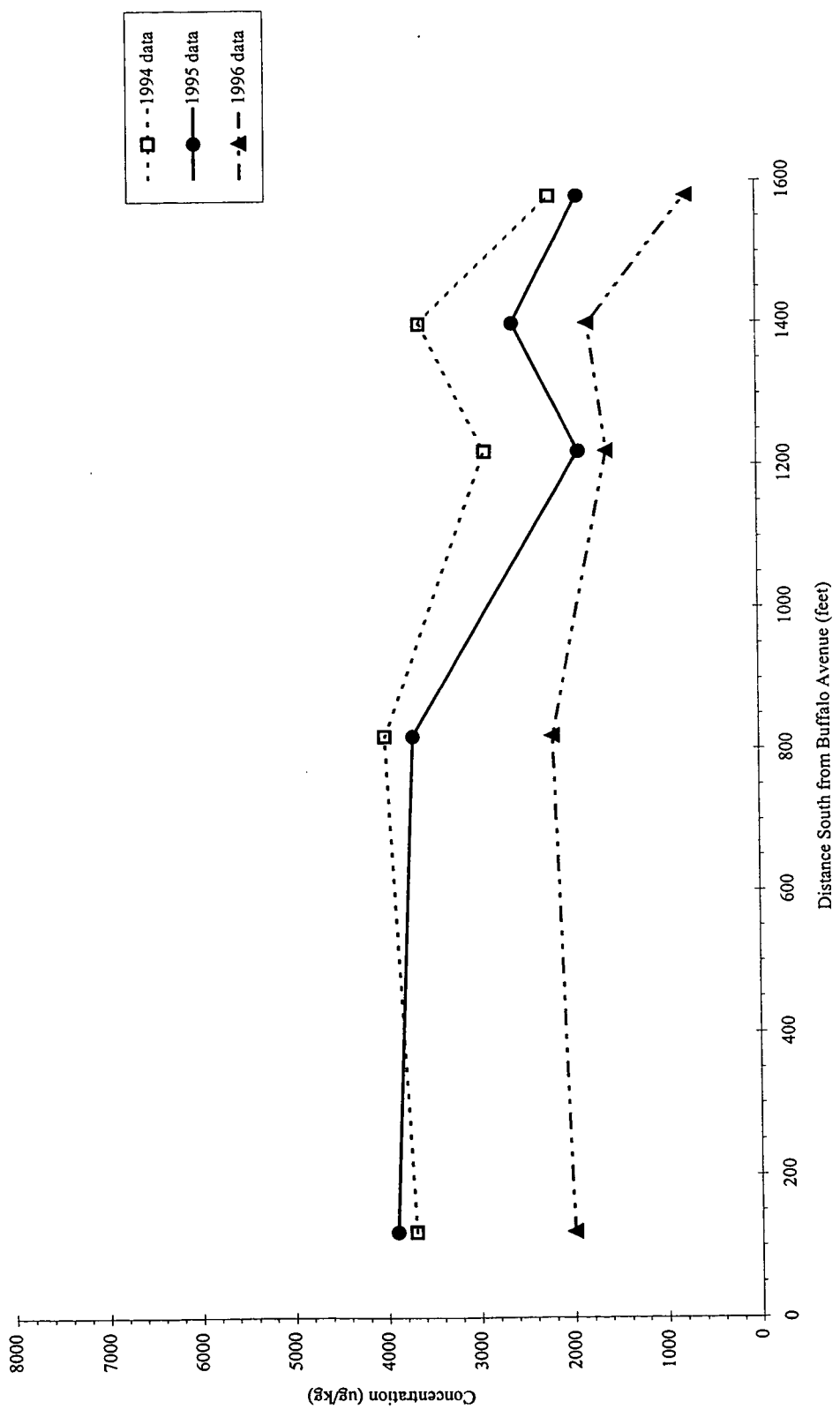


Figure 4-6

GILL CREEK POSTREMEDIATION MONITORING Sediment Concentrations vs Downstream Distance BHCs



GILL CREEK POSTREMEDIATION MONITORING Sediment Concentrations vs Downstream Distance Mercury



TABLES

Table 3-1

**INDICATOR PARAMETER LIST
GILL CREEK POSTREMEDATION MONITORING**

Volatiles	Semivolatiles
Benzene	1,4-dichlorobutane
Carbon tetrachloride	bis(2-ethylhexyl)phthalate
Chlorobenzene	1,2-dichlorobenzene
Chloroform	1,4-dichlorobenzene
Chloromethane	Hexachlorobutadiene
1,1-dichloroethane	Hexachloroethane
1,1-dichloroethene	Naphthalene
trans-1,2-dichloroethene	Pesticides/PCBs
cis-1,2-dichloroethene	Alpha-BHC
Methylene chloride	Beta-BHC
1,1,2,2-tetrachloroethane	Delta-BHC
Tetrachloroethene	Gamma-BHC
Tetrahydrothiophene	Total PCBs
Toluene	Inorganics
1,1,1-trichloroethane	Mercury
1,1,2-trichloroethane	
Trichloroethene	
Vinyl chloride	

Table 3-2

**SAMPLING AND ANALYSIS SUMMARY
1996 SAMPLING EVENT**

Sample Matrix	Analytical Parameter	Method	Investigative Samples	Quality Assurance/Quality Control Samples		
				Field Duplicates	Trip Blanks	MS/MSD*
Sediment	Halogenated volatile organics	8010**	5	1	---	1
	Aromatic volatile organics	8020	5	1	---	1
	Phthalate esters	8060	5	1	---	1
	Organochlorine pesticides & PCBs	8080	5	1	---	1
	Polynuclear aromatic hydrocarbons	8100	5	1	---	1
	Mercury	7471	5	1	---	1
Water	Halogenated volatile organics	8010**	3	1	1	1
	Aromatic volatile organics	8020	3	1	1	1
	Phthalate esters	8060	3	1	---	1
	Organochlorine pesticides & PCBs	8080	3	1	---	1
	Polynuclear aromatic hydrocarbons	8100	3	1	---	1
	Mercury	7471	3	1	---	1

* Matrix spike/matrix spike duplicate for organics analysis; matrix spike/laboratory duplicate for inorganics analysis

** Modified Method 8010 to facilitate analysis of 1,4-dichlorobutane, hexachlorobutadiene, and hexachloroethane

Table 4-1

**A ZONE GROUNDWATER
AND GILL CREEK SURFACE-WATER ELEVATIONS
OCTOBER 1996**

A Zone Overburden	
Monitor Well/Piezometer	Elevation (feet above MSL)
MW-1AR	563.22
EPO-1	562.29
EPO-8	563.59
EPO-9	562.56
PW-18	556.84
PW-19	557.05
PW-20	562.11
WPO-5	563.86
WPO-6	564.32
WPO-7	563.32
A Zone Bedrock	
Monitor Well/Piezometer	Elevation (feet above MSL)
MW-21A	563.67
MW-24A	562.31
DEC-3	562.56
EPT-1	562.58
EPT-8	563.09
EPT-9	562.61
PW-18	556.84
PW-19	557.05
PW-20	562.11
PW-35	554.90
WPT-5	563.15
WPT-6	563.22
WPT-7	563.33
OBA-9A	563.67
OBA-10A	563.16
GILL CREEK	559.89

Table 4-2

**CHEMICAL GROUPING
OF INDICATOR LIST COMPOUNDS/ANALYTES**

Chemical Groups	Compounds
C1-C4 Chlorinated Organics	Carbon tetrachloride
	Chloroform
	Chloromethane
	1,1-dichloroethane
	1,1-dichloroethene
	trans-1,2-dichloroethene
	cis-1,2-dichloroethene
	Methylene chloride
	1,1,2,2-tetrachloroethane
	Tetrachloroethene
	1,1,1-trichloroethane
	1,1,2-trichloroethane
	Trichloroethene
	Vinyl chloride
	1,4-dichlorobutane
Hexachlorobutadiene	
Hexachloroethane	
Chlorinated Aromatic Hydrocarbons	chlorobenzene
	1,2-dichlorobenzene
	1,4-dichlorobenzene
Aromatic Hydrocarbons	Benzene
	Toluene
Phthalates	bis(2-ethylhexyl)phthalate
PCBs	Aroclor 1016
	Aroclor 1221
	Aroclor 1232
	Aroclor 1242
	Aroclor 1248
	Aroclor 1254
	Aroclor 1260
BHCs	Alpha-BHC
	Beta-BHC
	Delta-BHC
	Gamma-BHC
Inorganics	Mercury
Miscellaneous other compounds	Tetrahydrothiophene
	Naphthalene

Table 4-3

1996 GILL CREEK POSTREMEDIATION MONITORING
 SEDIMENT SAMPLE RESULTS
 SUMMARY OF DETECTED COMPOUNDS

CONSTITUENT	UNITS	SED-1	SED-2	SED-3	QA-1	SED-4	SED-5
Tetrachloroethene	ug/kg	25 U	40 U	26 U	40 U	160	37 U
Hexachlorobutadiene	ug/kg	25 U	210	26 U	40 U	48 U	51
CL-CA CHLORINATED ORGANICS	ug/kg	ND	210	ND	ND	160	51
Chlorobenzene	ug/kg	140	71	70	72	42	130
1,4-dichlorobenzene	ug/kg	50 U	120	100	110	89	120
CHLORINATED AROMATICS	ug/kg	140	191	170	182	131	250
Benzene	ug/kg	25	40 U	26 U	40 U	38 U	37 U
Toluene	ug/kg	25 U	40 U	26 U	40 U	50	56
AROMATICS	ug/kg	25	ND	ND	ND	50	56
bis(2-ethylhexyl)phthalate	ug/kg	1100	5200	980	1600	1500	1300
PHTHALATES	ug/kg	1100	5200	980	1600	1500	1300
Aroclor 1248	ug/kg	1000	980	1100	1400	940	820
Aroclor 1254	ug/kg	480	580	440	560	780	480
PCBs	ug/kg	1480	1560	1340	1960	1720	1300
alpha-BHC	ug/kg	2800	240	34	53	100	23
gamma-BHC	ug/kg	86	16	10 U	10 U	13	11 U
beta-BHC	ug/kg	270	89	57	78	68	31
delta-BHC	ug/kg	74	53	39	47	39	30
BHCs	ug/kg	3230	398	130	178	207	84
Mercury	mg/kg	2	2.2	1.6	1.6	1.8	0.74
INORGANICS	mg/kg	2	2.2	1.6	1.6	1.8	0.74

U - Not detected
 J - Estimated value
 ND - No compounds/analytes within that group were detected. Detection limits may vary.
 QA-1 is a field duplicate of SED-3.

Table 4-4

**1996 GILL CREEK POSTREMEDIATION MONITORING
SURFACE-WATER SAMPLE RESULTS
SUMMARY OF DETECTED COMPOUNDS**

CONSTITUENT	UNITS	SW-1	SW-2	QA-2	SW-4
trans-1,2-dichloroethene	ug/kg	0.2 U	0.84	0.45	0.2 U
cis-1,2-dichloroethene	ug/kg	0.2 U	16	16	1.4
Chloroform	ug/kg	0.2 U	10	9.7	1.2
1,1,1-trichloroethane	ug/kg	0.2 U	0.7	0.57	0.32
Carbon tetrachloride	ug/kg	0.2 U	3.6	3.1	0.29
Trichloroethene	ug/kg	0.2 U	32 J	31 J	4.4
Tetrachloroethene	ug/kg	1	20 J	20	2.3
1,1,2,2-tetrachloroethane	ug/kg	0.2 U	12	11	0.76
Hexachlorobutadiene	ug/kg	2 U	2.2	2.5	2 U
CI-CI CHLORINATED ORGANICS	ug/kg	1	97.34	94.32	10.67
alpha-BHC	ug/kg	0.33 J	0.25 J	0.34 J	0.053
beta-BHC	ug/kg	0.18 J	0.19 J	0.16 J	0.05 U
delta-BHC	ug/kg	0.069 J	0.05 UJ	0.05 UJ	0.05 U
BHCs	ug/kg	0.579	0.44	0.5	0.053

U - Not detected

J - Estimated value

QA-2 is a field duplicate of SW-2.

Table 4-5

**SUMMARY OF HISTORIC SURFACE-WATER SAMPLE RESULTS
GILL CREEK POSTREMEDIATION MONITORING PROGRAM**

Constituent	Units	SW-1			SW-2			SW-4		
		1994	1995	1996	1994	1995	1996	1994	1995	1996
C1-C4 Chlorinated Organics	ug/l	ND	ND	1	NS	44.9	97.34	21.9	60.9	10.67
total BHCs	ug/l	1.045	0.471	0.579	NS	0.98	0.44	0.089	0.203	0.053
Mercury	mg/l	ND	0.0014	ND	NS	ND	ND	ND	ND	ND

ND=No compounds/analytes within that group were detected; detection limits may vary

NS=No sample

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