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915167

P E I

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GROUNDWATER ENVIRONMENTAL INVESTIGATION WATERFRONT SCHOOL PROPERTY CITY OF BUFFALO ERIE COUNTY, NEW YORK

Contract No. 92010190

Prepared for:

City of Buffalo
Division of Planning
901 City Hall
Buffalo, New York 14202

Attention:
Mr. Dennis Sutton

Prepared by:

Panamerican Environmental, Inc.

May 2000

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May 2000

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1.0 Introduction and Background

1.1 INTRODUCTION AND PURPOSE

A groundwater investigation program was completed by Panamerican Environmental, Inc. (PEI) at the Waterfront School property located in Buffalo, New York(refer to Figure 1-1). Performed for the City of Buffalo Department of Community Development, the program was conducted in general accordance with the scope of work provided with the proposal dated March 3, 2000, the revised proposal dated March 15, 2000, and the approved Work Plan. The work included installing two groundwater monitoring wells and the subsequent sampling of these wells and a third existing well to assess potential impacts from the former Wilkeson Boat Slip and the National Fuel Gas property. Previous investigations have been conducted on and adjacent to this property and a number of existing groundwater wells exist in the area. The samples were analyzed for volatile organic compounds and groundwater levels were established to assist in more accurately defining the groundwater flow direction. During the program, PEI personnel were observed by New York State Department of Environmental Conservation (DEC) personnel and personnel from IT Corporation (representing National Fuel Gas Distribution Corporation). Samples were split with the DEC and IT Corporation representatives.

1.2 SCOPE

The project scope included the following tasks:

- Development of brief work and health and safety plan designed to describe the work and the health and safety aspects.
- Installation and development of two groundwater monitoring wells and sampling of the two newly installed wells and a third existing well.
- Completion of a survey of the newly installed well locations and enhancement of an existing base map with well locations.
- Provide a final report

1.3 BACKGROUND

The National Fuel Gas Distribution Corporation (NFG), Buffalo Service Center (BSC) site located at 249 West Genesee Street, Buffalo, New York occupies approximately four acres and is bordered by the Waterfront School to the north. This site is the former location of a coal gas production facility (former manufactured gas plant [MGP]). Past investigations of the NFG site have revealed the presence of contaminants in subsurface soil and groundwater associated with the former coal gas activities including cyanide, lead, oil and coke/coal tar, and petroleum products.

Various past and ongoing investigations have been conducted at and adjacent to the

Figure 1.1. Location of project area.

Waterfront School and project area. The purpose of the subject investigation was to more accurately define the groundwater flow direction in relation to the NFG property and to assist in delineating a potential contamination plume. The wells were installed to assess potential impacts from the former Wilkeson Boat Slip and the National Fuel Gas property including the location of the former MGP. Wells were installed at specific locations as follows: MW-11 was installed just northeast of existing well MW-9 and adjacent to the northeast corner of the school building; and MW-12 was installed just south of the school building in a cement walkway, approximately midpoint along the northern National Fuel property boundary (refer to base map Figure 1-2). The wells were installed above the bedrock and screened so that any potential contamination encountered at depth would be detected in the borehole.

2.0 FIELD INVESTIGATIONS

The well installation and monitoring program was conducted in accordance with the approved work plan. A summary of the field investigation methodology and findings is presented in Sections 2.1 through 2.3 below.

2.1 Subsurface Borings/Monitoring Well Installation

All borings were drilled by SJB Services using a truck-mounted drill rig and hollow-stem augers to advance the boring to the required depth below ground surface (bgs). Soil samples were collected in each borehole on a continuous basis using a standard split-spoon sampler, advanced by a 140-lb. free-falling hammer in accordance with ASTM Standard D1586-84. Soil samples were collected for visual observations. Borings and wells were installed under the supervision of a qualified geologist.

All drilling equipment was decontaminated prior to drilling or between locations by steam cleaning. All drill cuttings were contained in 55-gallon drums and individually labeled as to content. A soil sample of obviously impacted drill cuttings was collected for full TCLP, reactivity, corrosivity, ignitability, PCBs and total solids for disposal purposes. Soil samples were collected by the DEC as part of their oversight role. However, this sampling was not part of this project and the results are not covered in this report.

Upon sample retrieval, each split-spoon was opened and the soil was scanned with a Photoionization Detector (PID). The PID readings ~~and~~ were recorded on geologic boring logs along with a description of the soil and observations. Boring logs are contained in Appendix A.

Upon completion, monitoring wells were installed in each of the two borings and designated as MW11 and MW12. The monitoring wells were constructed of two-inch diameter, schedule 40 PVC with flush-threaded joints. Well screens were 10 foot in length and the slot size was 0.01-inch. Both wells were constructed with a 2-foot sump

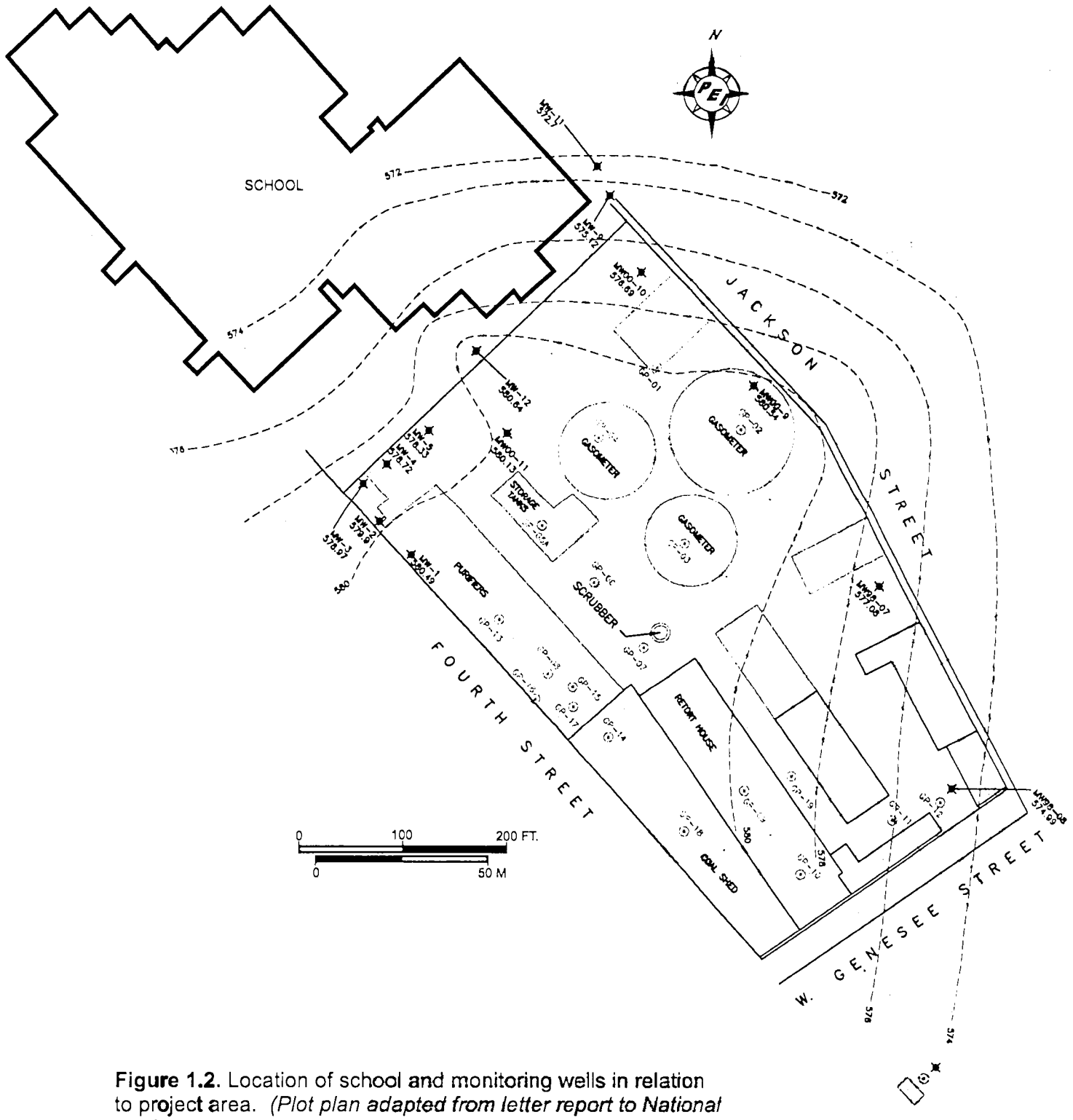


Figure 1.2. Location of school and monitoring wells in relation to project area. *(Plot plan adapted from letter report to National Fuel Gas Corporation by IT Corporation, May 10, 2000).*

beneath the screen to allow for DNAPL collection. A filter pack of silica sand was backfilled in the annular space, between the well screen and native soil, from the bottom of the sump to a maximum of two feet above the well screen. A minimum two-foot thick seal, composed of bentonite chips, was placed over the filter pack. A cement-bentonite grout was installed from the top of the bentonite seal to the ground surface. All wells were protected with hinged, locking, metal casings or curb boxes installed flush with the ground surface. Drilling logs and well construction diagrams are contained in Appendix A.

2.2 Development and Sampling of Monitoring Wells

Wells were developed and sampled as specified in the work plan. To complete each monitoring well installation, the wells were developed by continuous bailing. Well development continued until the well water became reasonably clear and sediment free, approaching 50 nephelometric turbidity units (NTUs). At least three well volumes were removed from each well during development. Temperature, conductivity, pH, and turbidity were monitored during development. All downhole equipment was decontaminated between wells. All development water was contained and staged onsite. Appendix B contains the well development logs.

Samples of groundwater were collected on April 3, 2000. A total of three groundwater samples including one duplicate (used as the matrix spike and matrix spike duplicate [MS/MSD]), and one trip blank, were collected from each well (wells MW-9, 11, and 12) and analyzed for volatile organic compounds by method 95-1 including 1995 NYS ASP B level quality.

Prior to sampling each well, the water level was measured and the well was purged by removing a minimum of three well volumes of water using a high density PVC disposable bailer. The purge volume and water quality data were recorded and purge logs are contained in Appendix B. After each well was purged, it was allowed to recover to 90 percent or greater of its static level. All equipment introduced into the monitoring well was either dedicated to the well and/or thoroughly cleaned according to sampling protocols. Chain-of Custody was documented from sample collection to sample analysis at the laboratory. Samples were packed on ice in a laboratory supplied cooler, and transported to the laboratory via courier to the laboratory (Friend Laboratory, Inc., Waverly, New York) for analysis. Groundwater analytical results are contained in Appendix C.

2.3 Monitoring Well Survey/Base Map Preparation

A site map was generated by TVGA Engineering, Surveying, P. C. to the specifications requested by the City of Buffalo and in accordance with the work plan. The map was completed in accordance with best engineering practice and was prepared under the

direct supervision of a NYS licensed land surveyor. At the completion of the field activities, the horizontal locations and vertical elevations of the new wells associated with the investigation were surveyed (refer to Appendix D). The survey included horizontal and vertical location including inner and outer casing and existing ground elevation. As requested by the City of Buffalo, TVGA utilized the previously established horizontal and vertical control, and updated the existing mapping to include as-built locations of the wells. No additional topographic survey was performed. Figure 1-2 represents a portion of the TVGA property base map showing the subject project area. One paper and one electronic copy of the entire property base map is provided with the report transmittal letter.

3.0 ANALYTICAL RESULTS

Analytical results from the groundwater sampling program are summarized in Table 3-1 (groundwater analytical data summary). The table presents groundwater data from the three wells and provides a comparison with the New York State Groundwater Quality Standards. The complete set of analytical data is provided in Appendix C. Groundwater analytical QA/QC documentation is provided in a separate volume labeled Waterfront School Property, Groundwater Investigation, QA/QC Data, May 2000.

Analytical results for monitoring well MW-9 indicated that only benzene was detected at 5,700 ug/l (parts per billion). Results from MW-11 indicated only one unknown compound was detected. Five known compounds and eleven unknown compounds were detected in MW-12. Benzene was detected at 740 ug/l, toluene was detected at 1,400 ug/l, ethylbenzene was detected at 1,700 ug/l, p-xylene/m-xylene were detected at 6,400 ug/l, and o-xylene was detected at 2,400 ug/l.

A limited data validation and assessment was performed. The data validation was limited to a review of the following criteria:

- Holding times
- Data completeness
- Comparison of surrogate, spike, and duplicate recoveries to validation criteria
- 10% quantitation check that reported sample results are correct
- Tentatively identified compounds (TICs) will be qualified by the laboratory only
- Proper sample analysis

The analytical data was found to be acceptable for the quantitative and qualitative determination of analysis. The data validation documentation is provided as a separate attachment to this report.

4.0 SUMMARY AND CONCLUSIONS

Groundwater was measured at variable intervals ranging between approximately 3 feet and 8.5 feet below ground surface (bgs) in the three project wells. Data from monitoring well sampling indicated concentrations of one compound in groundwater from MW-9 and several compounds in groundwater from MW-12 at levels above the New York State Groundwater Quality Standards (6 NYCRR Chapter X Part 703). Analytical results from MW-11, indicates that coal tar related contamination was not found at this location. Soil screening performed during monitoring well borings indicated that volatile organic compounds were present in soils from approximately 6 inches to 20 feet bgs at the MW-12 location. Additionally, during the drilling operations at MW-12, soil cuttings were observed to have a distinct "coal tar" odor and the soil had a black oily appearance. A total of eleven unidentified compounds were detected in groundwater from MW-12.

Based on the information obtained from this investigation combined with the information in the recent letter report developed by IT Corporation for National Fuel Gas (*"Additional Monitoring Well Report, National Fuel Gas Buffalo Service Center, Buffalo, New York"*), May 10, 2000), it appears that the contamination found in MW-12 and in MW-9 is migrating from the direction of the National Fuel Gas former MGP property. It does not appear that the contamination is migrating from the Waterfront School property (refer to Figure 1.2).

5.0 WARRANTS AND LIMITATIONS

This report is based on information from a limited groundwater investigation, organic vapor screening, and visual observations of the subsurface soils, as described within this report. This report is intended exclusively for the purpose outlined herein at the site location and project indicated. The investigation is limited to the project area.

This report is intended for the sole use of the City of Buffalo. The scope of services performed in this assessment may not be appropriate to satisfy the needs of other users and any use or re-use of this document or the findings, conclusions, or recommendations presented, is at the sole risk of the user.

The conclusions set forth in this report are based upon, and limited by, the analytical data and other information available to PEI.

It should be noted that all surface and subsurface environmental assessments are inherently limited in the sense that conclusions are drawn and recommendations developed from information obtained from limited data and site evaluation at a specific time. The passage of time may result in a change in environmental circumstances at this site and surrounding properties, or hazardous materials beneath the surface may

Table 3-1
Analytical Data Summary (ug/l)
Groundwater Environmental Investigation
Waterfront School Property

Analyte	Monitoring Well MW9 ug/l	Monitoring Well MW11 ug/l	Monitoring Well MW11 ug/l Matrix Spike	Monitoring Well MW12 ug/l	NYSDEC Water Quality Standards ug/l
Chloromethane	U	U	U	U	
Bromomethane	U	U	U	U	5
Vinyl chloride	U	U	U	U	2
Chloroethane	U	U	U	U	5
Methylene chloride	U	U	U	U	5
Acetone	U	U	U	U	
Carbon disulfide	U	U	U	U	
1,1-Dichloroethene	U	U	[redacted]43[redacted]	U	5
trans-1,2-Dichloroethene	U	U	U	U	5
1,1-Dichloroethane	U	U	U	U	5
cis-1,2-Dichloroethene	U	U	U	U	5
Methyl ethyl ketone	U	U	U	U	
Chloroform	U	U	U	U	7
1,1,1-Trichloroethane	U	U	U	U	5
Carbon tetrachloride	U	U	U	U	5
Benzene	[redacted]5700[redacted]	U	[redacted]48[redacted]	[redacted]740[redacted]	**1**
1,2-Dichloroethane	U	U	U	U	5
Trichloroethene	U	U	[redacted]47[redacted]	U	5
1,2-Dichloropropane	U	U	U	U	1
Bromodichloromethane	U	U	U	U	5
cis-1,3-Dichloropropene	U	U	U	U	0.4
Methyl isobutyl ketone	U	U	U	U	
Toluene	U	U	[redacted]50[redacted]	[redacted]1400[redacted]	**5**
trans-1,3-Dichloropropene	U	U	U	U	
1,1,2-Trichloroethane	U	U	U	U	1
Tetrachloroethene	U	U	U	U	5
2-Hexanone	U	U	U	U	
Dibromochloromethane	U	U	U	U	5
Chlorobenzene	U	U	[redacted]49[redacted]	U	5
Ethylbenzene	U	U	U	[redacted]1700[redacted]	**5**
p-Xylene/m-Xylene	U	U	U	[redacted]6400[redacted]	**5**
o-Xylene	U	U	U	[redacted]2400[redacted]	**5**
Styrene	U	U	U	U	5
Bromoform	U	U	U	U	
1,1,2,2-Tetrachloroethane	U	U	U	U	5
Unknown	U	5	U	190	
Unknown	U	U	U	130	
Unknown	U	U	U	500	
Unknown	U	U	U	720	
Unknown	U	U	U	180	
Unknown	U	U	U	1800	
Unknown	U	U	U	610	
Unknown	U	U	U	1900	
Unknown	U	U	U	10000	
Unknown	U	U	U	630	
Unknown	U	U	U	2000	
	U	U	U		

U = None Detected
Shaded areas indicate analyte concentrations above NEW York State Water Quality Standards.

Table 3-2
Groundwater Elevations
03/29/2000 and 04/03/00

Sample Point Location and Dates		Surveyed Top of Well Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
MW9	03/29/00	583.07	7.92	575.15
	04/03/00		7.91	575.16
MW11	03/29/00	583.53	15.30	578.23
	04/03/00		8.50	575.03
MW12	03/29/00	581.20	2.90	578.30
	04/03/00		2.89	578.31

be present but undetectable during this limited Phase II assessment or may migrate at some future time.

Opinions and summaries presented herein apply to the site conditions existing at the time of the subsurface assessment and those reasonably foreseeable. They cannot necessarily apply to site changes of which PEI is not aware and has not had the opportunity to evaluate.

APPENDIX A

Boring Logs and Well Diagrams

PANAMERICIAN ENVIRONMENTAL INC.
BORING LOG/GEOLOGICAL ANALYSIS

Test Boring Log: MW11
Boring No: MW11
Sheet: 1 of 1
Job No.:
Boring Location:
Ground Elevation:
Date Started: 03/28/2000
Date Ended: 03/28/2000
Driller: Dale Matties
Geologist: Jason Kelly
Reviewed By: Peter Gorton

Project: Buffalo Waterfront School
Client: City of Buffalo
Boring Contractor: SJB

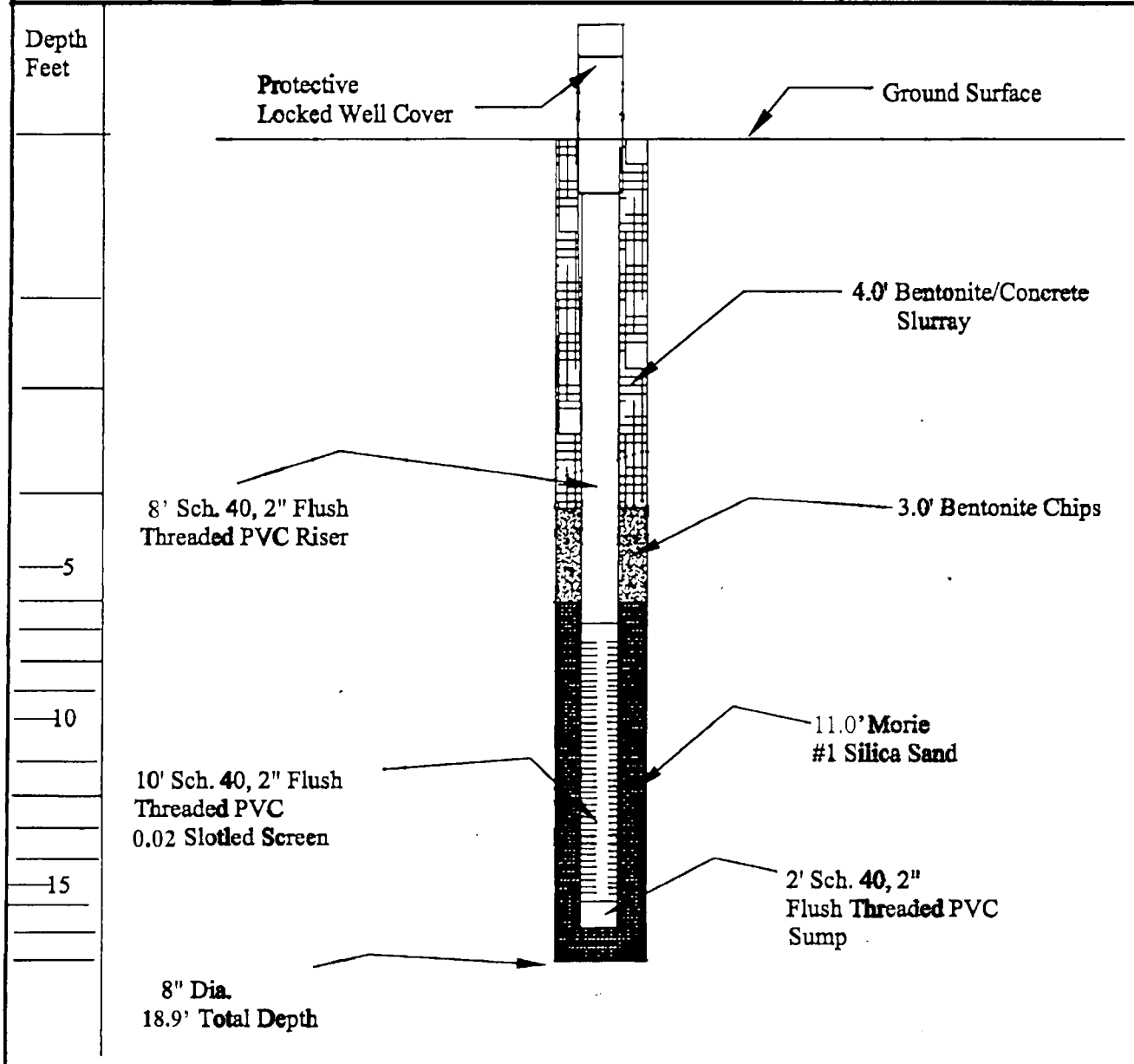
Groundwater: 5.7'

Date	Time	Level	Type	Type	Cas. PVC	Sampler SS	Core	Tube
				Dia.	2"			
				Wt.	140			
				Fall	36"			

Depth Feet	Sample No.	Sample Type	Blows per 6"		Recovery RQD %	Description: Color	Hardness	Material Description	Class USCS	PID-Hnu ppm
	1	SS	8	8	14"	Brown/ Olive Gray	Medium Dense	organic debris f Sand and Silt (moist)	ML	0
			7	8						
	2	SS	8	8	13"	Brown/ Olive Gray	Medium Dense	f Sand, trace f subrounded gravel (moist)	ML	0
			7	8						
5	3	SS	29	14	13"	Light Red/Brown	Medium Dense	f Sand, trace f subrounded gravel to f Sand (moist to wet)	SM	0
			16	14						
	4	SS	20	14	21"	Light Red/Brown	Medium Dense	f Sand and Silt (wet)	SM	0
			15	17						
	5	SS	7	5	14"	Light Red/Brown	Medium Stiff	f Sand to Silt and Clay (wet to moist)	OL	0
10			7	8						
	6	SS	7	9	7"	Brown/ Olive Gray	Medium Stiff	Silty Clay (moist to wet)	OH	0
			14	19						
	7	SS	9	7	21"	Brown/ Olive Gray	Soft	Silty Clay (moist to wet)	SM	0
			3	3						
15	8	SS	4	4	4"	Light Red/Brown	Soft	f Sand and Silt (wet)	SM	0
			2	1						
	9	SS	1	3	21"	Light Red/Brown	Very Soft	Silty Clay (wet)	OH	0
			1	2						
	10	SS	3	50/3	14"	Light Red/Brown	Soft	Silty Clay (wet)	OH	0
20										
25										
30										

Comments: Transitions of sand and clay intervals throughout the soil column.
No observations of contamination or nucience characteristics.

PANAMERICIAN ENVIRONMENTAL INC. MONITORING WELL CONSTRUCTION DETAILS	Sheet: 1 of 1 Monitoring Well No: MW 11
Project: Buffalo Waterfront School Job No.:	Ground Elevation:
Client: City of Buffalo	Groundwater Elevation:
Driller: SJB	Reviewed By:
Geologist: Jason Kelly Rig Make/Model: CME 550X	
Date Started: 03/28/2000 Date Ended: 03/28/2000	



CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL	SEAL MATERIAL	ROCK CORING
Setting: 0'-8'9" bgs	Type: 2" I.D. Flush Treaded PVC Slotted Screen Slot Size: 0.01 " Setting: 6'9"-16'9" bgs	Type: #1 Morie Silica Sand Setting: 6'9"-18'9" bgs	Type: Bentonite Chips Setting: 6'9"-4'9" bgs	Cored Interval: Core Diameter: Reamed Diameter:

PANAMERICIAN ENVIRONMENTAL INC.
BORING LOG/GEOLOGICAL ANALYSIS

Test Boring Log: MW12
Boring No: MW12
Sheet: 1 of 1
Job No.:
Boring Location:
Ground Elevation:
Date Started: 03/28/2000
Date Ended: 03/28/2000
Driller: Dale Matties
Geologist: Jason Kelly
Reviewed By: Peter Gorton

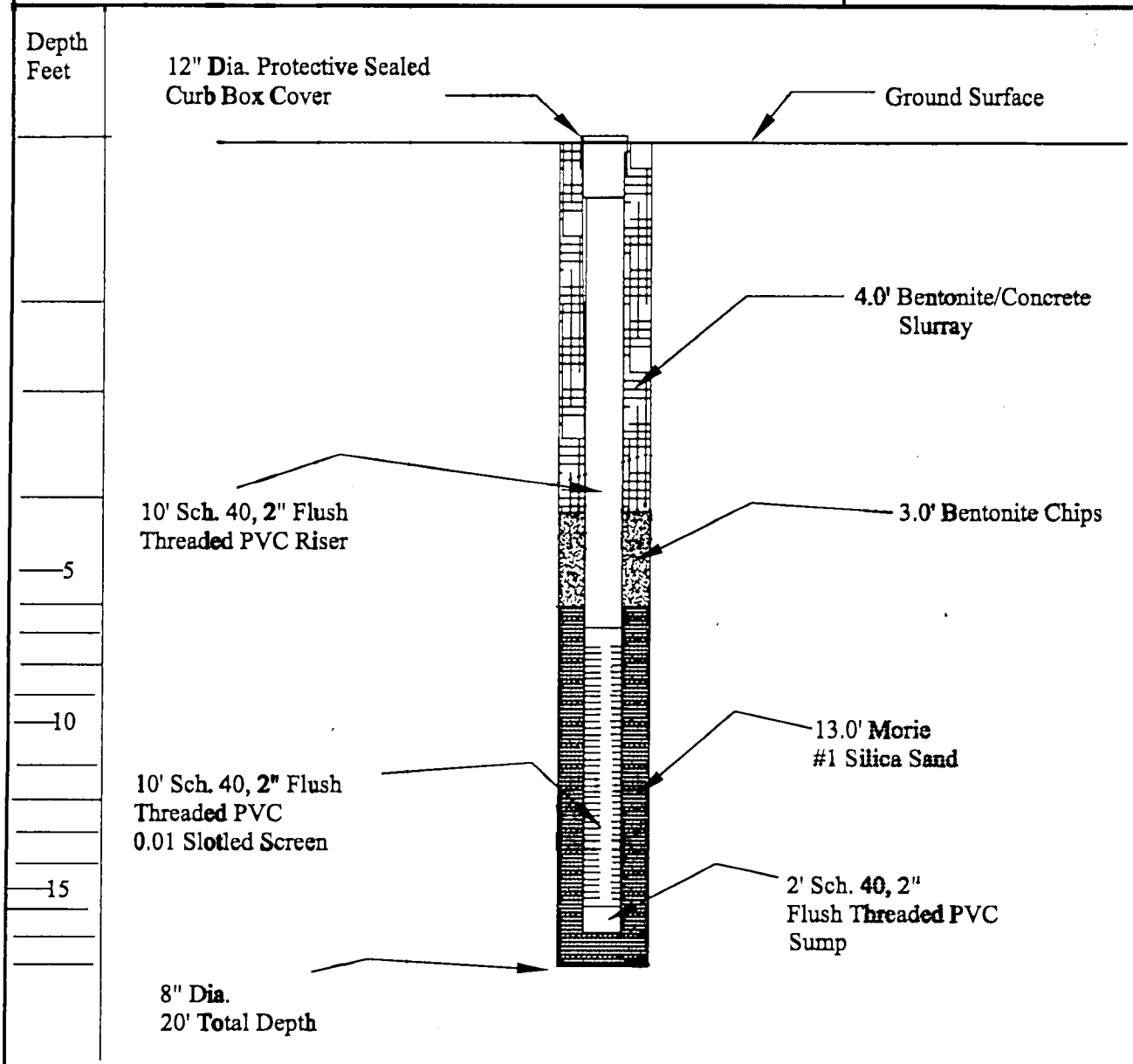
Project: Buffalo Waterfront School
Client: City of Buffalo
Boring Contractor: SJB

Groundwater: 5.7'				Cas.	Sampler	Core	Tube
Date	Time	Level	Type	Type	PVC	SS	
				Dia.	2"		
				Wt.	140		
				Fall	36"		

Depth Feet	Sample No.	Type	Blows per 6"	Recovery RQD %	Description: Color	Hardness	Material Description	Class USCS	PID-Hnu ppm
	1	SS	- 4 / 7 5	4"	Black	Loose	organic debris f Sand and Silt (moist)	GM	95
	2	SS	9 4 / 3 4	4"	Brown/ Olive Gray	Loose	f Sand and Silt (moist)	GM	120
5	3	SS	3 1 / 1 1	14"	Black	Very Loose	f Sand and Silt, some subrounded gravel, trace wood chips (very wet)	GM	90
	4	SS	4 1 / 1 1	18"	Black	Very Loose	f Sand and Silt, some subrounded gravel, trace wood chips (very wet)	GM	98
10	5	SS	7 2 / 2 2	15"	Black	Very Loose	f Sand and Silt, some wood chips, trace subrounded gravel, (wet)	GM	110
	6	SS	3 2 / 1 1	0	No Recovery	No Recovery	No Recovery	-	No Recovery
	7	SS	1 1 / 2 8	10"	Black	Soft	f Sand and Silt, trace wood chips (wet)	GM	250
15	8	SS	50/3 - / - -	4"	Black	Soft	f Sand and Silt, trace wood chips (wet)	GM	135
	9	SS	20 17 / 12 10	0	No Recovery	No Recovery	No Recovery	-	No Recovery
20	10	SS	7 7 / 3 50/4	2"	Light Red/Brown	Soft	Proglacial Lake Clay	OH	50
25									
30									

Comments: Significant amount of wood chips discovered in soils from 4'-16' bgs, contamination was indicated to be highly concentrated in this same interval.

PANAMERICIAN ENVIRONMENTAL INC. MONITORING WELL CONSTRUCTION DETAILS	Sheet: 1 of 1 Monitoring Well No: MW 12
Project: Buffalo Waterfront School Job No.:	Ground Elevation:
Client: City of Buffalo	Groundwater Elevation:
Driller: SJB	Reviewed By:
Geologist: Jason Kelly Rig Make/Model: CME 550X	
Date Started: 03/28/2000 Date Ended: 03/28/2000	



CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL	SEAL MATERIAL	ROCK CORING	
Setting: +2'-8' bgs	Type: 2" I.D. Flush Treaded PVC Slotted Screen Slot Size: 0.01 " Setting: 8'-18' bgs	Type: #1 Morie Silica Sand Setting: 7'-20' bgs	Type: Bentonite Chips Setting: 4'-7' bgs	Cored Interval: Core Diameter: Reamed Diameter:	

APPENDIX B

Development/Purging Records

PANAMERICIAN ENVIRONMENTAL INC. WELL DEVELOPMENT/PURGING LOG	Monitoring Well No: MW 9
Project: Buffalo Waterfront School	Sheet: 1 of 1
Job No.:	Date: 04/03/2000
Client: City of Buffalo	Start Purge: 9:10am
Staff: Jason Kelly and Perter Gorton	End Purge 10:00pm

		Well I.D.	Volume (Gal./ft.)
1. TOTAL CASING AND SCREEN LENGTH (ft.):	20.95'		
2. CASING INTERNAL DIAMETER (in.):	.17	1"	.04
3. WATER LEVEL BELOW TOP OF CASING (ft.):	7.92'	2"	.17
4. VOLUME OF WATER IN CASING (Gal.):	2.2	4"	.66
#1-#3x#2 (Gal./ft.)		6"	1.50
Volume of 3 casings (Gal.):	6.64	8"	2.60

Parameters PID-Hnu (ppm) at well head: 36ppm

Accumulated Volume Purged (Gal.)

	0														
pH															
Conductivity															
Turbidity (NTU)															
Temperature (°C)															
Dissolved Oxygen (mg/L)															

Comments
- Slight volatile odor detected at 6 gallons purged groundwater
- Iron bonding bacteria observed during first 6 gallons of purged groundwater
- Sampled well at 1:40pm
- Actually purged 10 gallons
- Groundwater levels during recharging were:
  8.42' at 12:30pm
  7.53' at 1:30pm

PANAMERICIAN ENVIRONMENTAL INC. WELL DEVELOPMENT/PURGING LOG	Monitoring Well No: MW 11
Project: Buffalo Waterfront School	Sheet: 1 of 1
Job No.:	Date: 03/29/2000
Client: City of Buffalo	Start Purge: 11:00am
Staff: Jason Kelly	End Purge 12:30am

		Well I.D.	Volume (Gal./ft.)
1. TOTAL CASING AND SCREEN LENGTH (ft.):	20.95'		
2. CASING INTERNAL DIAMETER (in.):	.17	1"	.04
3. WATER LEVEL BELOW TOP OF CASING (ft.):	15.83'	2"	.17
4. VOLUME OF WATER IN CASING (Gal.):	.8704	4"	.66
#1-#3x#2 (Gal./ft.)		6"	1.50
Volume of 3 casings (Gal.):	2.61	8"	2.60

Parameters PID-Hnu (ppm) at well head: 36ppm

Accumulated Volume Purged (Gal.)

	0	3	5	8	10	15	18								
pH	8.21	7.81	7.44	7.29	6.61	6.73	6.68								
Conductivity	.92	.91	.93	.88	.95	.97	.98								
Turbidity (NTU)	NA	NA	NA	NA	NA	NA	NA								
Temperature (°C)	10.0	10.3	10.8	10.4	10.5	11.1	10.9								
Dissolved Oxygen (mg/L)	9.67	9.98	9.2	11.25	12.13	12.15	12.18								

Comments
- Well head under pressure and vented upon access
- Groundwater turbid initially, cleared up after purging and surging 10 gallons
- No observations of nucience characteristics.
- MW 9 groundwater level @ 7.91'

PANAMERICIAN ENVIRONMENTAL INC. WELL DEVELOPMENT/PURGING LOG	Monitoring Well No: MW 11
Project: Buffalo Waterfront School	Sheet: 1 of 1
Job No.:	Date: 04/03/2000
Client: City of Buffalo	Start Purge: 9:10am
Staff: Jason Kelly	End Purge 10:00pm

		Well I.D.	Volume (Gal./ft.)
1. TOTAL CASING AND SCREEN LENGTH (ft.):	21.20'		
2. CASING INTERNAL DIAMETER (in.):	.17	1"	.04
3. WATER LEVEL BELOW TOP OF CASING (ft.):	8.5'	2"	.17
4. VOLUME OF WATER IN CASING (Gal.):	2.15	4"	.66
#1-#3x#2 (Gal./ft.)		6"	1.50
Volume of 3 casings (Gal.):	6.48	8"	2.60

Parameters PID-Hnu (ppm) at well head: 36ppm

Accumulated Volume Purged (Gal.)

	0														
pH															
Conductivity															
Turbidity (NTU)															
Temperature (°C)															
Dissolved Oxygen (mg/L)															

Comments
- No observations of nuscience characteristics
- Well went dry twice during purging
- Sampled well at 2:00pm
- Actually purged 10 gallons
- Groundwater levels during recharging were:
  20.21' at 10:45am
  14.81' at 11:30am
  11.69' at 12:30pm

PANAMERICIAN ENVIRONMENTAL INC. WELL DEVELOPMENT/PURGING LOG	Monitoring Well No: MW 12
Project: Buffalo Waterfront School	Sheet: 1 of 1
Job No.:	Date: 03/29/2000
Client: City of Buffalo	Start Purge: 10:00am
Staff: Jason Kelly	End Purge 11:00am

		Well I.D.	Volume (Gal./ft.)
1. TOTAL CASING AND SCREEN LENGTH (ft.):	19.5'		
2. CASING INTERNAL DIAMETER (in.):	.17	1"	.04
3. WATER LEVEL BELOW TOP OF CASING (ft.):	2.9'	2"	.17
4. VOLUME OF WATER IN CASING (Gal.):	2.82	4"	.66
#1-#3x#2 (Gal./ft.)		6"	1.50
Volume of 3 casings (Gal.):	8.46	8"	2.60

Parameters PID-Hnu (ppm) at well head: 36ppm

Accumulated Volume Purged (Gal.)

	0	5	10												
pH	5.5	5.87	5.84												
Conductivity	2.25	2.3	2.3												
Turbidity (NTU)	NA	NA	NA												
Temperature (°C)	10.3	10.	10.1												
Dissolved Oxygen (mg/L)	12.1	12.	11.98												

Comments
- Well head under pressure and vented upon access
- Groundwater opauqe black with thick sheen, no free phase product was observed
- Strong volatile odor
- Ceased purging and surging at 10 gallons, due to similiar readings of tested parameters.
- Let well recharge for 1 hour while developing MW11.

PANAMERICIAN ENVIRONMENTAL INC. WELL DEVELOPMENT/PURGING LOG	Monitoring Well No: MW 12
Project: Buffalo Waterfront School	Sheet: 1 of 1
Job No.:	Date: 04/03/2000
Client: City of Buffalo	Start Purge: 1:00pm
Staff: Jason Kelly	End Purge 2:00pm

		Well I.D.	Volume (Gal./ft.)
1. TOTAL CASING AND SCREEN LENGTH (ft.):	19.06'		
2. CASING INTERNAL DIAMETER (in.):	.17	1"	.04
3. WATER LEVEL BELOW TOP OF CASING (ft.):	2.89'	2"	.17
4. VOLUME OF WATER IN CASING (Gal.):	2.7	4"	.66
#1-#3x#2 (Gal./ft.)		6"	1.50
Volume of 3 casings (Gal.):	8.2	8"	2.60

Parameters PID-Hnu (ppm) at well head: 10 ppm

Accumulated Volume Purged (Gal.)

	0														
pH															
Conductivity															
Turbidity (NTU)															
Temperature (°C)															
Dissolved Oxygen (mg/L)															

Comments
- Strong volatile odor upon accessing well head
- Interface probe detected free phase product, but was not measurable.
- Purged 10 gallons
- Well was developed the day before and was only sampled, parameters were no measured during sampling.
- Groundwater at 3.81' upon completion of purging, sampled directly after purging at 2:00pm.
- Groundwater appeared grossly contaminated and effervessed.

APPENDIX C

Analytical Data

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ENVIRONMENTAL MONITORING • MICROBIOLOGY
ANALYTICAL CHEMISTRY • AIR QUALITY
INFORMATION MANAGEMENT

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

PANAMERICAN ENVIONMENTAL

WATERFRONT SCHOOL

SAMPLED: APRIL 3, 2000

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 11-APR-2000

LAB SAMPLE ID : L48023-1

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	MW-9
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 13:45 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
ASP 95-1						
Chloromethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Bromomethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Vinyl chloride	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Chloroethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Methylene chloride	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Acetone	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Carbon disulfide	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
1,1-Dichloroethene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
trans-1,2-Dichloroethene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
1,1-Dichloroethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
cis-1,2-Dichloroethene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Methyl ethyl ketone	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Chloroform	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
1,1,1-Trichloroethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Carbon tetrachloride	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Benzene	5700	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
1,2-Dichloroethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Trichloroethene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
1,2-Dichloropropane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Bromodichloromethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
cis-1,3-Dichloropropene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Methyl isobutyl ketone	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Toluene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
trans-1,3-Dichloropropene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
1,1,2-Trichloroethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Tetrachloroethene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
2-Hexanone	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Dibromochloromethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Chlorobenzene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Ethylbenzene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
p-Xylene/m-Xylene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
o-Xylene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Styrene	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
Bromoform	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192
1,1,2,2-Tetrachloroethane	U	ug/l	500	06-APR-00 11:13	ASP 95-1	00-034-0192

QC NY 10252 NJ 73168 PA 68180 EPA NY00033

Approved by: Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 11-APR-2000

LAB SAMPLE ID :L48023-1

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	MW-9
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 13:45 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Library Search Compounds:	Results	Units	Qual	Retention Time		
Surrogate Recovery:						
1,2-Dichloroethane-d4	98	%				00-034-0192
Toluene-d8	95	%				00-034-0192
4-Bromofluorobenzene	101	%				00-034-0192

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
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FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 11-APR-2000

LAB SAMPLE ID : L48023-2

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	MW-11
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 14:00 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
ASP 95-1						
Chloromethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Bromomethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Vinyl chloride	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Chloroethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Methylene chloride	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Acetone	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Carbon disulfide	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
1,1-Dichloroethene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
trans-1,2-Dichloroethene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
1,1-Dichloroethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
cis-1,2-Dichloroethene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Methyl ethyl ketone	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Chloroform	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
1,1,1-Trichloroethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Carbon tetrachloride	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Benzene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
1,2-Dichloroethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Trichloroethene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
1,2-Dichloropropane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Bromodichloromethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
cis-1,3-Dichloropropene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Methyl isobutyl ketone	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Toluene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
trans-1,3-Dichloropropene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
1,1,2-Trichloroethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Tetrachloroethene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
2-Hexanone	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Dibromochloromethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Chlorobenzene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Ethylbenzene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
p-Xylene/m-Xylene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
o-Xylene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Styrene	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
Bromoform	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179
1,1,2,2-Tetrachloroethane	U	ug/l	10	05-APR-00 13:13	ASP 95-1	00-034-0179

QC 20 NY 10252 NJ 73168 PA 68180 EPA NY 00033 Approved by: Lab Director

KEY: NO or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 11-APR-2000

LAB SAMPLE ID : L48023-2

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	MW-11
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 14:00 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Library Search Compounds:	**Results**	**Units**	**Qual**	**Retention Time**		
UNKNOWN	5	ug/l	J	1.97		
Surrogate Recovery:						
1,2-Dichloroethane-d4	105	%				00-034-0179
Toluene-d8	100	%				00-034-0179
4-Bromofluorobenzene	104	%				00-034-0179

QC NY 10252 NJ 73168 PA 68180 EPA NY00033

Approved by: Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

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FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 06-APR-2000

LAB SAMPLE ID : L48023-3

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	L48023-2MS, MW-11
DESCRIPTION	L48023-2
SAMPLED ON	03-APR-00 14:00 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
ASP 95-1						
Chloromethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Bromomethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Vinyl chloride	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Chloroethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Methylene chloride	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Acetone	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Carbon disulfide	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
1,1-Dichloroethene	43	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
trans-1,2-Dichloroethene	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
1,1-Dichloroethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
cis-1,2-Dichloroethene	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Methyl ethyl ketone	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Chloroform	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
1,1,1-Trichloroethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Carbon tetrachloride	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Benzene	48	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
1,2-Dichloroethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Trichloroethene	47	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
1,2-Dichloropropane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Bromodichloromethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
cis-1,3-Dichloropropene	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Methyl isobutyl ketone	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Toluene	50	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
trans-1,3-Dfchloropropene	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
1,1,2-Trichloroethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Tetrachloroethene	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
2-Hexanone	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Dibromochloromethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Chlorobenzene	49	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Ethylbenzene	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
p-Xylene/m-Xylene	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
o-Xylene	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Styrene	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
Bromoform	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183
1,1,2,2-Tetrachloroethane	U	ug/l	10	05-APR-00 15:25	ASP 95-1	00-034-0183

QC _____ NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 06-APR-2000

LAB SAMPLE ID L48023-3

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	L48023-2MS, MW-11
DESCRIPTION	L48023-2
SAMPLED ON	03-APR-00 14:00 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Surrogate Recovery:						
1,2-Dichloroethane-d4	110	%				00-034-0183
Toluene-d8	101	%				00-034-0183
4-Bromofluorobenzene	106	%				00-034-0183

QC NY 10252 NJ 73168 PA 68180 EPA NY00033 Approved by: Lab Director

KEY: ND or U = None Detected < = less than
mg/L = milligrams per liter (equivalent to parts per million)
B = analyte was detected in the method or trip blank
ug/L = micrograms per liter (equivalent to parts per billion)
mg/kg = milligrams per kilogram (equivalent to parts per million)
J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 06-APR-2000

LAB SAMPLE ID : L48023-4

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	L48023-2MSD/DUP, MW-11
DESCRIPTION	L48023-2
SAMPLED ON	03-APR-00 14:00 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
ASP 95-1						
Chloromethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Bromomethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Vinyl chloride	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Chloroethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Methylene chloride	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Acetone	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Carbon disulfide	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
1,1-Dichloroethene	43	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
trans-1,2-Dichloroethene	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
1,1-Dichloroethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
cis-1,2-Dichloroethene	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Methyl ethyl ketone	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Chloroform	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
1,1,1-Trichloroethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Carbon tetrachloride	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Benzene	49	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
1,2-Dichloroethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Trichloroethene	48	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
1,2-Dichloropropane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Bromodichloromethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
cis-1,3-Dichloropropene	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Methyl isobutyl ketone	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Toluene	51	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
trans-1,3-Dichloropropene	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
1,1,2-Trichloroethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Tetrachloroethene	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
2-Hexanone	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Dibromochloromethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Chlorobenzene	50	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Ethylbenzene	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
p-Xylene/m-Xylene	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
o-Xylene	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Styrene	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
Bromoform	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184
1,1,2,2-Tetrachloroethane	U	ug/l	10	05-APR-00 15:58	ASP 95-1	00-034-0184

QC _____ NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 06-APR-2000

LAB SAMPLE ID : L48023-4

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	L48023-2MSD/DUP, MW-11
DESCRIPTION	L48023-2
SAMPLED ON	03-APR-00 14:00 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Surrogate Recovery:						
1,2-Dichloroethane-d4	109	%				00-034-0184
Toluene-d8	101	%				00-034-0184
4-Bromofluorobenzene	106	%				00-034-0184

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
ENVIRONMENTAL LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 11-APR-2000

LAB SAMPLE ID : L48023-5

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	MW-12
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 13:20 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
ASP 95-1						
Chloromethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Bromomethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Vinyl chloride	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Chloroethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Methylene chloride	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Acetone	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Carbon disulfide	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
1,1-Dichloroethene	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
trans-1,2-Dichloroethene	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
1,1-Dichloroethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
cis-1,2-Dichloroethene	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Methyl ethyl ketone	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Chloroform	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
1,1,1-Trichloroethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Carbon tetrachloride	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Benzene	740	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
1,2-Dichloroethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Trichloroethene	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
1,2-Dichloropropane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Bromodichloromethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
cis-1,3-Dichloropropene	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Methyl isobutyl ketone	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Toluene	1400	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
trans-1,3-Dichloropropene	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
1,1,2-Trichloroethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Tetrachloroethene	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
2-Hexanone	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Dibromochloromethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Chlorobenzene	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Ethylbenzene	1700	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
p-Xylene/m-Xylene	6400	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
o-Xylene	2400	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Styrene	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
Bromoform	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193
1,1,2,2-Tetrachloroethane	U	ug/l	200	06-APR-00 11:46	ASP 95-1	00-034-0193

QC 22 NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 11-APR-2000

LAB SAMPLE ID : L48023-5

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	MW-12
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 13:20 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference

Library Search Compounds:	Results	Units	Qual	Retention Time
UNKNOWN	190	ug/l	J	2.62
UNKNOWN	130	ug/l	J	17.49
UNKNOWN	500	ug/l	J	18.29
UNKNOWN	720	ug/l	J	18.43
UNKNOWN	180	ug/l	J	18.76
UNKNOWN	1800	ug/l	J	19.35
UNKNOWN	610	ug/l	J	19.52
UNKNOWN	1900	ug/l	J	19.76
UNKNOWN	10000	ug/l	J	20.05
UNKNOWN	630	ug/l	J	20.74
UNKNOWN	2000	ug/l	J	20.86

Surrogate Recovery:			
1,2-Dichloroethane-d4	99	%	00-034-0193
Toluene-d8	93	%	00-034-0193
4-Bromofluorobenzene	102	%	00-034-0193

QC _____ NY 10252 NJ 73168 PA 68180 EPA NY00033 *Approved by:* _____ *Lab Director*

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 11-APR-2000

LAB SAMPLE ID : L48023-6

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	FRIEND LABORATORY, INC.
ORIGIN	95-045-95-29
DESCRIPTION	TRIP BLANK
SAMPLED ON	03-APR-00 00:00 by LAB
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
ASP 95-1						
Chloromethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Bromomethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Vinyl chloride	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Chloroethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Methylene chloride	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Acetone	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Carbon disulfide	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
1,1-Dichloroethene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
trans-1,2-Dichloroethene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
1,1-Dichloroethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
cis-1,2-Dichloroethene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Methyl ethyl ketone	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Chloroform	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
1,1,1-Trichloroethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Carbon tetrachloride	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Benzene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
1,2-Dichloroethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Trichloroethene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
1,2-Dichloropropane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Bromodichloromethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
cis-1,3-Dichloropropene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Methyl isobutyl ketone	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Toluene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
trans-1,3-Dichloropropene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
1,1,2-Trichloroethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Tetrachloroethene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
2-Hexanone	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Dibromochloromethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Chlorobenzene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Ethylbenzene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
p-Xylene/m-Xylene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
o-Xylene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Styrene	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
Bromoform	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187
1,1,2,2-Tetrachloroethane	U	ug/l	10	05-APR-00 17:36	ASP 95-1	00-034-0187

QC _____ NY 10252 NJ 73168 PA 68180 EPA NY00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY I·N·C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 11-APR-2000

LAB SAMPLE ID : L48023-6

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	FRIEND LABORATORY, INC.
ORIGIN	95-045-95-29
DESCRIPTION	TRIP BLANK
SAMPLED ON	03-APR-00 00:00 by LAB
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Library Search Compounds:	**Results**	**Units**	**Qual**	**Retention Time**		
Surrogate Recovery:						
1,2-Dichloroethane-d4	109	%				00-034-0187
Toluene-d8	101	%				00-034-0187
4-Bromofluorobenzene	106	%				00-034-0187

QC _____ NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per millio
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-8500 FAX (607) 565-4065

DATE 11-APR-2000

LAB SAMPLE ID L48023-7

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	FRIEND LABORATORY, INC.
ORIGIN	95-045-95-29
DESCRIPTION	HOLDING BLANK
SAMPLED ON	04-APR-00 00:00 by LAB
DATE RECEIVED	04-APR-00 12:52
P.O. NO	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
ASP 95-1						
Chloromethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Bromomethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Vinyl chloride	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Chloroethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Methylene chloride	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Acetone	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Carbon disulfide	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
1,1-Dichloroethene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
trans-1,2-Dichloroethene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
1,1-Dichloroethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
cis-1,2-Dichloroethene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Methyl ethyl ketone	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Chloroform	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
1,1,1-Trichloroethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Carbon tetrachloride	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Benzene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
1,2-Dichloroethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Trichloroethene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
1,2-Dichloropropane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Bromodichloromethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
cis-1,3-Dichloropropene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Methyl isobutyl ketone	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Toluene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
trans-1,3-Dichloropropene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
1,1,2-Trichloroethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Tetrachloroethene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
2-Hexanone	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Dibromochloromethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Chlorobenzene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Ethylbenzene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
p-Xylene/m-Xylene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
o-Xylene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Styrene	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
Bromoform	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194
1,1,2,2-Tetrachloroethane	U	ug/l	10	06-APR-00 12:18	ASP 95-1	00-034-0194

QC _____ NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: NO or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 11-APR-2000

LAB SAMPLE ID : L48023-7

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	FRIEND LABORATORY, INC.
ORIGIN	95-045-95-29
DESCRIPTION	HOLDING BLANK
SAMPLED ON	04-APR-00 00:00 by LAB
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Library Search Compounds:	**Results**	**Units**	**Qual**	**Retention Time**		
Surrogate Recovery:						
1,2-Dichloroethane-d4	100	%				00-034-0194
Toluene-d8	95	%				00-034-0194
4-Bromofluorobenzene	102	%				00-034-0194

QC ____ NY 10252 NJ 73168 PA 68180 EPA NY 00033 *Approved by:* _____ *Lab Director*

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per millio...
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

"Our family, caring about your analytical needs . . . Since 1963."

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FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 21-APR-2000

LAB SAMPLE ID :L48027-1

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	CUTTINGS SOIL
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 12:45 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P O NO	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Corrosivity	Noncorrosive	mg/l		07-APR-00 16:13	EPA 1110	99-116-19
Cyanide, Reactive	U	mg/kg	0.498	12-APR-00 00:00	SW846 CH.7.3.3.2	00-013-16
Ignitability	NON-IGNITABLE			10-APR-00 00:00	SW846 CH.7	98-032-36
Total Solids	78.7	%		05-APR-00 00:00	CLP 3.0	00-010-49
Sulfide Reactivity	U	mg/kg	11	07-APR-00 00:00	SW846 CH.7.3.4.2	98-140-19
EPA 8082						
PCB 1016	U	mg/kg	0.12	20-APR-00 00:00	EPA 8082	99-108-4242
PCB 1221	U	mg/kg	0.12	20-APR-00 00:00	EPA 8082	99-108-4242
PCB 1232	U	mg/kg	0.12	20-APR-00 00:00	EPA 8082	99-108-4242
PCB 1242	U	mg/kg	0.12	20-APR-00 00:00	EPA 8082	99-108-4242
PCB 1248	U	mg/kg	0.12	20-APR-00 00:00	EPA 8082	99-108-4242
PCB 1254	U	mg/kg	0.12	20-APR-00 00:00	EPA 8082	99-108-4242
PCB 1260	0.58	mg/kg	0.12	20-APR-00 00:00	EPA 8082	99-108-4242
Surrogate Recovery:						
Decachlorobiphenyl	145	%				99-108-4242

Analysis Comment:Results are calculated on a dry weight basis.

QC QA NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 21-APR-2000

LAB SAMPLE ID L48027-2

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	CUTTINGS SOIL
DESCRIPTION	TCLP EXTRACT
SAMPLED ON	03-APR-00 12:45 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Arsenic	U	mg/l	1.20	12-APR-00 11:54	EPA 6010 TCLP	00-051-08
Barium	0.694	mg/l	0.160	12-APR-00 11:54	EPA 6010 TCLP	00-051-08
Cadmium	U	mg/l	0.0500	14-APR-00 01:48	EPA 6010 TCLP	00-051-09
Chromium	U	mg/l	0.100	12-APR-00 11:54	EPA 6010 TCLP	00-051-08
Lead	U	mg/l	0.440	12-APR-00 11:54	EPA 6010 TCLP	00-051-08
Mercury	U	mg/l	0.0100	12-APR-00 00:00	EPA 7470 TCLP	98-126-81
Selenium	U	mg/l	0.700	14-APR-00 01:48	EPA 6010 TCLP	00-051-09
Silver	U	mg/l	0.100	12-APR-00 11:54	EPA 6010 TCLP	00-051-08
TCLP 8260						
Vinyl chloride	U	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
1,1-Dichloroethene	U	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
Methyl ethyl ketone	U	mg/l	0.5	06-APR-00 14:29	TCLP 8260	00-035-1557
Chloroform	U	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
Carbon tetrachloride	U	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
Benzene	0.2	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
1,2-Dichloroethane	U	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
Trichloroethene	U	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
Tetrachloroethene	U	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
Chlorobenzene	U	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
1,4-Dichlorobenzene	U	mg/l	0.1	06-APR-00 14:29	TCLP 8260	00-035-1557
Surrogate Recovery:						
Dibromofluoromethane	100	%				00-035-1557
Toluene-d8	96	%				00-035-1557
4-Bromofluorobenzene	101	%				00-035-1557

QC ____ NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY I·N·C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 21-APR-2000

LAB SAMPLE ID L48027-2

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	CUTTINGS SOIL
DESCRIPTION	TCLP EXTRACT
SAMPLED ON	03-APR-00 12:45 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
TCLP 8081						
Lindane	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9623
Heptachlor	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9623
Heptachlor Epoxide	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9623
Endrin	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9623
Methoxychlor	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9623
Chlordane	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9623
Toxaphene	U	mg/l	0.1	13-APR-00 00:00	TCLP 8081	99-127-9623
Surrogate Recovery:						
Tetrachloro-m-Xylene	96	%				99-127-9623
Decachlorobiphenyl	134	%				99-127-9623
TCLP 8150						
2,4-D	U	mg/l	0.4	13-APR-00 00:00	TCLP 8150	99-100-4966
2,4,5-TP (Silvex)	U	mg/l	0.4	13-APR-00 00:00	TCLP 8150	99-100-4966
Surrogate Recovery:						
DCAA	94	%				99-100-4966
TCLP 8270						
Pyridine	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
o-Cresol	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
p-Cresol/m-Cresol	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
Hexachloroethane	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
Nitrobenzene	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
Hexachlorobutadiene	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
2,4,6-Trichlorophenol	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
2,4,5-Trichlorophenol	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
2,4-Dinitrotoluene	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
Hexachlorobenzene	U	mg/l	0.05	07-APR-00 18:10	TCLP 8270	98-051-10461
Pentachlorophenol	U	mg/l	0.2	07-APR-00 18:10	TCLP 8270	98-051-10461
Surrogate Recovery:						
2-Fluorophenol	23	%				98-051-10461
Phenol-d5	16	%				98-051-10461
Nitrobenzene-d5	21	%				98-051-10461
2-Fluorobiphenyl	29	%				98-051-10461
2,4,6-Tribromophenol	32	%				98-051-10461
Terphenyl-d14	44	%				98-051-10461

QC NY 10252 NJ 73168 PA 68180 EPA NY00033 Approved by: Lab Director

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mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY
I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 21-APR-2000

LAB SAMPLE ID :L48027-3

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	PURGE WATER
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 13:05 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Corrosivity	Noncorrosive	mg/l		07-APR-00 16:13	EPA 1110	99-116-19
Cyanide, Reactive	U	mg/kg	0.483	12-APR-00 00:00	SW846 CH.7	00-013-16
Ignitability	Non-ignitable			13-APR-00 00:00	SW846 CH.7	00-033-02
Sulfide Reactivity	71.5	mg/kg	11	07-APR-00 00:00	SW846 Ch.7	98-140-19
Arsenic	U	mg/l	1.20	12-APR-00 11:56	EPA 6010 TCLP	00-051-08
Barium	U	mg/l	0.160	12-APR-00 11:56	EPA 6010 TCLP	00-051-08
Cadmium	U	mg/l	0.0500	14-APR-00 01:51	EPA 6010 TCLP	00-051-09
Chromium	U	mg/l	0.100	12-APR-00 11:56	EPA 6010 TCLP	00-051-08
Lead	U	mg/l	0.440	12-APR-00 11:56	EPA 6010 TCLP	00-051-08
Mercury	U	mg/l	0.0100	12-APR-00 00:00	EPA 7470 TCLP	98-126-81
Selenium	U	mg/l	0.700	14-APR-00 01:51	EPA 6010 TCLP	00-051-09
Silver	U	mg/l	0.100	12-APR-00 11:56	EPA 6010 TCLP	00-051-08
TCLP 8260						
Vinyl chloride	U	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556
1,1-Dichloroethene	U	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556
Methyl ethyl ketone	U	mg/l	0.5	06-APR-00 13:54	TCLP 8260	00-035-1556
Chloroform	U	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556
Carbon tetrachloride	U	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556
Benzene	1	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556
1,2-Dichloroethane	U	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556
Trichloroethene	U	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556
Tetrachloroethene	U	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556
Chlorobenzene	U	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556
1,4-Dichlorobenzene	U	mg/l	0.1	06-APR-00 13:54	TCLP 8260	00-035-1556

QC OK NY 10252 NJ 73168 PA 68180 EPA NY 00033 Approved by: Lab Director

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mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 21-APR-2000

LAB SAMPLE ID :L48027-3

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	PURGE WATER
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 13:05 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Surrogate Recovery:						
Dibromofluoromethane	101	%				00-035-1556
Toluene-d8	96	%				00-035-1556
4-Bromofluorobenzene	100	%				00-035-1556
EPA 8082						
PCB 1016	U	ug/l	2	20-APR-00 00:00	EPA 8082	99-108-4272
PCB 1221	U	ug/l	4	20-APR-00 00:00	EPA 8082	99-108-4272
PCB 1232	U	ug/l	2	20-APR-00 00:00	EPA 8082	99-108-4272
PCB 1242	U	ug/l	2	20-APR-00 00:00	EPA 8082	99-108-4272
PCB 1248	U	ug/l	2	20-APR-00 00:00	EPA 8082	99-108-4272
PCB 1254	U	ug/l	2	20-APR-00 00:00	EPA 8082	99-108-4272
PCB 1260	U	ug/l	2	20-APR-00 00:00	EPA 8082	99-108-4272
Surrogate Recovery:						
Decachlorobiphenyl	83	%				99-108-4272
TCLP 8081						
Lindane	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9622
Heptachlor	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9622
Heptachlor Epoxide	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9622
Endrin	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9622
Methoxychlor	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9622
Chlordane	U	mg/l	0.005	13-APR-00 00:00	TCLP 8081	99-127-9622
Toxaphene	U	mg/l	0.1	13-APR-00 00:00	TCLP 8081	99-127-9622
Surrogate Recovery:						
Tetrachloro-m-Xylene	82	%				99-127-9622
Decachlorobiphenyl	78	%				99-127-9622
TCLP 8150						
2,4-D	U	mg/l	0.4	13-APR-00 00:00	TCLP 8150	99-100-4967
2,4,5-TP (Silvex)	U	mg/l	0.4	13-APR-00 00:00	TCLP 8150	99-100-4967
Surrogate Recovery:						
DCAA	98	%				99-100-4967

QC _____ NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____
Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
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B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

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ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 21-APR-2000

LAB SAMPLE ID L48027-3

Panamerican Environmental, Inc.
Pete Gorton
2390 Clinton Street
Buffalo, NY 14227

SAMPLE SOURCE	WATERFRONT SCHOOL
ORIGIN	PURGE WATER
DESCRIPTION	GRAB
SAMPLED ON	03-APR-00 13:05 by CLIENT
DATE RECEIVED	04-APR-00 12:52
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
TCLP 8270						
Pyridine	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
o-Cresol	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
p-Cresol/m-Cresol	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
Hexachloroethane	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
Nitrobenzene	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
Hexachlorobutadiene	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
2,4,6-Trichlorophenol	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
2,4,5-Trichlorophenol	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
2,4-Dinitrotoluene	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
Hexachlorobenzene	U	mg/l	0.05	07-APR-00 19:08	TCLP 8270	98-051-10462
Pentachlorophenol	U	mg/l	0.2	07-APR-00 19:08	TCLP 8270	98-051-10462
Surrogate Recovery:						
2-Fluorophenol	30	%				98-051-10462
Phenol-d5	22	%				98-051-10462
Nitrobenzene-d5	28	%				98-051-10462
2-Fluorobiphenyl	41	%				98-051-10462
2,4,6-Tribromophenol	48	%				98-051-10462
Terphenyl-d14	57	%				98-051-10462

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
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CUSTOMER CODE # _____

CHAIN OF CUSTODY RECORD

PAGE __ OF __

FLI
FRIEND LABORATORY I • N • C
ONE RESEARCH CIRCLE
WAVERLY NY 14892-1532
Telephone (607) 565 3500
Fax (607) 565 7160

Sample Site: WATERFRONT SCHOOL BUFFALO, NEW YORK

P.O. #

Untreated | Sodium thiosulfate | HCl pH <2 | Ascorbic acid & HCl pH <2 | HNO_3 pH <2 | H_2SO_4 pH <2 | NaOH pH >12 | NaOH & Zinc acetate pH >9 | Acetic Buffer pH <3 | Sodium sulfite

CLIENT: PEI
ADDRESS: 2390 CLINTON ST BUFFALO, NEW YORK 14227
PHONE: 716-821-1650 FAX: 716-831-1607

INVOICE TO: PETE J. GORTON
ADDRESS: SAME

PROJECT NO. / NAME: WATERFRONT SCHOOL

COPY TO:
ADDRESS:

L48023

DATE & TIME OF SAMPLE COLLECTION	SAMPLE DESCRIPTION	NUMBER OF CONTAINERS	ANALYSES / TESTS REQUESTED	SAMPLE NUMBER
04-03-2000 12:45p	Soil generated during Monitoring Well Installation - CUTTINGS	2 Description: Grab Composite Other Matrix: DW WW MW (Soil) Air Other	Full TCLP Reactivity, Corrosivity, Ignit, PCBs, TS — *NOTE SAMPLE IS CONTAMINATED WITH COAL TAR - MAY NEED DILUTION	LAB USE ONLY
04.03.2000 1:05	PURGE WATER	2 3 1 Description: Grab Composite Other Matrix: DW WW (MW) Soil Air Other	8082 Full TCLP Reactivity, Corrosivity, Ign. *NOTE SAMPLE CONTAINS COAL TAR	
04-3-2000 1:20pm	MW-12	3 Description: Grab Composite Other Matrix: DW WW (MW) Soil Air Other	WELL 12 VOA's -5	
04-3-2000 2:00pm	MW-11	3	WELL 11 VOA's -2,-3,-4	
04-3-2000 2:00pm	MW-11 dup		WELL 11 VOA's Dup	
04.03.2000 1:45p	MW9	3 Description: Grab Composite Other Matrix: DW WW MW Soil Air Other	WELL 9 VOA's -1	
4/3 4/4	95-045-95-29TB Holding Blank		VOA's -6 VOA's -7	

RELINQUISHED BY	DATE /TIME	ACCEPTED BY	DATE/TIME	NOTES TO LABORATORY
SAMPLER: Pete Gorton	4-3-2000 16:20	Tom Jones	4/4/00 12:52	temp as received 2.1 Received on ice
				SUSPECTED CONTAMINATION LEVEL: NONE SLIGHT MODERATE HIGH (please circle)

APPENDIX D

Monitoring Well Survey Elevations

JOB 980008

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
MW2	1,052,302.19	418,976.51	584.84	TOP OF CASING
			584.93	TOP PROTECTIVE CASING
			582.34	GROUND
MW3	1,052,294.17	419,094.50	585.60	TOP OF CASING
			585.90	TOP PROTECTIVE CASING
			583.09	GROUND
MW4	1,052,383.15	419,134.02	586.78	TOP OF CASING
			586.93	TOP PROTECTIVE CASING
			584.47	GROUND
MW5	1,052,124.61	418,708.73	579.58	TOP OF CASING
			580.07	TOP PROTECTIVE CASING
MW6	1,052,446.21	418,796.30	581.30	TOP OF CASING
			581.75	TOP PROTECTIVE CASING
MW7	1,052,269.74	418,589.57	580.26	TOP OF CASING
			580.64	TOP PROTECTIVE CASING
MW8	1,051,539.79	419,024.75	584.00	TOP OF CASING
			584.06	TOP PROTECTIVE CASING
			581.87	GROUND
MW9	1,051,775.53	419,540.05	583.07	TOP OF CASING
			583.15	TOP PROTECTIVE CASING
			580.69	GROUND
MW10	1,052,047.80	419,009.72	583.47	TOP OF CASING
			583.76	TOP PROTECTIVE CASING
			581.40	GROUND
SB21	1,052,368.53	418,650.08	581.20	GROUND
SB22	1,052,424.19	418,707.40	583.47	GROUND
SB23	1,052,445.03	418,978.72	579.90	GROUND

TVGA JOB#980008 MONITORING WELL LOCATIONS

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
MW-11	1051819.06	419544.43	583.53	TOP OF CASING
			583.35	TOP PROTECTIVE CASING
			580.80	GROUND
MW-12	1051658.78	419402.96	581.20	TOP OF CASING
			581.04	TOP PROTECTIVE CASING
			581.20	GROUND