



**CONESTOGA-ROVERS
& ASSOCIATES**

E-Mail To: Dennis Hoyt
c.c.: Paul McMahon
Interoffice:



ANALYTICAL RESULTS AND QA/QC REVIEW
SEMI-ANNUAL GROUNDWATER SAMPLING
102ND STREET LANDFILL
NIAGARA FALLS, NEW YORK
JUNE 2007

PREPARED BY:
CONESTOGA-ROVERS & ASSOCIATES
2055 Niagara Falls Blvd., Suite #3
Niagara Falls, New York 14304
Telephone: 716-297-6150 Fax: 716-297-2265
Contact: Paul McMahon [jbh]
Date: July 26, 2007
www.CRAworld.com

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 QA/QC REVIEW	1
3.0 CONCLUSION	3

LIST OF TABLES (Following Text)

TABLE 1	SAMPLE COLLECTION AND ANALYSIS SUMMARY
TABLE 2	ANALYTICAL RESULTS SUMMARY
TABLE 3	ANALYTICAL METHOD SUMMARY
TABLE 4	QUALIFIED SAMPLE RESULTS DUE TO INADEQUATE PRESERVATION
TABLE 5	QUALIFIED SAMPLE RESULTS DUE TO OUTLYING SURROGATE RECOVERIES
TABLE 6	QUALIFIED SAMPLE RESULTS DUE TO ANALYTE CONCENTRATIONS IN THE METHOD BLANKS
TABLE 7	QUALIFIED SAMPLE RESULTS DUE TO OUTLYING MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERIES
TABLE 8	QUALIFIED SAMPLE RESULTS DUE TO OUTLYING BLANK SPIKE RECOVERIES
TABLE 9	QUALIFIED SAMPLE RESULTS DUE TO ANALYTE CONCENTRATIONS IN THE TRIP BLANK
TABLE 10	QUALIFIED SAMPLE RESULTS DUE TO ANALYTE CONCENTRATIONS IN THE RINSE BLANKS

LIST OF ATTACHMENTS

ATTACHMENT A	CHAIN OF CUSTODY DOCUMENT(S)
ATTACHMENT B	GRAPHICAL PRESENTATION - CHEMICAL CONCENTRATION VERSUS TIME

1.0 INTRODUCTION

Groundwater samples were collected in support of the Operation and Maintenance Program at the 102nd Street Landfill (Site) in Niagara Falls, New York. The samples were collected in June 2007 and delivered to CompuChem in Cary, North Carolina, for analysis. Samples were analyzed for Site-Specific Parameter List (SSPL) volatile organic compounds (VOCs), SSPL semi-volatile organic compounds (SVOCs), SSPL pesticides, total mercury, and total arsenic. A sampling and analysis summary is presented in Table 1. The analytical results are summarized in Table 2 and the analytical methods used are summarized in Table 3. Copies of the Chain of Custody documents are included in Attachment A.

The final sample results and supporting quality assurance/quality control (QA/QC) results were reported by the laboratory in accordance with the requested deliverables. The QA/QC criteria by which these data were assessed are outlined in the analytical methods used and the following guidance documents:

- i) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", October 1999; and
- ii) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", February 1994.

All data were reviewed for the QA/QC information detailed in Section 2.0 by Paul McMahon of CRA, Inc. The names of the laboratory analysts were included in the report.

A graphical presentation of the concentration of chemical constituents versus time for wells PCM-03, PCM-04, and PCM-05 is located in Attachment B.

2.0 QA/QC REVIEW

Holding Times

The sample holding time criteria are specified in Table 3. All holding time criteria were met. Most samples were properly preserved and received at 4°C ($\pm 2^\circ\text{C}$). One metals sample was received at the laboratory at an elevated pH. The laboratory preserved the bottle upon receipt. Since acid preservation should be completed at the time of collection, the associated sample results were qualified as estimated (see Table 4).

Surrogate Spike Recoveries –VOCs/SVOCs/Pesticides

All samples and blanks analyzed for VOCs, SVOCs, and pesticides were spiked with surrogate compounds prior to sample extraction and/or analysis. Most surrogate spike recoveries were acceptable per the "Guidelines", indicating good analytical efficiency. Low benzene hexachloride (BHC) surrogate recoveries were reported for three samples. All associated sample results were qualified as estimated (see Table 5).

Laboratory Method Blank Analyses

Method blanks were extracted and/or analyzed with the investigative samples for all parameters. All methods blanks were non-detect for the analytes of interest except some VOCs. Associated sample results with comparable concentrations were qualified as non-detect (See Table 6).

Matrix Spike/Matrix Spike Duplicate/Duplicate (MS/MSD/Duplicate) Analyses

One sample was selected for MS/MSD analyses as specified in Table 1. The metals analyses were also performed in duplicate. Most recoveries and relative percent differences (RPDs) were acceptable, demonstrating good analytical accuracy and precision. One slightly low VOC MSD recovery and two high RPDs were reported. The associated sample results were non-detect and were judged acceptable based on the acceptable MS recovery. Low MS/MSD recoveries were reported for phenol, and the associated sample result was qualified as estimated (see Table 7).

Blank Spike (BS) Analyses

BS and/or laboratory control samples (LCSs) were analyzed for all parameters. Some analyses were performed in duplicate, with all RPDs demonstrating acceptable analytical precision. Most recoveries were acceptable, indicating good analytical accuracy. One low phenol recovery was reported, and the associated sample results were qualified as estimated (see Table 8).

Field Duplicate Analysis

One field duplicate sample was submitted "blind" to the laboratory for analyses as summarized in Table 1.

All field duplicate results showed acceptable reproducibility outside of estimated regions of detection, indicating good laboratory and sampling protocol precision.

Trip Blanks

Three trip blanks were collected for the program. The trip blanks were analyzed for VOCs, and some detections were noted. Associated results detected at levels similar to the blanks were qualified as non-detect (see Table 9).

Rinse Blank Analysis

One rinse blank was collected for the program as detailed in Table 1. All rinse blank results were non-detect except 2-chlorotoluene. Associated results detected at levels similar to the blank were qualified as non-detect (see Table 10).

3.0 CONCLUSION

Based on this QA/QC review, the data presented in Table 2 are acceptable with the noted qualifications.

ATTACHMENT A

CHAIN OF CUSTODY DOCUMENT(S)

F of 1

METHOD OF SHIPMENT :	SAMPLE TEAM:	DC/TB/FK/JT	CHAIN OF CUSTODY NO:	102nd614071
----------------------	--------------	-------------	----------------------	-------------

1 of 1

METHOD OF SHIPMENT :

F of 1

Fax (716) 693-4681 Phone: (716) 693-4616

[illegible]

ATTACHMENT B

GRAPHICAL PRESENTATION
CHEMICAL CONCENTRATIONS VERSUS TIME

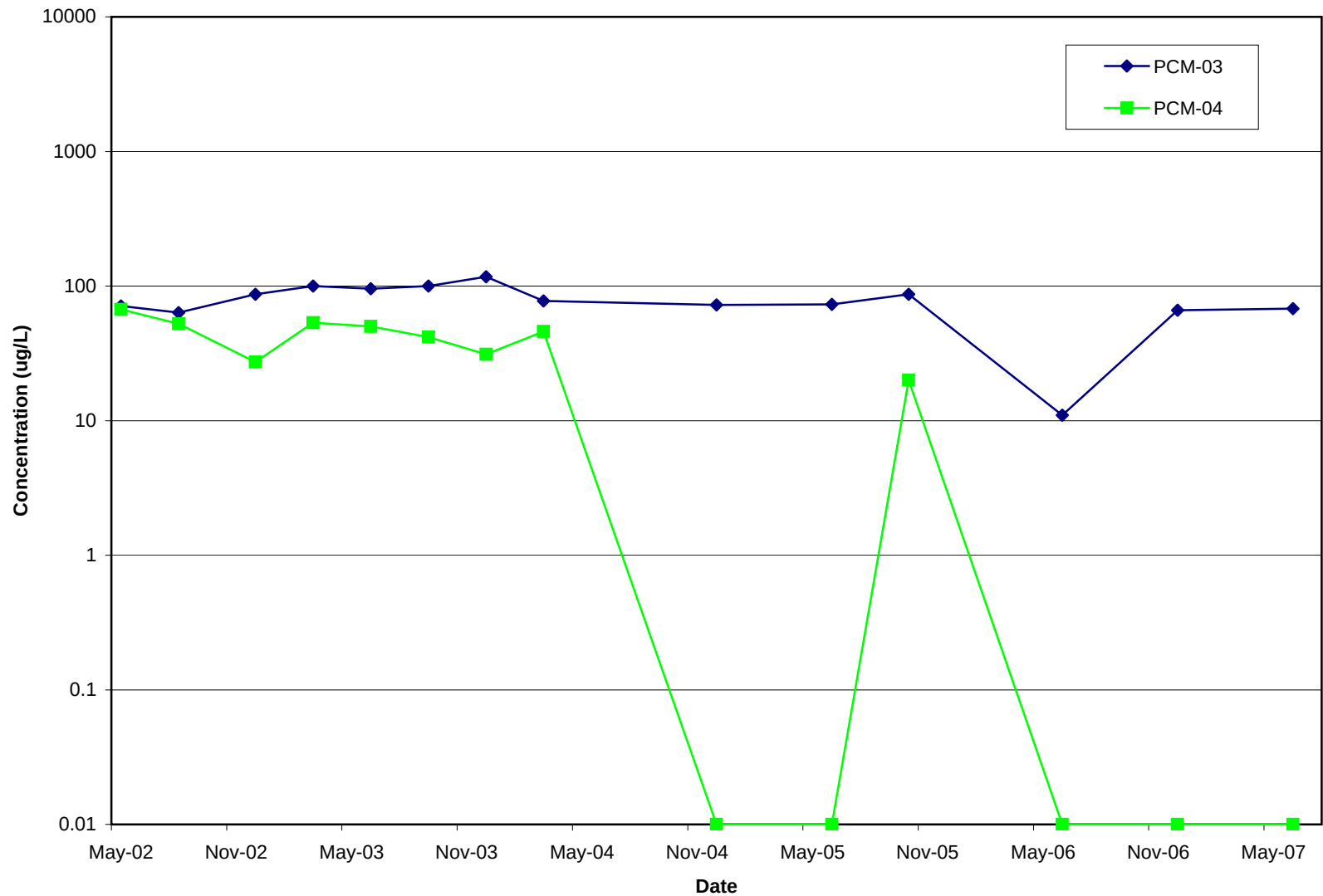


figure 1
CONCENTRATION OF 1,2-DICHLOROBENZENE vs. TIME
102ND STREET LANDFILL

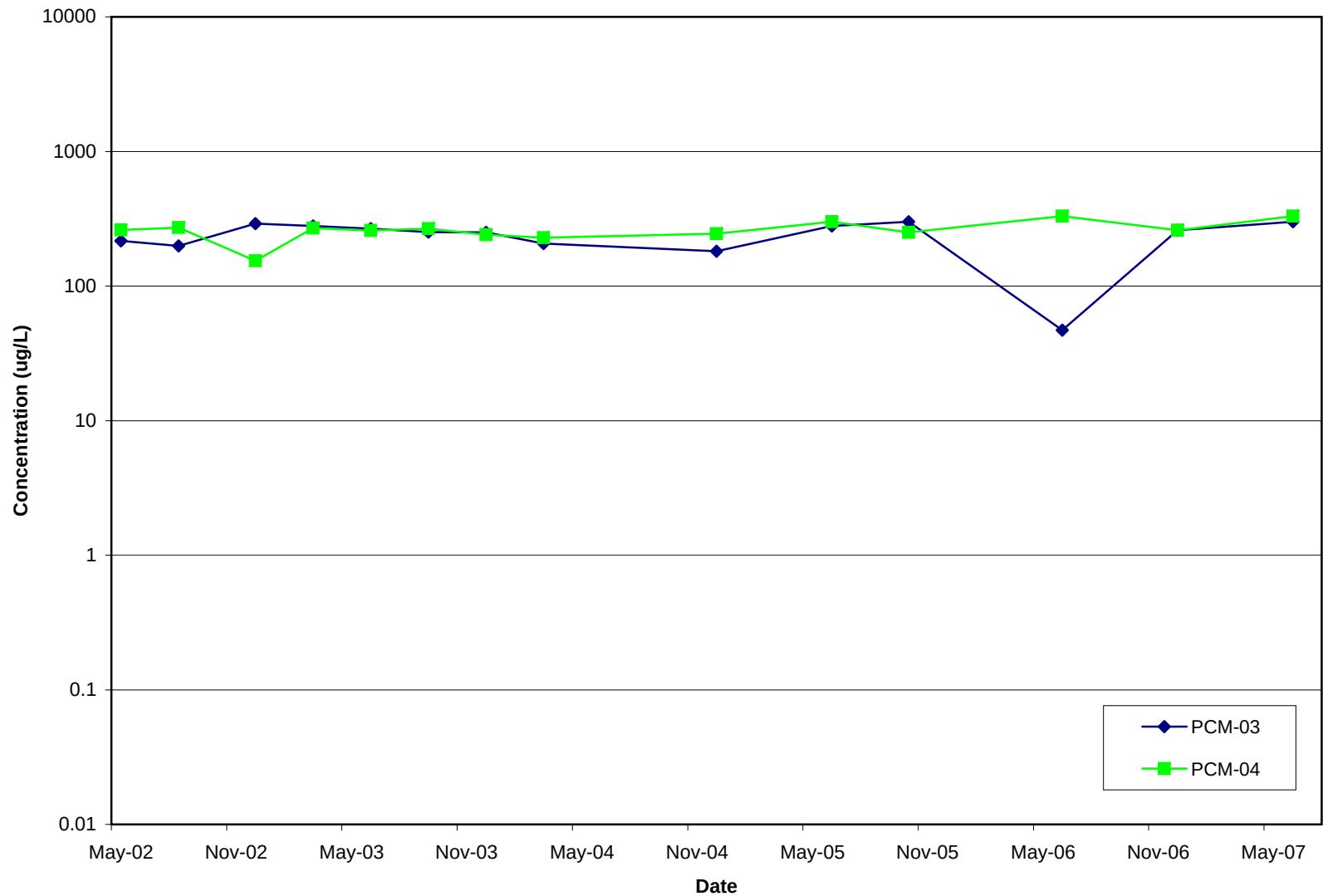


figure 2
CONCENTRATION OF 1,4-DICHLOROBENZENE vs. TIME
102ND STREET LANDFILL

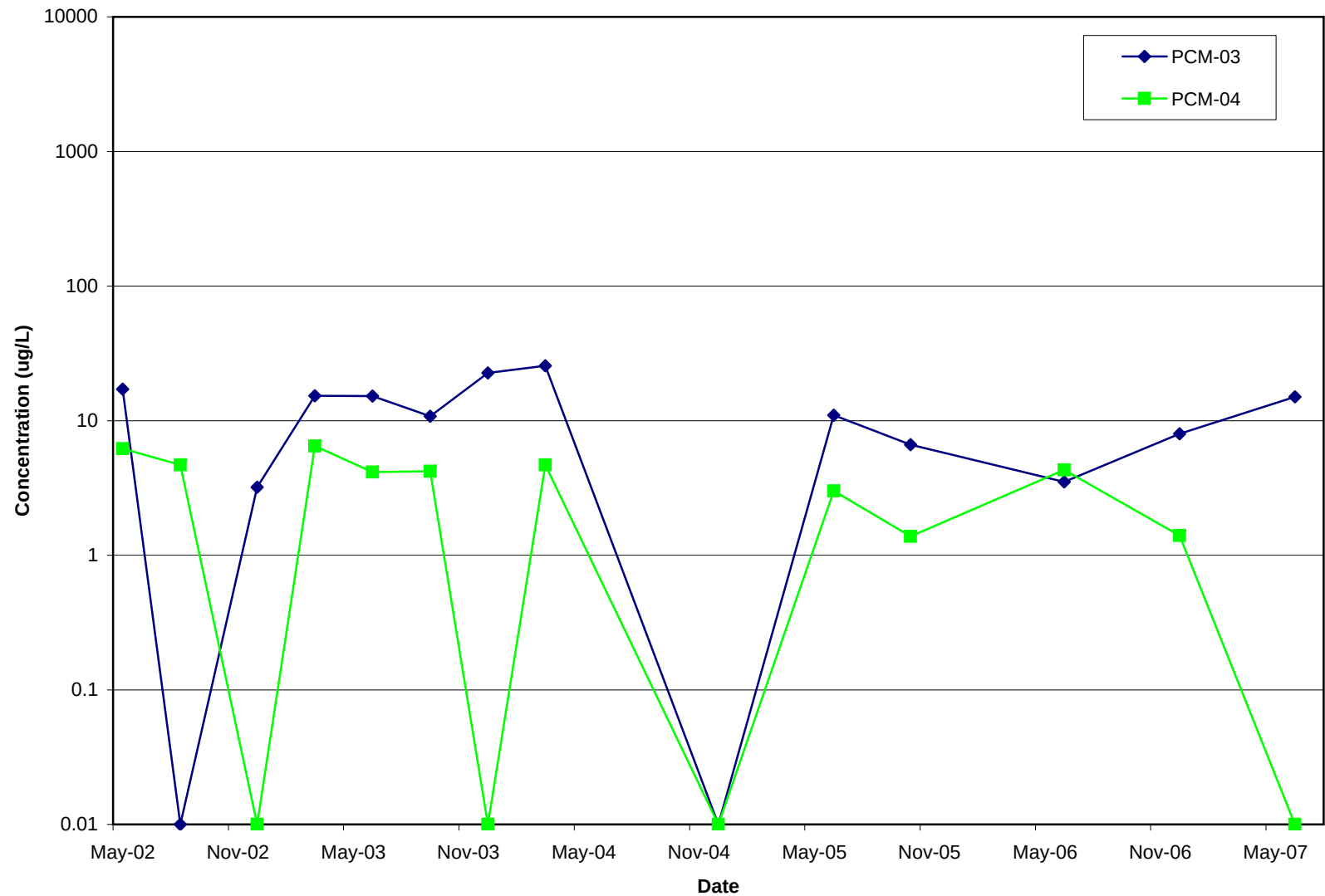


figure 3
CONCENTRATION OF 2,4-DICHLOROPHENOL vs. TIME
102ND STREET LANDFILL

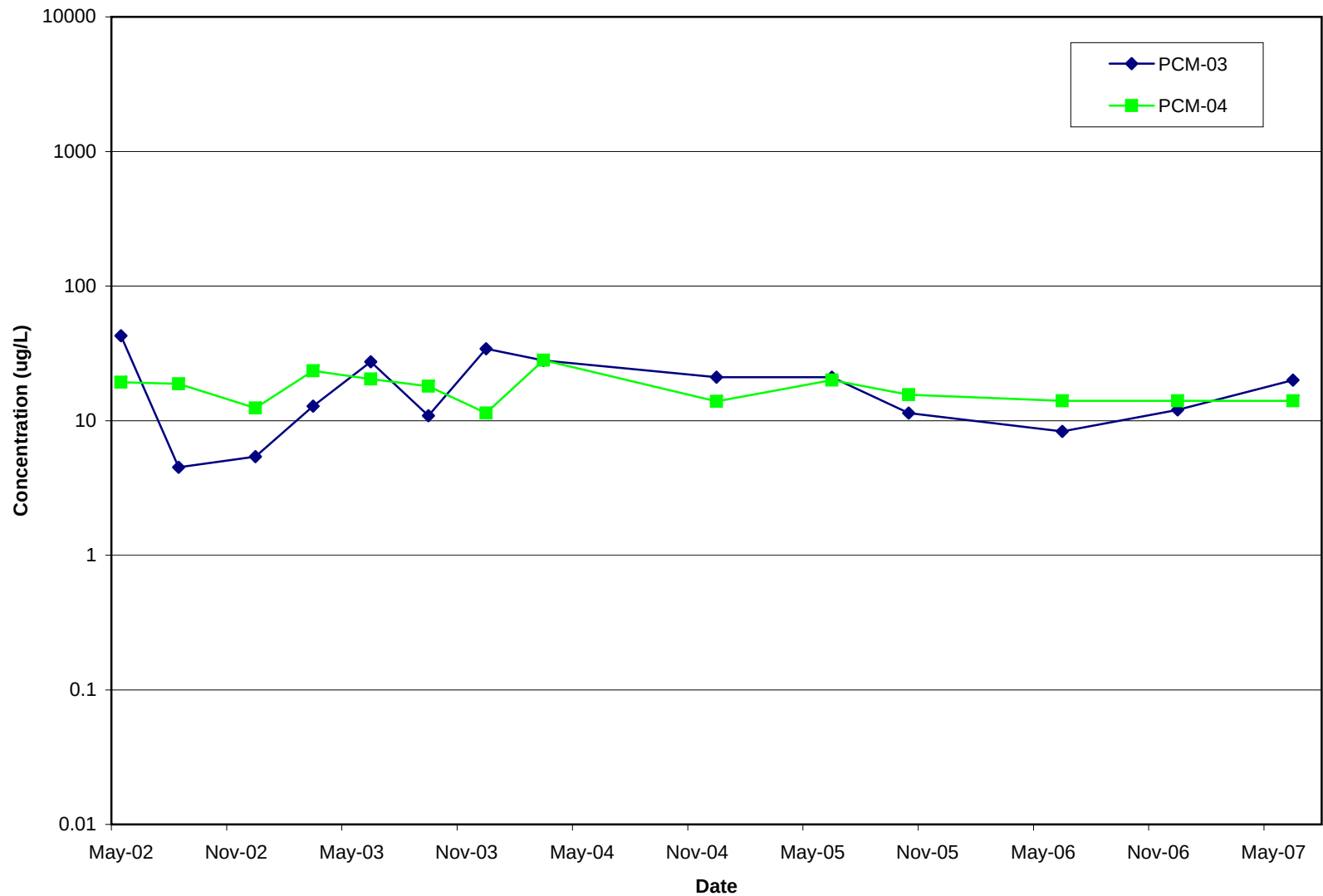


figure 4
CONCENTRATION OF 2-CHLOROPHENOL vs. TIME
102ND STREET LANDFILL

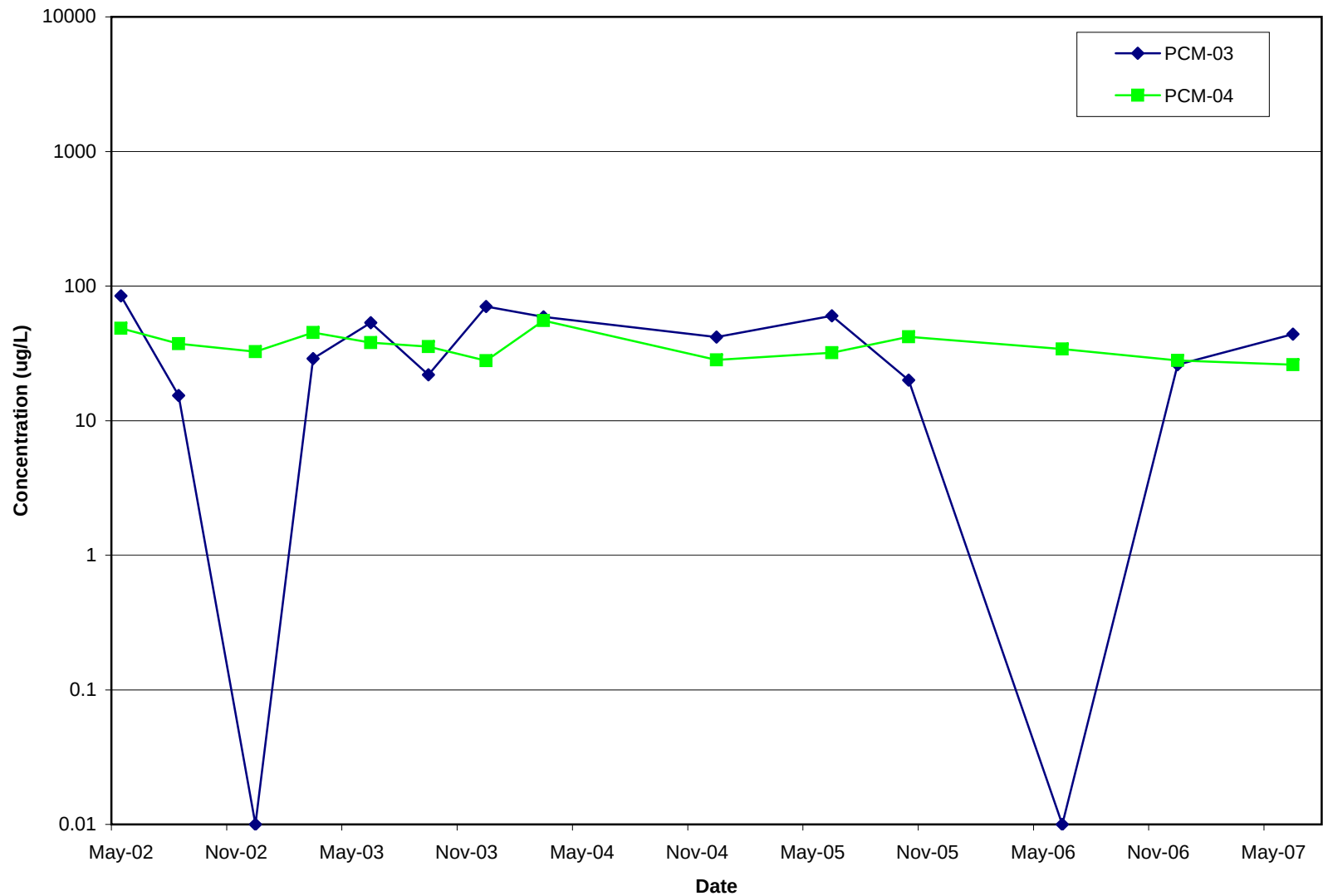


figure 5
CONCENTRATION OF 4-CHLOROPHENOL vs. TIME
102ND STREET LANDFILL

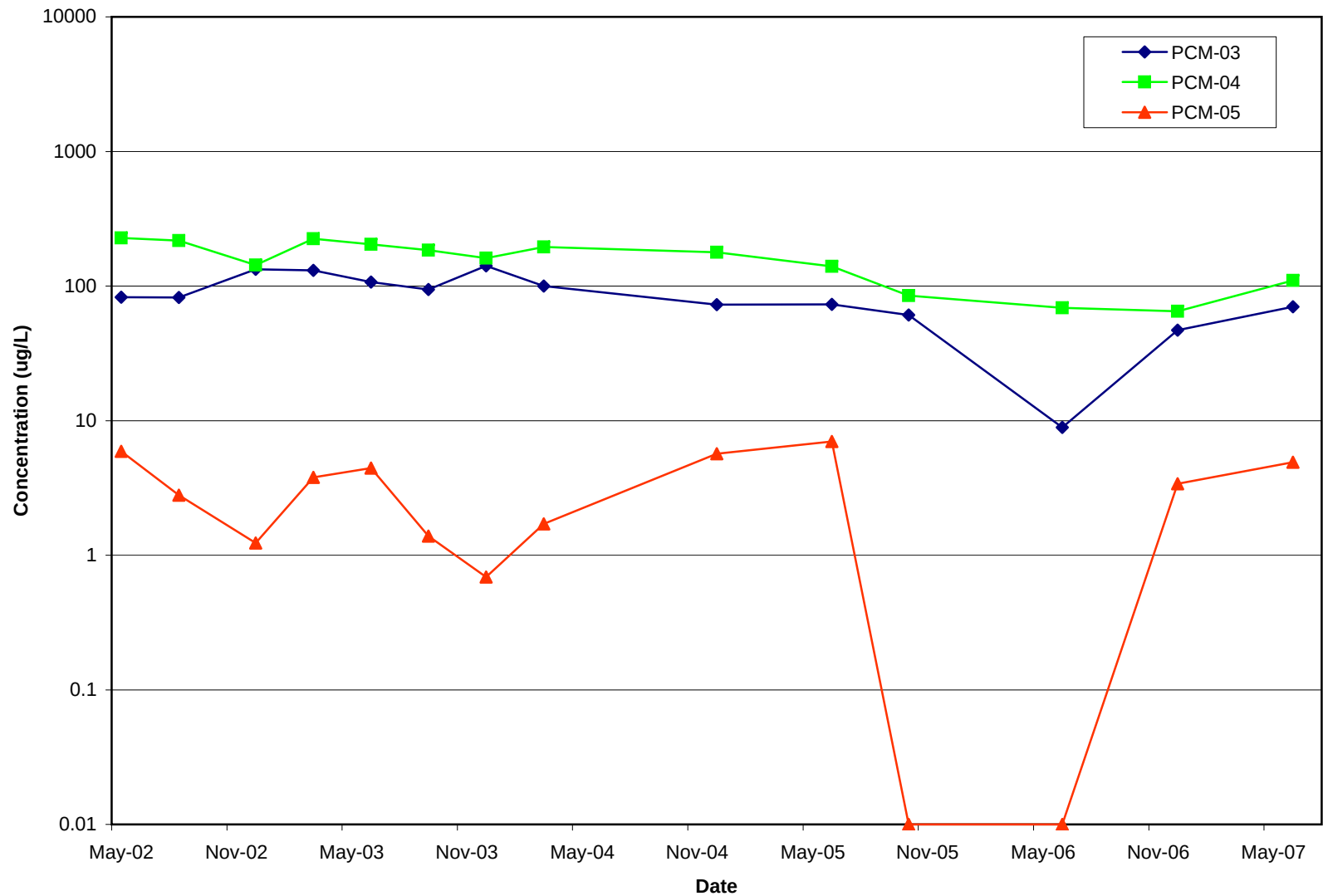


figure 6
CONCENTRATION OF BENZENE vs. TIME
102ND STREET LANDFILL

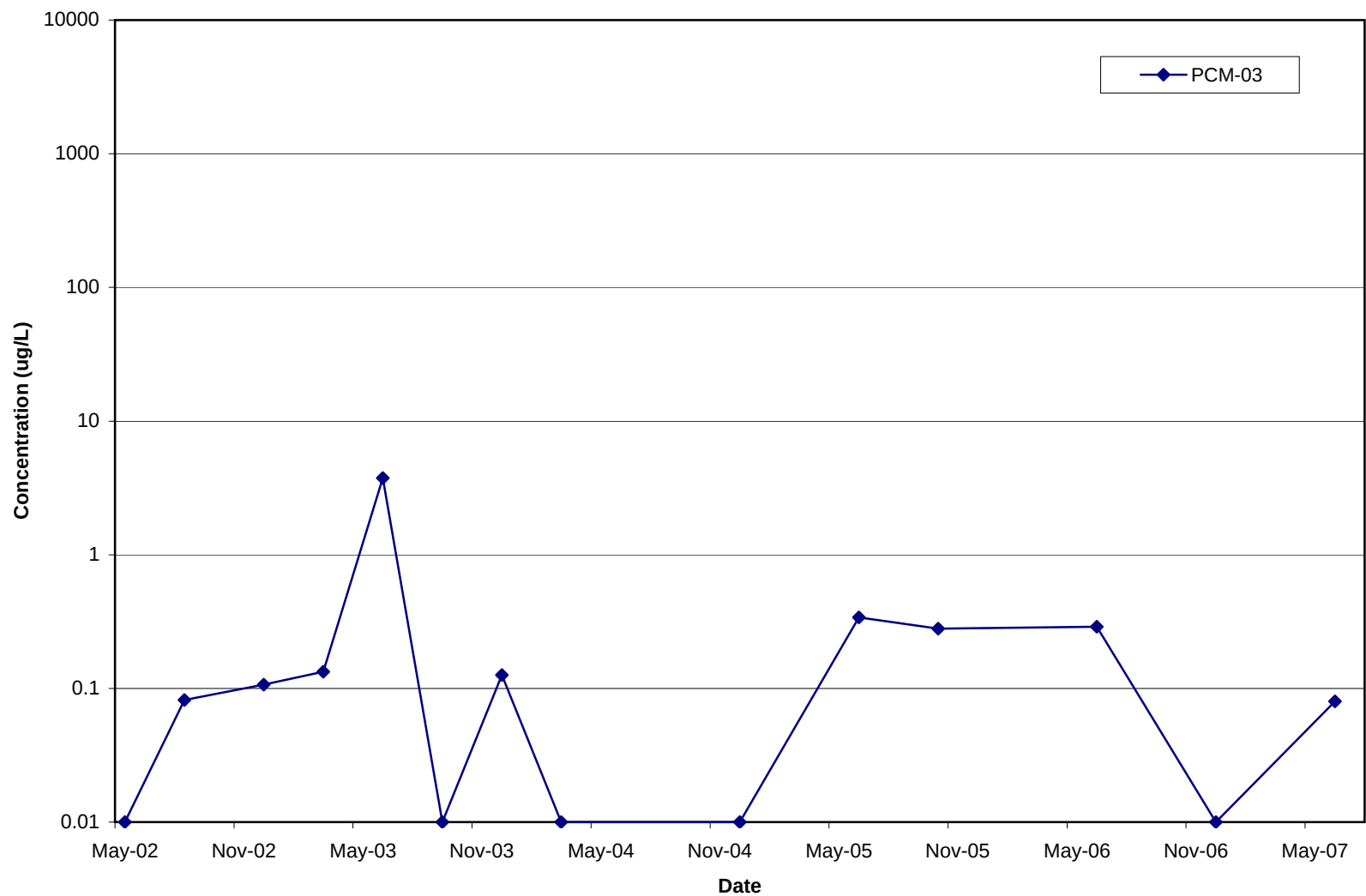


figure 7
CONCENTRATION OF BETA-BHC vs. TIME
102ND STREET LANDFILL

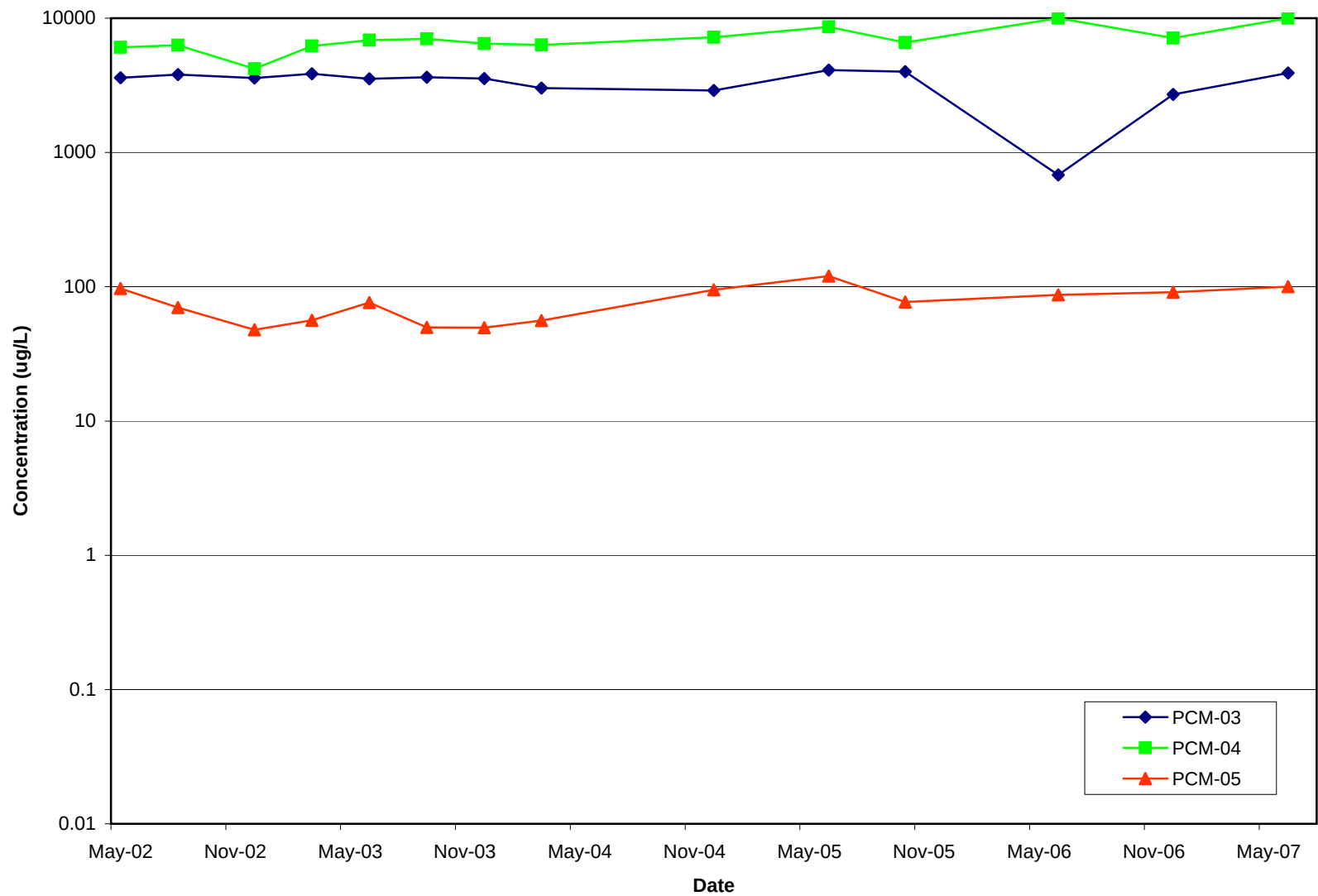


figure 8
CONCENTRATION OF CHLOROBENZENE vs. TIME
102ND STREET LANDFILL

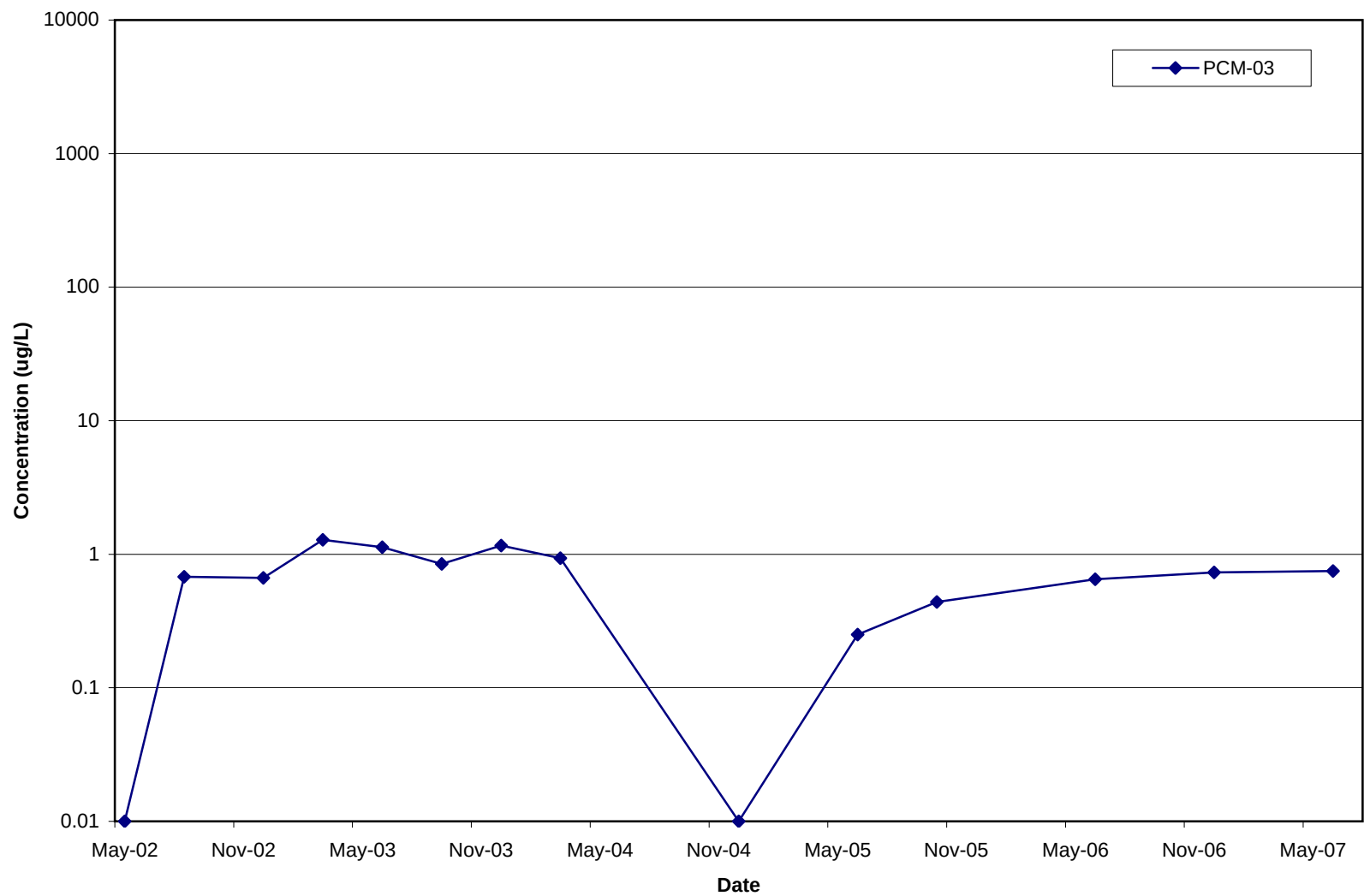


figure 9
CONCENTRATION OF DELTA-BHC vs. TIME
102ND STREET LANDFILL

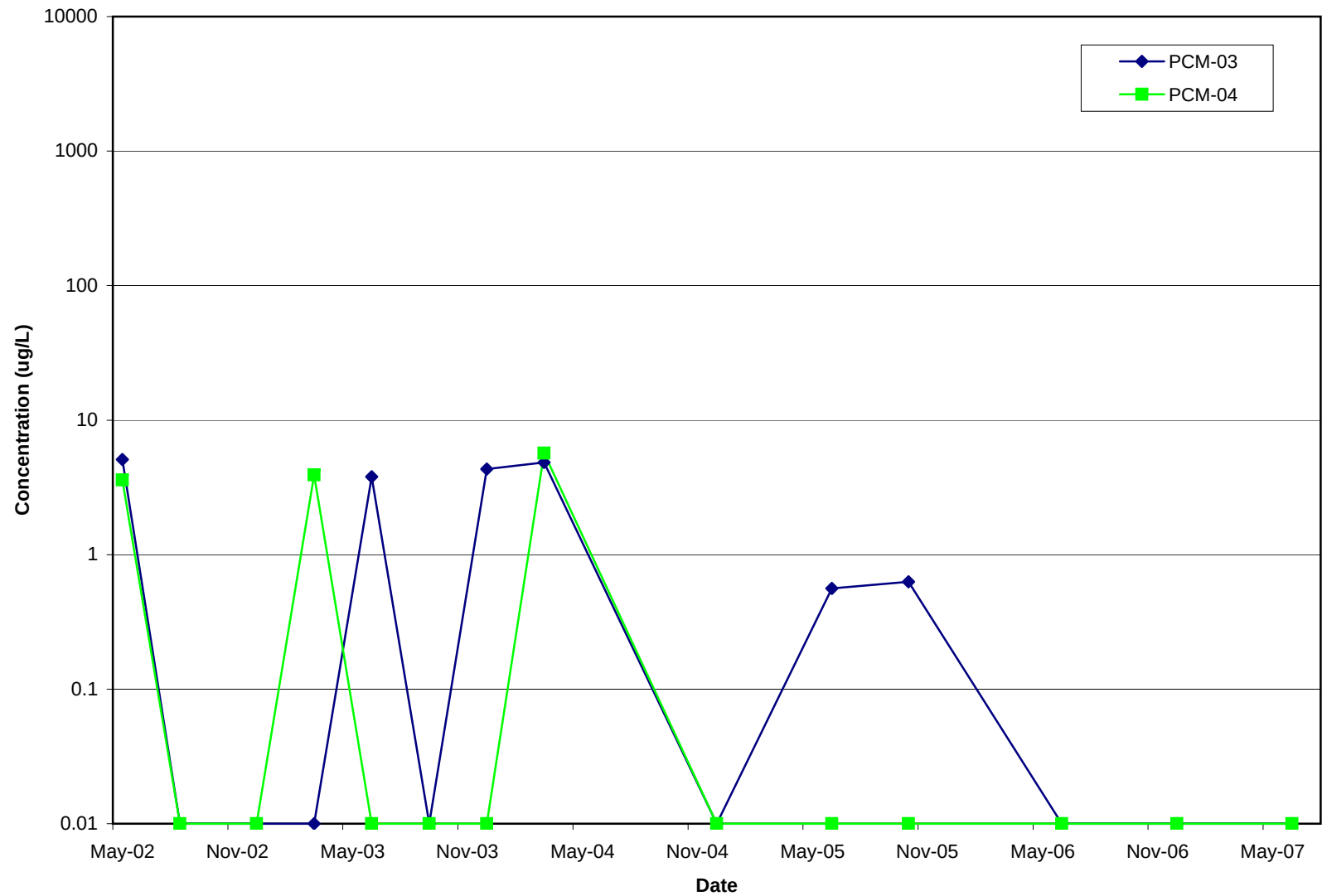


figure 10
CONCENTRATION OF PHENOL vs. TIME
102ND STREET LANDFILL

TABLES

TABLE 1
SAMPLE COLLECTION AND ANALYSIS SUMMARY
SEMI-ANNUAL GROUNDWATER SAMPLING
102ND STREET LANDFILL
NIAGARA FALLS, NEW YORK
JUNE 2007

<i>Sample ID</i>	<i>Location I.D. ⁽¹⁾</i>	<i>Collection Date</i>	<i>Collection Time</i>	<i>Analysis/Parameters</i>				<i>Depth to Water ⁽²⁾ (ft. BTOC)</i>	<i>Comment</i>
				<i>BHCs</i>	<i>VOCs</i>	<i>Metals</i>	<i>SVOCs</i>		
PCM-02-607	PCM-02	06/14/07	10:05	X	X	X	X	21.50	
PCM-03-607	PCM-03	06/14/07	11:50	X	X	X	X	12.38	
PCBM-01-607	PCBM-01	06/14/07	11:00	X	X	X	X	18.18	MS/MSD/Duplicate
TRP102-61407	-	06/14/07	-		X			18.68	Trip Blank
PCM-04-607	PCM-04	06/18/07	8:25	X	X	X	X	-	
PCM-12-607	PCM-04	06/18/07	8:00	X	X	X	X	12.35	Duplicate of PCM-04-607
PCM-05-607	PCM-05	06/18/07	9:25	X	X	X	X	17.21	
PCBM-02-607	PCBM-02	06/18/07	10:10	X	X	X	X	19.10	
TRP102-61807	-	06/18/07	-		X			12.35	Trip Blank
PCM-07-607	PCM-07	06/19/07	10:40	X	X	X	X	-	
PCM-01-607	PCM-01	06/19/07	10:05	X	X	X	X	-	
PCM-10-607	PCM-10	06/19/07	9:15	X	X	X	X	15.77	
PCBM-03-607	PCBM-03	06/19/07	8:35	X	X	X	X	14.78	
RINSE-607	-	06/19/07	7:30	X	X	X	X	13.17	Rinse Blank
TRP102-61907	-	06/19/07	-		X			-	Trip Blank

Notes:

- ⁽¹⁾ Wells PCM-06, PCM-08, and PCM-09 were dry.
- ⁽²⁾ Niagara River water level for July 2007 was 563.67 feet.
- Not applicable.
- BHCs Benzene Hexachlorides.
- ft. BTOC Feet Below Top of Casing.
- MS Matrix Spike.
- MSD Matrix Spike Duplicate.
- SVOCs Semi-Volatile Organic Compounds.
- VOCs Volatile Organic Compounds.

TABLE 2
ANALYTICAL RESULTS SUMMARY
SEMI-ANNUAL GROUNDWATER SAMPLING
102ND STREET LANDFILL
NIAGARA FALLS, NEW YORK
JUNE 2007

<i>Sample Location:</i>		<i>PCBM-01</i>	<i>PCBM-02</i>	<i>PCBM-03</i>	<i>PCM-01</i>	<i>PCM-02</i>	<i>PCM-03</i>	<i>PCM-04</i>	<i>PCM-04</i>	<i>PCM-05</i>	<i>PCM-07</i>	<i>PCM-10</i>
<i>Sample ID:</i>		<i>PCBM-01-607</i>	<i>PCBM-02-607</i>	<i>PCBM-03-607</i>	<i>PCM-01-607</i>	<i>PCM-02-607</i>	<i>PCM-03-607</i>	<i>PCM-04-607</i>	<i>PCM-12-607</i>	<i>PCM-05-607</i>	<i>PCM-07-607</i>	<i>PCM-10-607</i>
<i>Sample Date:</i>		<i>6/14/2007</i>	<i>6/18/2007</i>	<i>6/19/2007</i>	<i>6/19/2007</i>	<i>6/14/2007</i>	<i>6/14/2007</i>	<i>6/18/2007</i>	<i>6/18/2007</i>	<i>6/18/2007</i>	<i>6/19/2007</i>	<i>6/19/2007</i>
<i>Parameters</i>	<i>Units</i>								<i>Duplicate</i>			
<i>Volatile Organic Compounds</i>												
1,2,3-Trichlorobenzene	ug/L	.5 U	6.3 U	.5 U	.5 U	.5 U	250 U	310 U	310 U	.5 U	.5 U	.5 U
1,2,4-Trichlorobenzene	ug/L	.5 U	6.3 U	.5 U	.5 U	.5 U	250 U	310 U	310 U	.5 U	.5 U	.5 U
1,2-Dichlorobenzene	ug/L	.5 U	6.3 U	.5 U	.5 U	.5 U	68 J	310 U	310 U	.5 U	.5 U	.5 U
1,4-Dichlorobenzene	ug/L	.5 U	6.3 U	.5 U	.5 U	0.27 J	300	330	320	.5 U	.5 U	.5 U
2-Chlorotoluene	ug/L	.5 U	6.3 U	.5 U	.5 U	.5 U	250 U	310 U	310 U	.5 U	.5 U	0.53 U
Benzene	ug/L	.5 U	6.3 U	.5 U	.5 U	0.14 J	70 J	110 J	100 J	4.9	.5 U	.5 U
Chlorobenzene	ug/L	.5 U	6.3 U	.5 U	.5 U	.5 U	3900	10000	11000	100	.5 U	.5 U
<i>Semi-Volatile Organic Compounds</i>												
1,2,4,5-Tetrachlorobenzene	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	ug/L	10 U	10 U	10 U	10 U	10 U	15	10 U	10 U	10 U	10 U	10 U
2,5-Dichlorophenol	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	ug/L	10 U	10 U	10 U	10 U	10 U	20	14	15	10 U	10 U	10 U
4-Chlorophenol	ug/L	10 U	10 U	10 U	10 U	10 U	44	26	26	10 U	10 U	10 U
Phenol	ug/L	10 UJ	10 U	10 UJ	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
<i>Metals</i>												
Arsenic	ug/L	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U
Mercury	ug/L	.2 U	.2 U	.2 U	.2 U	.2 U	.2 UJ	0.10 J	.2 U	.2 U	.2 U	.2 U
<i>Pesticides</i>												
alpha-BHC	ug/L	0.042 J	.05 U	.05 U	.05 UJ	.05 UJ	.5 U	0.0081 J	.05 U	.05 U	0.013 J	0.014 J
beta-BHC	ug/L	0.013 J	.05 U	.05 U	.05 UJ	.05 UJ	0.08 J	0.14 J	0.16	.05 U	.05 U	0.022 J
delta-BHC	ug/L	0.02 J	.05 U	.05 U	.05 UJ	.05 UJ	0.75	.05 UJ	.05 U	.05 U	0.011 J	0.0089 J
gamma-BHC (Lindane)	ug/L	0.029 J	.05 U	.05 U	.05 UJ	.05 UJ	.5 U	.05 UJ	.05 U	.05 U	.05 U	.05 U

Notes:
BHC Benzene Hexachloride.
J Estimated.
U Not detected.
UJ Not detected, estimated reporting limit.

TABLE 3
ANAYTICAL METHOD SUMMARY
SEMI-ANNUAL GROUNDWATER SAMPLING
102ND STREET LANDFILL
NIAGARA FALLS, NEW YORK
JUNE 2007

<i>Analyses</i>	<i>Methodology ⁽¹⁾</i>	<i>Holding Time to Extraction (Days)</i>	<i>Holding Time to Analyses (Days)</i>
VOCs	SW-846 8260B	-	14
SVOCs	SW-846 8270C	7	40
Pesticides	SW-846 8081A	7	40
Arsenic	SW-846 6010B	-	180
Mercury	SW-846 7470A	-	28

Notes:

⁽¹⁾ Referenced from "Test Methods for Evaluating Solid Waste", USEPA OSW, 3rd Edition, 1986 and subsequent revisions.

SVOCs Semi-Volatile Organic Compounds.

VOCs Volatile Organic Compounds.

TABLE 4
 QUALIFIED SAMPLE RESULTS DUE TO INADEQUATE PRESERVATION
 SEMI-ANNUAL GROUNDWATER SAMPLING
 102ND STREET LANDFILL
 NIAGARA FALLS, NEW YORK
 JUNE 2007

<i>Parameter</i>	<i>Sample ID</i>	<i>Analyte</i>	<i>pH Upon Receipt at Laboratory</i>	<i>Required pH</i>	<i>Sample Result</i>	<i>Units</i>	<i>Qualifier</i>
Metals	PCM-03-607	Arsenic	4	>2	10 U	ug/L	UJ
		Mercury	4	>2	.2 U	ug/L	UJ

Notes:

J Estimated.

U Not detected.

TABLE 5
 QUALIFIED SAMPLE RESULTS DUE TO OUTLYING SURROGATE RECOVERIES
 SEMI-ANNUAL GROUNDWATER SAMPLING
 102ND STREET LANDFILL
 NIAGARA FALLS, NEW YORK
 JUNE 2007

<i>Parameter</i>	<i>Surrogate</i>	<i>Surrogate Recovery (percent)</i>	<i>Control Limits (percent)</i>	<i>Sample ID</i>	<i>Analytes</i>	<i>Sample Results</i>	<i>Units</i>	<i>Qualifier</i>
BHCs	Decachlorobiphenyl	25	43-144	PCM-01-607	alpha-BHC	.05 U	ug/L	UJ
					beta-BHC	.05 U	ug/L	UJ
					delta-BHC	.05 U	ug/L	UJ
					gamma-BHC (Lindane)	.05 U	ug/L	UJ
BHCs	Decachlorobiphenyl	40	43-144	PCM-02-607	alpha-BHC	.05 U	ug/L	UJ
					beta-BHC	.05 U	ug/L	UJ
					delta-BHC	.05 U	ug/L	UJ
					gamma-BHC (Lindane)	.05 U	ug/L	UJ
BHCs	Decachlorobiphenyl	34	43-144	PCM-04-607	alpha-BHC	0.0081 J	ug/L	J
					beta-BHC	0.14	ug/L	J
					delta-BHC	.05 U	ug/L	UJ
					gamma-BHC (Lindane)	.05 U	ug/L	UJ

Notes:

BHC Benzene Hexachloride.

J Estimated.

U Not detected.

UJ Not detected, estimated reporting limit.

TABLE 6
 QUALIFIED SAMPLE RESULTS DUE TO ANALYTE CONCENTRATIONS IN THE METHOD BLANKS
 SEMI-ANNUAL GROUNDWATER SAMPLING
 102ND STREET LANDFILL
 NIAGARA FALLS, NEW YORK
 JUNE 2007

<i>Parameter</i>	<i>Analysis Date</i>	<i>Analyte</i>	<i>Blank Result ⁽¹⁾</i>	<i>Sample ID</i>	<i>Sample Result (ug/L)</i>	<i>Qualified Result (ug/L)</i>
Volatiles	06/22/07	Chlorobenzene	0.60 J	PCBM-02-607	1.7 J	6.3 U
			0.12 J	PCM-01-607	0.10 J	.5 U
			0.12 J	PCM-02-607	0.31 J	.5 U
			0.12 J	PCM-07-607	0.13 J	.5 U
Volatiles	06/22/07	1,2,3-Trichlorobenzene	0.1 J	PCM-02-607	0.15 J	.5 U

Notes:

⁽¹⁾ Blank result corrected for sample dilution, where applicable.

J Estimated.

U Not detected.

TABLE 7
 QUALIFIED SAMPLE RESULTS DUE TO OUTLYING MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERIES
 SEMI-ANNUAL GROUNDWATER SAMPLING
 102ND STREET LANDFILL
 NIAGARA FALLS, NEW YORK
 JUNE 2007

<i>Parameter</i>	<i>Sample ID</i>	<i>Analyte</i>	<i>MS Recovery (percent)</i>	<i>MSD Recovery (percent)</i>	<i>RPD (percent)</i>	<i>Control Limits</i>		<i>Sample Result</i>	<i>Units</i>	<i>Qualifier</i>
						<i>Recovery (percent)</i>	<i>RPD (percent)</i>			
SVOCs	PCBM-01-607	Phenol	34	36	5	38-112	39	10 U	ug/L	UJ

Notes:

J Estimated.
 MS Matrix Spike.
 MSD Matrix Spike Duplicate.
 RPD Relative Percent Difference.
 SVOCs Semi-Volatile Organic Compounds.
 U Not detected.
 UJ Not detected, estimated reporting limit.

TABLE 8
 QUALIFIED SAMPLE RESULTS DUE TO OUTLYING BLANK SPIKE RECOVERIES
 SEMI-ANNUAL GROUNDWATER SAMPLING
 102ND STREET LANDFILL
 NIAGARA FALLS, NEW YORK
 JUNE 2007

<i>Parameter</i>	<i>Analyte</i>	<i>BS Recovery (percent)</i>	<i>Control Limits (percent)</i>	<i>Associated Sample ID</i>	<i>Sample Result (ug/L)</i>	<i>Qualifier</i>
SVOCs	Phenol	36	38-112	PCBM-03-607	10 U	UJ
				PCM-01-607	10 U	UJ
				PCM-07-607	10 U	UJ
				PCM-10-607	10 U	UJ

Notes:

BS Blank Spike.

SVOCs Semi-volatile organic compounds.

U Not detected.

UJ Not detected, estimated reporting limit.

TABLE 9
 QUALIFIED SAMPLE RESULTS DUE TO ANALYTE CONCENTRATIONS IN THE TRIP BLANK
 SEMI-ANNUAL GROUNDWATER SAMPLING
 102ND STREET LANDFILL
 NIAGARA FALLS, NEW YORK
 JUNE 2007

<i>Parameter</i>	<i>Blank Date</i>	<i>Analyte</i>	<i>Blank Result</i>	<i>Associated Sample ID</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Units</i>
Volatiles	06/14/07	1,2,4-Trichlorobenzene	0.13 J	PCM-02-607	0.12 J	0.5 U	ug/L

Notes:

J Estimated.

U Not detected.

TABLE 10
 QUALIFIED SAMPLE RESULTS DUE TO ANALYTE CONCENTRATIONS IN THE RINSE BLANKS
 SEMI-ANNUAL GROUNDWATER SAMPLING
 102ND STREET LANDFILL
 NIAGARA FALLS, NEW YORK
 JUNE 2007

<i>Parameter</i>	<i>Rinse Blank ID</i>	<i>Analyte</i>	<i>Blank Result</i>	<i>Associated Sample ID</i>	<i>Sample Result (µg/L)</i>	<i>Qualified Sample Result (µg/L)</i>
Volatiles	Rinse-607	2-Chlorotoluene	0.18 J	PCBM-01-607	0.18 J	.5 U
				PCBM-03-607	0.28 J	.5 U
				PCM-01-607	0.48 J	.5 U
				PCM-02-607	0.18 J	.5 U
				PCM-05-607	0.26 J	.5 U
				PCM-07-607	0.24 J	.5 U
				PCM-10-607	0.53	0.53 U

Notes:

J Estimated.
 U Not detected.