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#### **ENVIRONMENTA** PRODUCTS & SERVICES, INC. 170 Cooper Avenue, Suite 100 Tonawanda, NY 14150 FAX (716) 447-4708 (716) 447-4700 (800) THE-TANK

August 13, 1996

FILE COPY

Mr. James Cooke New York State Department of Environmental Conservation 270 Michigan Avenue Buffalo, New York 14203

RE: Subsurface Investigation Report Spill No. 9213441 Gastown Sportsmen's Club 154 East Niagara Street Tonawanda, New York

Dear Mr. Cooke:

Environmental Products & Services, Inc. is pleased to submit to the New York State Department of Environmental Conservation the enclosed Subsurface Investigation Report detailing site activities, operations, and findings including laboratory analytical results for the site referenced above.

Please accept my personal apology for the delay in delivering this report to you. If you have any questions concerning this report please feel free to contact me or Mr. David Ellsworth at 716-447-4700. We appreciate this opportunity and look forward to working with you on future projects.

Very truly yours,

ENVIRONMENTAL PRODUCTS & SERVICES, INC.

Davie H Con

David H. Coulter, Branch Manager Buffalo Branch

7139.1113.DHC DHC/dc

File cc:

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# FILE COPY

# SUBSURFACE INVESTIGATION REPORT

Gastown Sportsmen's Club 154 East Niagara Street Tonawanda, New York

**Prepared For:** 

New York State Department of Environmental Conservation 270 Michigan Avenue Buffalo, New York

**Prepared By:** 

Environmental Products & Services, Inc. 170 Cooper Avenue, Suite 100 Tonawanda, New York

August 1996



#### SUBSURFACE INVESTIGATION REPORT

Gastown Sportsmen's Club 154 East Niagara Street Tonawanda, New York

Prepared For:

New York State Department of Environmental Conservation 270 Michigan Avenue Buffalo, New York

Submitted By:

Environmental Products & Services, Inc. 170 Cooper Avenue, Suite 100 Tonawanda, New York

August 1996

7139.1113.DHC



#### **EXECUTIVE SUMMARY**

- In response to the reported infiltration of petroleum and/or creosote into the sump of the Gastown Sportmen's Club located at 154 East Niagara Street in Tonawanda, New York, the New York State Department of Environmental Conservation (NYSDEC) directed Environmental Products & Services, Inc. to perform a subsurface investigation including:
  - o drilling 26 subsurface borings on the project site, and adjacent properties,
  - assessing soil and groundwater conditions through the collection, and subsequent field examination and description, of continuous soil samples,
  - assessing soil and groundwater conditions through the collection, and subsequent laboratory analysis, of soil and groundwater samples,
  - o converting five (5) of the borings to micro-monitoring wells,
  - o preparation of a subsurface investigation report.
- The predominant lithology encountered on site included glacial sediments consisting of yellow/brown silty clay overlying a fine to medium grained sand. Underlying the sand layer is a thin sand and gravel unit overlying a fairly impermeable red/brown clay.
- Depth to groundwater on site ranged from 4.58 to 6.11 feet below top-of-casing.
- Environmental Products & Services, Inc. partially delineated a subsurface petroleum and creosote accumulation in the project area.
- Laboratory analysis indicates the presence, in three (3) of the four (4) soil samples submitted, of volatile and semi-volatile organics in concentrations exceeding the Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values (AGV) as listed in the NYSDEC's STARS Memo #1 Petroleum-Contaminated Soil Guidance Policy.



#### RECOMMENDATIONS

- This subsurface investigation has been fairly extensive and valuable information has been compiled on subsurface conditions on site including lithology, groundwater, and chemical contaminant presence and concentrations. However, several issues remain unresolved including:
  - o groundwater conditions and flow direction,
  - complete vertical and horizontal delineation of the petroleum and/or creosote accumulation,
  - the relationship between the petroleum and creosote (i.e. are there two separate and distinct problems on site or two parts of the same problem?),
  - the best response for remediating this site, particularly with regard to the Gastown Sportsmen's Club's basement sump.
- Environmental Products & Services, Inc. recommends the following tasks be considered:
  - a detailed records search (if not previously completed) of the three sites to determine present and/or past underground storage tanks, spills, and property usage,
  - the drilling and installation of additional borings and/or monitoring wells to completely delineate groundwater conditions/flow direction and the extent of the contamination, especially horizontally within the southern half of the project site.
- Pending additional information, Environmental Products & Services, Inc. recommends that, in order to prevent further contamination from migrating into the Gastown Sportsmen's Club's basement sump, a barrier, either hydraulic (i.e. groundwater pump and treatment) or physical (slurry wall or sheet piling) or a combination of the two, be considered. This situation involves both a floating (petroleum) and sinking (creosote) contaminant. At first, it seems unlikely that the creosote should be detected in the sump however, it appears the creosote does possess some floating characteristics, thereby allowing it to migrate to the basement. Site-wide, the problem is more prevalent and a remediation response will need to be larger in scale and address possible source areas (i.e. groundwater pump and treatment, excavation, etc.).



### TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION	1
3.0 DRILLING INVESTIGATION	1
3.1 Methodology/Soil Borings	2
3.2 Methodology/Micro-monitoring Well Construction	2
3.3 Gastown Sportsmen's Club Property	3
3.4 NFTA Property	3
3.5 Holler Property	4
3.6 Surveying and Gauging	4
4.0 HYDROGEOLOGIC DATA	4
4.1 Site Geology	4
4.2 Site Hydrogeology	5.
5.0 LABORATORY ANALYTICAL RESULTS	5
6.0 SUMMARY	6

#### **FIGURES**

Figure 1:

Well Location Map

#### TABLES

Table 1:Laboratory Analytical Results (exceeding the Toxicity Characteristic<br/>Leaching Procedure (TCLP) Alternative Guidance Values (AGV)) -<br/>June 4, 6, 11, 1996

#### APPENDICES

Appendix A: Subsurface Logs Appendix B: Laboratory Analytical Results (June 4, 6, and 11, 1996)



#### **1.0 INTRODUCTION**

Environmental Products & Services, Inc. was contracted by the New York State Department of Environmental Conservation (NYSDEC), Region 9 to perform a subsurface investigation at the Gastown Sportsmen's Club, and adjacent properties, in Tonawanda, New York (see Figure 1). The investigation consisted of drilling borings for the purposes of assessing soil and groundwater conditions related to a reported infiltration of petroleum and/or creosote into the sump and tiles in the club's basement.

Laboratory analysis of water samples collected previously from the sump indicated concentrations of petroleum and creosote. Test pits had been previously excavated to a maximum depth of approximately 12 feet below grade in the parking area to the west of the club. According to the NYSDEC representative, no petroleum or creosote were observed in the excavation.

#### 2.0 SITE DESCRIPTION

The project site is located at 154 East Niagara Street, near the intersection with Carney Street, in Tonawanda, New York. The property is utilized as a social club. The topography of the property is relatively flat-lying with a gradual northerly downward slope toward Tonawanda Creek. Adjacent property to the west is owned by the Niagara Frontier Transportation Authority (NFTA). This property was a former International Railway Company railbed. The right of way was purchased by the NFTA which removed the track bed to the surrounding grade level. A portion of the property is leased to the Gastown Sportsmen's Club for parking. An AT&T fiber optic underground cable is located within this parking area approximately 25 feet west of the club.

To the west of the NFTA property is an industrial site purchased by Mr. Jack Holler in 1964. An aluminum casting company, a machine shop, and an industrial cleaning company currently occupy this property. The site was formerly owned by Iroquois Gas Corporation from 1957-1964. Republic Light, Heat, and Power operated a coal gasification facility on the property from 1921-1957.

Residential property is located to the south of the project site. Ellicott Creek is located within 1/2 mile of the site, to the south and southwest.

#### **3.0 DRILLING INVESTIGATION**

The drilling investigation was divided into three (3) phases; the Gastown Sportsmen's Club property, the NFTA property, and the Holler property. The primary goals of the investigation were to locate and delineate the areal extent of the petroleum and/or creosote contamination, collect soil and groundwater samples for laboratory analysis, and characterize the local geology including subsurface lithology and groundwater flow.



#### 3.1 Methodology/Soil Borings

From June 3-7, and 10, 1996, Environmental Products & Services, Inc. drilled a total of 26 borings (see Figure 1). The boring locations were determined by the Environmental Products & Services, Inc. on-site geologist and through consultation with the NYSDEC representative. Each boring was drilled to depth utilizing Environmental Products & Services, Inc. Concord Model 9200 Series, a truck-mounted, hydraulically-controlled drill rig similar to a Geoprobe<sup>@</sup> system. This particular unit utilizes both direct-push technology and/or rotating augers. A pre-cleaned two-inch inside diameter stainless steel spoon with a clear acetate "zero contamination" liner was inserted for the collection of continuous soil samples over the entire length of each boring. Following a visual inspection and lithologic description by Environmental Products & Services, Inc. on-site geologist (see Appendix A), each soil sample was field examined with a Microtip II photoionization detector (PID) for volatile organic compounds (VOC's) using head-space methodology (see Appendix A). Based on the PID results and visual and olfactory examination, four (4) soil and three (3) groundwater samples were collected in laboratory-grade sample jars or vials, sealed, individually labeled, and transported, under standard chain-of-custody protocol, to Environmental Laboratory Services, Inc. in North Syracuse, New York for analysis of volatile and/or semi-volatile organics using EPA Methods 8021 and 8270 (Base/Neutrals), respectively (see Appendix B).

Decontamination procedures were implemented on all drilling and sampling equipment prior to, and between, each boring and/or sample acquisition. Contaminated (as determined in the field using a PID) drilling spoils (cuttings) and cores were temporarily stored on site in DOT-approved 55-gallon steel drums pending transportation and disposal at a licensed facility.

Each boring, with the exception of SB-13, SB-14, SB-15, SB-17, and SB-23, was subsequently plugged and sealed at grade. Borings SB-13, SB-14, SB-15, SB-17, and SB-23 were converted into micro-monitoring wells.

#### 3.2 Methodology/Micro-monitoring Well Construction

Each micro-monitoring well was constructed of one-inch diameter Schedule 40 PVC well screen (.010 slot size) and riser with flush-threaded joints. An appropriately sized silica sand pack was placed in the annular space between the borehole and the well screen. The screened interval was determined on a well specific basis. Please refer to Appendix A for well completion details. A bentonite seal was placed between grade and the top of the sand pack to prevent the infiltration of surface water. Each micro-monitoring well was finished with a limited access, flush-mount, aluminum road box.



#### 3.3 Gastown Sportsmen's Club Property

On June 3, 1996, Environmental Products & Services, Inc. drilled 12 soil borings (SB-1 through SB-12) on the south side of the Gastown Sportsmen's Club (see Figure 1). The borings ranged in depth from approximately 8-24 feet below grade.

The lithology encountered consisted of a mottled yellow-brown silty clay overlying (at approximately 8.0 feet below grade) a yellow-brown to gray, medium to fine-grained sand (see Appendix A). Borings SB-1 and SB-3 encountered a resistant gray, rounded to subrounded, fine gravel and coarse-grained sand layer at approximately 19-20 feet below grade. In SB-3, a red-brown clay was underlying the gravel at approximately 20-21 feet below grade.

Groundwater was encountered at approximately 6.5-8.0 feet below grade. Petroleum odor was detected in borings SB-1, 3, 4, 6, and 7 at depths ranging from approximately 6-20 feet below grade. An iridescent sheen was observed in SB-3, 6, and 7 at approximately 6.0-8.5 feet below grade. PID field analysis did not conclusively indicate VOC concentrations above background levels in any of the soil borings. However, based on the visual and olfactory observations, SB-3 was offset a few feet and re-drilled on June 4, 1996 to facilitate collection of soil (S-1) and groundwater (S-1) samples for laboratory analysis.

#### **3.4 NFTA Property**

On June 4-5, 1996, Environmental Products & Services, Inc. drilled seven (7) soil borings (SB-13 through SB-19) on this property to the west and north of the Gastown Sportsmen's Club (see Figure 1). The borings ranged in depth from approximately 20-24 feet below grade.

The lithology encountered was consistent with that seen in borings SB-1 through SB-12 except that miscellaneous fill material was present to a depth of approximately 2-5 feet below grade (see Appendix A).

Groundwater was encountered at approximately 7.0-10.0 feet below grade. Petroleum odor and sheen was detected in borings SB-13 and 16 at depths ranging from approximately 8.0-10.0 feet below grade. Creosote oil was observed in SB-13, 14, 15, 16, and 17 at depths ranging from 12.0-24.0 feet below grade. PID field analysis indicated VOC concentrations above background levels in SB-16 and 17 (the PID was inoperational during borings SB-13 through 15) ranging from 7.8-55.0 parts-per-million (ppm). PID field analysis did not indicate VOC concentrations above background levels in SB-18 or 19.

Soil (S-2, S-3) and groundwater (S-5) samples were collected from SB-13 and submitted for laboratory analysis.



Soil borings SB-13, 14, 15, and 17 were converted to micro-monitoring wells.

## 3.5 Holler Property

On June 6-7, and 10, 1996, Environmental Products & Services, Inc. drilled seven (7) soil borings (SB-20 through SB-26) on this property to the west of the NFTA property (see Figure 1). The borings ranged in depth from approximately 12-24 feet below grade.

The lithology encountered was consistent with that seen on the other properties. Miscellaneous fill material was present to a depth of approximately six (6) feet below grade (see Appendix A).

Groundwater was encountered at approximately 6.0-12.0 feet below grade. Petroleum odor was detected in borings SB-24 and 25 at depths ranging from approximately 3.5-10.0 feet below grade. Creosote odor was detected in SB-21, 22, 23, and 25 at depths ranging from approximately 4.0-24.0 feet below grade. Creosote oil was observed in SB-21, 22, 23, and 25 at depths ranging from 7.2-24.0 feet below grade. PID field analysis indicated VOC concentrations above background levels in SB-21 and 25 (the PID was inoperational during boring SB-22 and may have been adversely affected by rainy weather during SB-23 and 24) ranging from 20.0-54.0 ppm. PID field analysis did not indicate VOC concentrations above background levels in SB-20 or 26.

Soil (S-4) and groundwater (S-6) samples were collected from SB-21 and 23, respectively, and submitted for laboratory analysis.

Soil boring SB-23 was converted to a micro-monitoring well.

#### 3.6 Surveying and Gauging

From June 11-14, 1996 the site was surveyed by Environmental Products & Services, Inc. including soil boring and micro-monitoring well locations and top-of-casing elevations. All survey data was referenced to a relative datum point of 100 feet above mean sea level.

Depth to groundwater and the presence and thickness of free-phase product (if applicable) was determined for each micro-monitoring well on June 14, 1996.

#### 4.0 HYDROGEOLOGIC DATA

#### 4.1 Site Geology

During the drilling of the 26 borings and installation of the five (5) micro-monitoring wells, the composition of the overburden was accurately documented by an Environmental Products & Services, Inc. geologist (see Appendix A). Miscellaneous fill of varying thickness overlies



Pleistocene glacial sediments. These sediments were probably deposited in glacial Lake Tonawanda. The predominant lithology of these glacial sediments consists of yellow/brown silty clay of varying thickness (approximately five (5) feet near the central portion of the project site to almost 20 feet near Tonawanda Creek) overlying a fine to medium grained sand. This sand layer is up to 14 feet thick in the center of the project site and pinches out toward Tonawanda Creek. Underlying the sand layer is a thin sand and gravel unit ranging in thickness from a few inches to approximately one (1) foot. This sand and gravel unit overlies a red/brown clay of unknown thickness.

#### 4.2 Site Hydrogeology

Depth to groundwater and depth to free-phase product measurements were recorded from each on-site micro-monitoring well on June 14, 1996. Depth to groundwater ranged from 4.58 (MW-23) to 6.11 (MW-15) feet below top-of-casing. Free-phase product was not encountered in any of the micro-monitoring wells on June 14. Groundwater elevation contours were developed from the June 14 gauging data and are depicted on Figure 1. Groundwater within the overburden material underlying the project site appears to be migrating locally in a south-southeasterly direction. It should be noted that the project site is located in close proximity to two creeks; one immediately to the north and the other within 1/2 mile to the south-southwest. The five (5) micro-monitoring wells are probably too closely grouped to provide definitive groundwater flow direction information. Additional data points are necessary to accurately determine this site's groundwater flow.

Petroleum and/or creosote was detected/observed in several borings on the project site (see Figure 1 & Appendix A). A partially delineated petroleum and creosote accumulation extends eastward from the Holler property to the Gastown Sportsmen's Club. Petroleum sheen was observed on site from approximate depths of 6.0-10.0 feet below grade while a petroleum odor was detected from approximate depths of 3.5-20.0 feet below grade. Creosote oil was observed on site from approximate depths of 7.2-24.0 feet below grade.

#### **5.0 LABORATORY ANALYTICAL RESULTS**

Based on field screening utilizing a PID as well as visual and olfactory examinations by Environmental Products & Services, Inc. on-site geologist, soil and groundwater samples were collected from selected borings and/or micro-monitoring wells on June 4, 6, and 11, 1996.

On June 4, 1996, soil sample, S-1 was collected from boring #3 at a depth of approximately 6.0-8.0 feet below grade. Groundwater sample, S-1 was also collected from this boring. Soil samples, S-2 and S-3, were collected from boring #13 at a depth of approximately 8.0-9.0 feet below grade and 19.0-20.0 feet below grade, respectively. Both S-1 samples and S-2 were analyzed using EPA Method 8021 while S-3 was analyzed using EPA Methods 8021 and 8270 (Base/Neutrals). Laboratory analysis performed on the acquired samples verified



the presence of chemical constituents (see Appendix B). In the case of soil samples, S-1 and S-3, some of these chemical constituents were detected at concentrations exceeding the Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values (AGV) as identified in Tables 1 and 2 of the NYSDEC's STARS Memo #1 - Petroleum-Contaminated Soil Guidance Policy (see Table 1). Chemical constituents were detected in S-1 (groundwater) and S-2, but not at concentrations exceeding the TCLP AGV. It should be noted that these TCLP AGV's were developed for contaminated soil and are not necessarily applicable for groundwater.

On June 6, 1996, soil sample, S-4 was collected from boring #21 at a depth of approximately 11.0-12.0 feet below grade. This sample was analyzed using EPA Methods 8021 and 8270 (Base/Neutrals). Laboratory analysis performed on the acquired sample verified the presence of chemical constituents (see Appendix B), most of them at concentrations substantially exceeding the TCLP AGV (see Table 1).

On June 11, 1996, groundwater samples, S-5 and S-6, were collected from micro-monitoring wells, MW-13 and MW-23, respectively. Both samples were analyzed using EPA Methods 8021 and 8270 (Base/Neutrals). Laboratory analysis performed on the acquired samples verified the presence of chemical constituents (see Appendix B) however, the TCLP AGV's were developed for contaminated soil and are not necessarily applicable for groundwater.



#### 6.0 SUMMARY

- In response to the reported infiltration of petroleum and/or creosote into the sump of the Gastown Sportmen's Club located at 154 East Niagara Street in Tonawanda, New York, the New York State Department of Environmental Conservation (NYSDEC) directed Environmental Products & Services, Inc. to perform a subsurface investigation including:
  - o drilling 26 subsurface borings on the project site, and adjacent properties,
  - assessing soil and groundwater conditions through the collection, and subsequent field examination and description, of continuous soil samples,
  - assessing soil and groundwater conditions through the collection, and subsequent laboratory analysis, of soil and groundwater samples,
  - o converting five (5) of the borings to micro-monitoring wells,
  - o preparation of a subsurface investigation report.
- The predominant lithology encountered on site included glacial sediments consisting of yellow/brown silty clay overlying a fine to medium grained sand. Underlying the sand layer is a thin sand and gravel unit overlying a fairly impermeable red/brown clay.
- Depth to groundwater on site ranged from 4.58 to 6.11 feet below top-of-casing.
- Environmental Products & Services, Inc. partially delineated a subsurface petroleum and creosote accumulation in the project area.
- Laboratory analysis indicates the presence, in three (3) of the four (4) soil samples submitted, of volatile and semi-volatile organics in concentrations exceeding the Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values (AGV) as listed in the NYSDEC's STARS Memo #1 - Petroleum-Contaminated Soil Guidance Policy.



#### **FIGURES**



TABLES



#### Table 1

#### Laboratory Analytical Results (exceeding the Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values (AGV)) (June 4, 6, 11, 1996)

#### NYSDEC/Gastown Sportsmen's Club 154 East Niagara Street, Tonawanda, NY

Sample I.D.	Chemical Constituent	Concentration (in ppb)	TCLP AGV (in ppb)
S-1 (soil)	n-butylbenzene	472	100
	sec-butylbenzene	119	100
	naphthalene	384	200
	n-propylbenzene	227	100
	1,2,4-trimethylbenzene	202	100
	1,3,5-trimethylbenzene	195	100
S-3 (soil)	n-butylbenzene	158	100
	ethylbenzene	228	100
	naphthalene	20,300	200
	1,2,4-trimethylbenzene	196	100
	anthracene	10,600	1,000
	benzo(a)anthracene	2,700	0.04
	benzo(b)fluoranthene	1,100	0.04
	benzo(k)fluoranthene	1,700	0.04
	benzo(g,h,i)perylene	1,400	0.04
	benzo(a)pyrene	2,800	0.04
	chrysene	3,600	0.04
	fluoranthene	6,600	1,000
	ideno(1,2,3-cd)pyrene	1,100	0.04
	naphthalene	13,800	200
	phenanthrene	14,700	1,000
	pyrene	9,100	1,000
S-4 (soil)	n-butylbenzene	5,570	100
	sec-butylbenzene	8.720	100
	ethylbenzene	32,000	100
	n-propylbenzene	3,800	100
	1,2,4-trimethylbenzene	26,000	100
	1,3,5-trimethylbenzene	11,800	100
	total xylenes	30,700	100
	acenaphthene	75,700	400
	anthracene	95,500	1,000
	benzo(a)anthracene	45,200	0.04
	benzo(b)fluoranthene	18,100	0.04
	benzo(k)fluoranthene	28,400	0.04
	benzo(g,h,i)perylene	22,700	0.04
	benzo(a)pyrene	47,000	0.04
	chrysene	45,800	0.04
	fluoranthene	141,000	1,000
	fluorene	84,100	1,000
	ideno(1,2,3-cd)pyrene	18,600	0.04
	naphthalene	596,000	200
	phenanthrene	286,000	1,000
	pyrene	168,000	1,000

#### APPENDIX A

## Subsurface Logs



E PROI	nvir	onmen S & SERV	Ital ICES, INC.		Subsurfa	ce Log	Hole No	.:1	Date Starte	ed:	06/03/96	
						. <u> </u>	Sheet	1of 1	Date Finish	te Finished: 06/03/96		
Clier	nt:	NYSDE	С		Method of	od of Investigation:Direct push method, Geoprobe tooling, 2-inch diameter, 4-foot long soil						
l	Ga	stown Sp	ortsmen's	Club		probe.						
Locat			nda, N.Y.							<u> </u>		
Projec	ano. Aar	D Filew	orth			Drilling Co	).: t		cts & Services			
Goolo	viyr. aiet	T Burm	oior			Drill Dia:		R. varno		05-70 0	egrees F, light rain	
Depth	<u>gist.</u>	T. Durin	Sample					Concold 9200		·	Crowndwater	
(#)		<u> </u>	Blows	1	Recovery	1	Sa	mple	Field	Mol	and Other	
	No.	Depth (ft.)	/6"	-N-	(#)		Desc	ription	Readings	Details	Observations	
° -	<u> </u>					0.0' 0.5' TOD	50ll		liteudinge		NO ODOR	
		0-4	<u> </u>		3.0	0.5'-4.0' Tan to	b light brown,	moist, silty CLAY,			OBSERVED IN SAMPLES (1-19.8	
						trace sand.						
						coal.	irk gray, silty (	CLAY, some black				
		<u></u>			1	1						
1						   4.0'-4.4' Mediu	um orav CLAY					
5 -	S2	4-8			3.5	4.4'-7.8' Mediu	Im yellow/brow	wn, firm to soft, moist to				
						very moist, sill	Y CLAY.					
				1		1						
					·	-						
						7.8'-10.3' Med	ium yellow/bro	own, fine to medium SAND.				
	S3	8-12			40	Becomes med	lium gray, fine	sAND (10.3' -15.4').			SAMPLES WET AT	
			· · · · · · · · · · · · · · · · · · ·	1		1					8.0'	
10 -		·				-		,				
				1								
						1						
	54	12-16	<u> </u>		4.0	4						
45												
15 -					1	15 4'-15 6' Mo	dium arou cou					
					+	15.6'-19.8' Gra	ly, fine to med	lium SAND.				
	S5	16-20			3.5						19.8'-20' FAINT	
											ODOR	
l i												
					· · ·	-					REFUSAL ON	
20 -				ļ		19.8'-20' Roun	ded GRAVEL				GRAVEL @ 20'	
					1						20' = BOTTOM OF	
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Sampl	етур	es: S=Shite	Snoon.	<b></b>					Backfill Well	Key		
		R= Rock	Core:								Native Fill	
							•					
	N = ASTM D1586							Sand		Bentonite		

# MEMORANDUM

TO: Dave Ellsworth

FROM: Tim Osier

DATE: July 24, 1996

SUBJECT: Subsurface Investigation at Gastown Sportmen's Club, Tonawanda, New York

This memorandum is to advise you of the issues of concern regarding the MGP site at the Gastown Sportsmen's Club property in Tonawanda, New York. The three main issues that must be determined are:

- 1. Are there two distinct problems at the site or is the floating oil and the DNAPL coal tar residue two parts of the same problem?
- 2. What is the full vertical and horizontal extent of the subsurface involvement?
- 3. What is the best method to prevent the problem from effecting the sump in the Sportsmen's Club building?

The following tasks should be performed to provide information and answer issue one:

- Determine the presence or past presence of underground storage tanks.
- Do an historical search of the site to determine all past uses for the site.
- Determine if a fingerprint analysis is necessary on the sump oil and floating sheen.
  - Determine the types of analyses completed on the different phases in the

basement sump.

Obtain the results of any analyses preformed of the basement sump.

The following tasks should be performed to provide information and answer issue two:

- Determine if there are sumps in other buildings in the area that have similar problems.
- Install at least one up-gradient background well to the west of the foundry building. ,
- Add at least one-double cased boring to determine if the coal tar oil has migrated down through the lower clay layer.
  - Add more borings to the west and east to delineate the outer edges of the complete horizontal plume.
    - Determine why the soil samples in boring 13 had no excedences, but had a sheen on the water table.

The following tasks should be preformed to provide information and answer issue three:

- Obtain water elevations in the basement sump and Tonawanda Creek.
- Determine the water elevation in the area of borings 20, 21, and 24.
  - Add at least one upgradient background well to the west of the old MGP site.

The above information is needed to determine the natural flow of groundwater in the area, the full horizontal and vertical extent of the plume, and the best method to prevent the flow of oils into the basement sump. Some of the possible methods to prevent contamination in the basement sump are a hydraulic barrier, excavation, and/or a slurry wall.

# TRO/mm

8433.TO.814

cc: Mark Wilder, Environmental Products & Services, Inc. Dave Coulter, Environmental Products & Services, Inc.

Issues to oddress for MGP site in Buffelo × D Water levels - Stream (2points) + Sampin Sportsmais " Club. D. Is there actually 2 problems on the site or is The oil in the sump coming from MGT. problem? 3. Was there any underground storage tanks on-sete? -D. Historical. use of the proberty - Do a history check. Determine the problems in the samps, - I nearby homes? Determine in an alysis to determine the source of the problem Install more writer level points to determine X sectional writer toble - work one to appradient/ballywork will B lead more borings to determine the alestarly hogizontil estent.
\* (9) Double case some deeper borings and monitoring wells to determine the vertical extent. De Perminent monitoris wells to determine water table Plusty of (D) Obtain the analytical results of the Sump white An What is malyses (B) (D) Obtain the analytical results of the oil sample from the swarp (3) Obtain the analytical results of the oil adhering the the Walks of the Samp. A D stow Why is there a no CF designation on borings 20 + It, but the notes pay there was black straining on the soil From the first two attempts on boring 24. Dilling no water levels for borings 20, 21, or 24? ( Boring 13 had no excelences on the 8-9 Flintenel, however, There was an observed shear.

· 7-24-94 David I Spoke with tim osien this Mening @ 750 AM, Regarding the inf Sent to the And MARK, I inquined as to the States of dilucuables for DEC Gustinn. report. \* Prior to my VACATION ON 7/8, 9-94 I Spoke to time O. He Had Recieved all related materials and would stave recomendations pack to mile asap. did it Happen \* to date nothing has been done. I told him this monny el absolutly had to have boring logs. as well as any thing elie they were Proveding. \* « an not pleased with the Service we have neieved, Corp. Geo was involved because they insisted they be involved. \* tim promised logi + Recomendations Repeatedly\_ hasn't Froduced \* tim Promised it would be done today \* if you Speak to mark a would appreciate it if you would Convaricate my frustration over the lack of Support, and Remind him they wave only involved Because they didnot

trust our abilities (DHC TB DE) to do an investigation and Produce a report, Had we done this on our own & believe it would have been delivened prior to this. \* Mark + tim wave Supposed to have heen in Buffale today 7/24 they are not concing- didn't Call ahead to reschedual \* I will do my best to accomodate there Schedual How ever, work is Coming in the door, and we need to do it if they would like to reschedual Clement Some advance motice So (not Clean he - Prepared. \* Al have Sent inf for Cattoringus Ority - Lound fill 15' ( analysis ) today. for Pricing eet. thends Survey Dance



NYS DEC REGION 9 - BUFFALO 270 MICHIGAN AVE.

BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113

SAMPLE #: 106053

PROJECT #: 963828 RECEIVED: 06/12/96

DATE SAMPLED: 06/11/96

PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 EAST NIAGARA STREET TONAWANDA, NY

TEST PERFORMED			1	RESULTS		UNITS		DATE PERFORMED	METHOD NUMBER	) t	PERFORMED BY		
SAMPLE	: #:	106051	CLIENT	SAMPLE	ID:	B1327	S-5	HOLE	#13	DATE SAMP	LED: 06/	/11/96	
VOL. (	ORGAN	NICS - EPA 80	21 STARS L	.IST				UG/L		06/17/96	EPA 8021		SKW
В	ENZEN	IE				<1.0							
N	-BUTY	LBENZENE			•	1.3							
s	EC-BU	TYLBENZENE				<1.0				•			
т	ERT-B	UTYLBENZEN				<1.0							
С	UMEN	E (ISOPROPYL	BENZENE)			<1.0						5-5=	
С	YMEN	E (4-ISOPROP	YLTOLUENE	3)		<1.0						<8-R	
E	THYLE	BENZENE				<1.0						30-13	
N		HALENE			-	7.8							
N	-PROP	YLBENZENE				<1.0							
т	OLUEN	IE				<1.0							
1	,2,4-T	RIMETHYLBEN	IZENE			<1.0							
1	,3,5-T	RIMETHYLBEN	IZENE			<1.0							
т	OTAL	XYLENES				<1.0							
N	ITBE					<1.0							

SEMIVOL. ORGANICS - B/N STARS LIST		UG/L	06/13/96	EPA 8270	LQ
ACENAPHTHENE	<1.0				
ANTHRACENE	<1.0				
BENZO(A)ANTHRACENE	<1.0				
BENZO(B)FLUORANTHENE	<1.0				
BENZO(K)FLUORANTHENE	<1.0				
BENZO(G,H,I)PERYLENE	<1.0				
BENZO(A)PYRENE	<1.0	•			
CHRYSENE	<1.0				
DIBENZ(A,H)ANTHRACENE	<1.0				
FLUORANTHENE	2.2				
FLUORENE	2.2				
INDENO(1,2,3-CD)PYRENE	<1.0				
NAPHTHALENE	<1.0				
		Page 1			

CLIENT SAMPLE ID: B1327 S-5 HOLE #13





NYS DEC REGION 9 - BUFFALO 270 MICHIGAN AVE.

BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113 PROJECT #: 963828 RECEIVED: 06/12/96

PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 EAST NIAGARA STREET TONAWANDA, NY

TEST PERFORMED	RESULTS	UNITS	DATE PERFORMEC	METHOD NUMBER	PERFORMED BY
SAMPLE #: 106053 CLIENT SAMP	LE ID: B1327 S-	5 HOLE #13	DATE SAME	PLED: 06/11/96	
SEMIVOL. ORGANICS - B/N STARS LIST		UG/L	06/13/96	EPA 8270	DJ
PHENANTHRENE	4.1				
PYRENE	2.3				

UG/L

SAMPLE #: 106054 CLIENT SAMPLE ID: B1327 S-6 HOLE #23

VOL. ORGANICS - EPA 8021 STARS LIST	
BENZENE	< 5.0
N-BUTYLBENZENE	7.6
SEC-BUTYLBENZENE	<5.0
TERT-BUTYLBENZENE	<5.0
CUMENE (ISOPROPYLBENZENE)	<5.0
CYMENE (4-ISOPROPYLTOLUENE)	<5.0
ETHYLBENZENE	7.0
NAPHTHALENE	128
N-PROPYLBENZENE	<5.0
TOLUENE	<5.0
1,2,4-TRIMETHYLBENZENE	19.0
1,3,5-TRIMETHYLBENZENE	8.4
TOTAL XYLENES	33.9
МТВЕ	<5.0

DATE SAMPLED: 06/11/96

06/18/96	EFA <b>8021</b>	
	5-4.	
	5B-23	

SAMPLE #: 106055	CLIENT SAMPLE	ID: B1327 S-	6 HOLE #23	DATE SAM	PLED: 06/11/96	
SEMIVOL. ORGANICS - B/	N STARS LIST		UG/L	06/13/96	EPA 8270	LD
ACENAPHTHENE		<1.0				
ANTHRACENE		2.3				
BENZO(A)ANTHRACI	ENE	<1.0				
BENZO(B)FLUORANT	HENE	<1.0				
BENZO(K)FLUORANT	HENE	<1.0	•			
BENZO(G,H,I)PERYLE	INE	<1.0				
			Page 2			

SKW



NYS DEC REGION 9 - BUFFALO 270 MICHIGAN AVE.

BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113 **PROJECT #: 963828 RECEIVED: 06/12/96** 

PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 EAST NIAGARA STREET TONAWANDA, NY

TEST PERFORMED	RESULTS	UNITS	DATE METHOD PERFORMED NUMBER	PERFORMED BY
SAMPLE #: 106055 CLIENT SA	MPLE ID: B1327 S-6	HOLE #23	DATE SAMPLED: 06/11/96	
SEMIVOL. ORGANICS - B/N STARS LIST		UG/L	06/13/96 EPA 8270	LD
BENZO(A)PYRENE	<1.0			
CHRYSENE	< 1.0			
DIBENZ(A,H)ANTHRACENE	< 1.0			
FLUORANTHENE	4.7			
FLUORENE	7.0			
INDENO(1,2,3-CD)PYRENE	< 1.0			
NAPHTHALENE	< 1.0			
PHENANTHRENE	9.1			
PYRENE	3.4			

for Douglas W. Mendrala Laboratory Director

06/19/96 Date

All tests performed under NYS ELAP Laboratory Certification # 11375 unless otherwise stated.

Page 3

4. 062000

Your Full-Service Analytical Laboratory

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			CHAIN OF C	USIODY RECORI
PRODUC	TS & SERVICES, INC. (3	15) 471-0503/(800) 843-82	es EPS LA	BLOG NO. 1327
IOB NUMBER BI	13 DIN NU IMPED 7755/0	LABORATORY F1	REPO	RTING REQUIREMENTS (other than m
P.O. NUMBER: N	SPILL NUMBER 9213441	ADDRESS:		IONE NO: 716 - 44-1-4-70
TURN AROUND TIME	SPECIAL DETECTION	SPECIAL QA/QC LEVEL	ANALYSIS RE-	SITE ADDRESS
APPROVAL FOR RUS	H) Yes No	(Specify)		154E.
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	W - WIPE SS - SURFACE SCRAPE			
	O - OTHER (SPECIFY)			
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White - LABORATOR	Canary - CORPORATE ENVIRON	MENTAL Pink - PROJ	ECT COORDINATOR Gold	denrod - BRANCH FILE 2005 ENVIRON



NYS DEC REGION 9 - BUFFALO 270 MICHIGAN AVE.

BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113 PROJECT #: 963803 RECEIVED: 06/10/96

PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 E. NIAGARA STREET TONAWANDA, NY

TEST PE	RFORMED			F	RESULTS	i	UNITS		DATE PERFORM	/IED	METHOD NUMBER		PERFORMED BY
SAMPLE #:	105981	CLIENT	SAMPLE	ID:	B1325	s-4	HOLE ;	<b>#21, 1</b>	1-12'DAT	E S	AMPLED:	06/06/96	
VOL. ORGAI	NICS - EPA 802	21 STARS L	IST.				MG/KG I	DRY WT.	06/20/96	5	EPA 8021		sкw
BENZER	NE				<0.313								
N-BUT)	LBENZENE			5	5.57								
SEC-BL	JTYLBENZENE			ε	3.72								
TERT-B	UTYLBENZENE			•	<0.313							<u> </u>	
CUMEN	E (ISOPROPYL	BENZENE)		•	<0.313							5-7-	
CYMEN	E (4-ISOPROP)	LTOLUENE	)	•	<0.313							5B-21	1
ETHYL	BENZENE			3	32.0								
NAPHT	HALENE			•	<0.313								
N-PROF	PYLBENZENE			3	3.80								
TOLUE	NE			•	<0.313								
1,2,4-T	RIMETHYLBEN	ZENE		2	26.0								
1,3,5-T	RIMETHYLBEN	ZENE		1	1.8								
TOTAL	XYLENES			з	30.7								
MTBE					<0.313								

#### SAMPLE #: 105982 CLIENT SAMPLE ID: B1325 S-4 HOLE #21, 11-12'DATE SAMPLED: 06/06/96

80	PERCENT	06/11/96	EPA 160.3	SKW
	MG/KG DRY WT.	06/14/96	EPA 8270	LD
75.7				
95.5				
45.2				
18.1				
26.4				
22.7				
47.0				
45.8				
<12.0				
141				
84.1				
	80 75.7 95.5 45.2 18.1 26.4 22.7 47.0 45.8 <12.0 141 84.1	80 PERCENT MG/KG DRY WT. 75.7 95.5 45.2 18.1 26.4 22.7 47.0 45.8 <12.0 141 84.1	80         PERCENT         06/11/96           MG/KG DRY WT.         06/14/96           75.7         95.5           95.5         .           45.2         .           18.1         .           26.4         .           22.7         .           47.0         .           45.8         .           <12.0	80         PERCENT         06/11/96         EPA 160.3           MG/KG DRY WT.         06/14/96         EPA 8270           75.7         95.5         45.2           45.2         18.1         26.4           22.7         47.0           45.8         <12.0

Page 1

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 SAMPLE #: 105982
 CLIENT SAMPLE ID: B1325 S-4 HOLE #21, 11-12'DATE SAMPLED: 06/06/96

 SEMIVOL. ORGANICS - B/N STARS LIST
 MG/KG DRY WT. 06/14/96 EPA 8270
 DJ

 INDENO(1,2,3-CD)PYRENE
 18.6
 NAPHTHALENE
 596

286

168

Douglas W. Mendrala Laboratory Director

PHENANTHRENE

PYRENE

06/21/96 Date

All tests performed under NYS ELAP Laboratory Certification # 11375 unless otherwise stated.

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White - LABORATORY

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Canary - CORPORATE ENVIRONMENTAL

Pink - PROJECT COORDINATOR

Goldenrod - BRANCH FILE 2202 ENV 202 05/05

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NYS DEC REGION 9 - BUFFALO 270 MICHIGAN AVE.

PROJECT #: 963768 RECEIVED: 06/05/96

BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113 PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 E. NIAGARA STREET TONAWANDA, NY

TEST	T PERFORMED			I	RESULTS	5	UNITS	DATE PERFORMED	METHOD NUMBER		Đ
SAMPLE	#: 105909	CLIENT	SAMPLE	ID:	B1322	S-1	GROUNDWATER	DATE SAMP	LED: 06/04/96	5-1	
VOL. OI	RGANICS - EPA 80	21 STARS L	IST				UG/L	06/07/96	EPA 8021	= SI	ĸw
BE	NZENE				<0.7					~ 2 2 2	
N-I	BUTYLBENZENE			:	2.5					DD	>
SE	C-BUTYLBENZENE			:	2.3						
TE	RT-BUTYLBENZEN	E			<1.0						
CU	MENE (ISOPROPY	BENZENE)			<1.0						
CY	MENE (4-ISOPROP	YLTOLUENE	)		<1.0						
ET	HYLBENZENE			1	1.1						
NA	PHTHALENE				<1.0					•	
N-I	PROPYLBENZENE				<1.0						
то	LUENE				<1.0						
1,2	2,4-TRIMETHYLBE	ZENE			<1.0						
1,3	3,5-TRIMETHYLBE	ZENE			<1.0						
то	TAL XYLENES				<1.0						
МТ	ГВЕ				<1.0						

#### SAMPLE #: 105910 CLIENT SAMPLE ID: B1322 S-1 GROUNDWATER DATE SAMPLED: 06/04/96

SEMIVOL. ORGANICS - B/N STARS LIST		UG/L	06/13/96	EPA 8270	LD
ACENAPHTHENE	3.5				
ANTHRACENE	<1.0				
BENZO(A)ANTHRACENE	<1.0				
BENZO(B)FLUORANTHENE	<1.0				
BENZO(K)FLUORANTHENE	<1.0				
BENZO(G,H,I)PERYLENE	<1.0				
BENZO(A)PYRENE	<1.0				
CHRYSENE	<1.0				
DIBENZ(A,H)ANTHRACENE	<1.0				
FLUORANTHENE	<1.0				
FLUORENE	4.0				
INDENO(1,2,3-CD)PYRENE	<1.0				
NAPHTHALENE	<1.0				
		Page 1			





NYS DEC REGION 9 - BUFFALO 270 MICHIGAN AVE.

BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113 PROJECT #: 963768 RECEIVED: 06/05/96

PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 E. NIAGARA STREET TONAWANDA, NY

TEST PERFORMED		RESULTS	UNITS	DATE PERFORMED	METHOD NUMBER	PERFORMED BY
SAMPLE #: 105910	CLIENT SAMPLE	ID: B1322 S-	1 GROUNDWATER	DATE SAMP	LED: 06/04/96	
SEMIVOL. ORGANICS - B/	N STARS LIST		UG/L	06/13/96	EPA 8270	DJ
PHENANTHRENE		1.1				
PYRENE		<1.0				

SAMPLE #: 105911 CLIENT SAMPLE ID: B1322 S-1 SOIL DATE SAMPLED: 06/04/96

VOL. ORGANICS - EPA 8021 STARS LIST		MG/KG DRY WT.	06/07/96	EPA 8021	SKW
BENZENE	<0.014				
N-BUTYLBENZENE	0.472				
SEC-BUTYLBENZENE	0.119				
TERT-BUTYLBENZENE	<0.080				
CUMENE (ISOPROPYLBENZENE)	<0.080				
CYMENE (4-ISOPROPYLTOLUENE)	<0.080				
ETHYLBENZENE	<0.080				
NAPHTHALENE	0.384				
N-PROPYLBENZENE	0.227				
TOLUENE	<0.080				
1,2,4-TRIMETHYLBENZENE	0.202				
1,3,5-TRIMETHYLBENZENE	0.195				
TOTAL XYLENES	<0.080				
МТВЕ	<0.080				

SAMPLE #: 105912 CL	IENT SAMPLE 1	ID: B1322 S-1	SOIL	DATE SAMPL	ED: 06/04/96	
SOLIDS, TOTAL		79	PERCENT	06/06/96	EPA 160.3	SKW
SEMIVOL. ORGANICS - B/N ST	ARS LIST		MG/KG DRY WT.	06/17/96	EPA 8270	DJ
ACENAPHTHENE		<0.061				
ANTHRACENE		<0.061				
BENZO(A)ANTHRACENE		<0.061				
BENZO(B)FLUORANTHENE		<0.061				
		•				

Page 2

Rhode Island



NYS DEC REGION 9 - BUFFALO 270 MICHIGAN AVE.

BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113

BENZENE

**N-BUTYLBENZENE** 

**ETHYLBENZENE** 

NAPHTHALENE

TOLUENE

MTBE

N-PROPYLBENZENE

TOTAL XYLENES

1,2,4-TRIMETHYLBENZENE

1,3,5-TRIMETHYLBENZENE

SEC-BUTYLBENZENE

TERT-BUTYLBENZENE

CUMENE (ISOPROPYLBENZENE)

CYMENE (4-ISOPROPYLTOLUENE)

PROJECT #: 963768 **RECEIVED: 06/05/96** 

PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 E. NIAGARA STREET TONAWANDA, NY

TEST PEF	RFORMED			RES	SULTS	UNITS	DATE PERFORMED	NUMBER	BY
SAMPLE #:	105912	CLIENT	SAMPLE	ID: B	1322 S-	1 SOIL	DATE SAMPI	LED: 06/04/96	5
SEMIVOL. OF	RGANICS - B	N STARS LI	бΤ			MG/KG DRY WT.	06/17/96	EPA 8270	LD
BENZO(	K)FLUORANT	HENE		<0	.061				
BENZO(	G,H,I)PERYLE	NE		<0	.061				
BENZO(	A)PYRENE			<0	.061				
CHRYSE	ENE			<0	.061				
DIBENZ	(A,H)ANTHR	ACENE		<0	.061				
FLUORA	NTHENE			<0	.061				
FLUORE	NE			<0	.061				
INDENO	(1,2,3-CD)P)	<b>RENE</b>		<0	.061				
NAPHTH	HALENE			<0	.061				
PHENAN	NTHRENE			<0	.061				
PYRENE				<0	.061				
SAMPLE #:	105913	CLIENT	SAMPLE	ID: B	1322 S-:	2 SOIL	DATE SAMPI	LED: 06/04/96	5-2-
VOL. ORGAN	IICS - EPA 80	21 STARS L	.IST			MG/KG DRY WT.	06/08/96	EPA 8021	SKW
8ENZEN	F			<0	014				58-15

< 0.014

<0.080

<0.080

< 0.080

<0.080

<0.080

<0.080

< 0.080

< 0.080

< 0.080

< 0.080

<0.080 <0.080

< 0.080

Page 3





NYS DEC REGION 9 - BUFFALO 270 MICHIGAN AVE.

BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113

TERT-BUTYLBENZENE

ETHYLBENZENE

NAPHTHALENE

CUMENE (ISOPROPYLBENZENE)

CYMENE (4-ISOPROPYLTOLUENE)

PROJECT #: 963768 RECEIVED: 06/05/96

PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 E. NIAGARA STREET TONAWANDA, NY

TEST PERFORMED	RESULTS	UNITS	DATE PERFORMED		PERFORMED BY
SAMPLE #: 105914 CLIENT SAMPLE	ID: B1322 S-2	SOIL	DATE SAMP	LED: 06/04/9	6
SOLIDS, TOTAL	83	PERCENT	06/06/96	EPA 160.3	SKW
SEMIVOL. ORGANICS - B/N STARS LIST		MG/KG DRY WT.	06/13/96	EPA 8270	DJ
ACENAPHTHENE	<0.060				
ANTHRACENE	< 0.060				
BENZO(A)ANTHRACENE	<0.060				
BENZO(B)FLUORANTHENE	<0.060				
BENZO(K)FLUORANTHENE	<0.060				
BENZO(G,H,I)PERYLENE	<0.060				
BENZO(A)PYRENE	< 0.060				
CHRYSENE	< 0.060				
DIBENZ(A,H)ANTHRACENE	<0.060				
FLUORANTHENE	0.070				
FLUORENE	<0.060				
INDENO(1,2,3-CD)PYRENE	<0.060				
NAPHTHALENE	<0.060				
PHENANTHRENE	< 0.060				È.
PYRENE	0.11				
SAMPLE #: 105915 CLIENT SAMPLE	ID: B1322 S-3	CREASOTE	DATE SAMP	LED: 06/04/9	6
SOLIDS, TOTAL	82	PERCENT	06/06/96	EPA 160.3	Sk.'
VOL. ORGANICS - EPA 8021 STARS LIST		MG/KG DRY WT.	06/12/96	EPA 8021	JB-13skw
BENZENE	<0.014				
N-BUTYLBENZENE	0.158				
SEC-BUTYLBENZENE	< 0.080				

Your Full-Service Analytical Laboratory

Page 4

< 0.080

< 0.080

<0.080

< 0.080

0.228

20.3

- Certified in: Connecticut • Delaware
- Maryland Massachusetts
- New
- Hampshire
- New Jersey
- . New York

• Pennsylvania

 Rhode Island 

. . . . . . .





BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113 PROJECT #: 963768 RECEIVED: 06/05/96

PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 E. NIAGARA STREET TONAWANDA, NY

TEST PE	RFORMED			i	RESULTS	i	UNITS	DATE PERFORMED	METHOD NUMBER	PERFORMED BY
SAMPLE #:	105915	CLIENT	SAMPLE	ID:	B1322	s-3	CREASOTE	DATE SAMPI	LED: 06/04/96	
VOL. ORGAI	NICS - EPA 8	021 STARS I	lst				MG/KG DRY WT.	06/12/96	EPA 8021	SKW
N-PROF	PYLBENZENE				<0.080					
TOLUE	NE				<0.080					
1,2,4-T	RIMETHYLB	ENZENE		C	D.196					
1,3,5-T	RIMETHYLB	ENZENE		C	0. <b>09</b> 5					
TOTAL	XYLENES				<0.080					
MTBE					<0.080					
SEMIVOL. O	RGANICS - B	N STARS LI	sт				MG/KG DRY WT.	06/14/96	EPA 8270	LD
ACENA	PHTHENE				<0.61					
ANTHR	ACENE			•	10.6					
BENZO	(A)ANTHRAC	ENE		:	2.7					
BENZO	(B)FLUORAN	THENE		•	1.1		·			
BENZO	(K)FLUORAN	THENE		•	1.7					
BENZO	(G,H,I)PERYL	ENE		•	1.4					
BENZO	(A)PYRENE			:	2.8					
CHRYS	ENE			3	3.6					
DIBENZ	Z(A,H)ANTHR	ACENE			<0.61					
FLUOR.	ANTHENE			6	6.6					
FLUOR	ENE				<0.61					
INDENG	D(1,2,3-CD)P	YRENE		1	1.1					
NAPHT	HALENE			1	13.8					
PHENA	NTHRENE			1	14.7					
PYREN	E			5	Э.1					



Certified in: Connecticut • Delaware • Maryland

ik :



NYS DEC REGION 9 - BUFFALO 270 MICHIGAN AVE.

BUFFALO NY 14203-2999 ATTN: MR. JIM COOKE

P.O. # D100712 CLIENT JOB NUMBER: B1113

Douglas W. Méndrala tor Laboratory Difector

PROJECT #: 963768 RECEIVED: 06/05/96

PIN #: SP92556 SPILL #: 9213441 SPILL SITE: 154 E. NIAGARA STREET TONAWANDA, NY

> 06/19/96 Date

All tests performed under NYS ELAP Laboratory Certification # 11375 unless otherwise stated.

Page 6

Certified in: • Connecticut • Delaware • Maryland • Massachusetts • New • Hampshire • New • Hampshire • New • Jersey • J

1:000	S AN

# Environmental DEC contact Jim Looke PRODUCTS & SERVICES, INC.

# CHAIN OF CUSTODY RECORD

1322 FPS LABLOG NO

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	P.O. N					n: <u>)</u>	721	34	41	•		DD	RES	S:														ONE NO.:		7/6-	. ५५-	7-4	760
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Sample(s)	24-HO		(Spe	cify) <	10 472	؛ ک	<u> </u>	6.5-	"   v	VASTE	SAN	/PL		~										<b>TB</b>						To	yn MA	LUAN	AA
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E	Environmental PRODUCTS & SERVICES, INC.						Hole No.	:2		Date Starte	ed:	06/02/02
PROD	DUCT	S & SERVIO	CES, INC.		Subsurfa	ce Log	Sheet	101	f 1	Date Finish	ed:	06/03/96
Clier	nt:	NYSDEC	;	l	Method of	Investigatio	n: Direct pus	h method, Geo	probe tooli	ng, 2-inch dia	meter, 4-f	oot long soil
	Gas	stown Spo	ortsmen's	Club			probe.					
Projec	t No.	: B1113	iua, in. i .			Drilling Co	р.: Е	nvironmenta	I Products	s & Services	Weathe	er:
Proj. N	Agr:	D. Ellswo	orth			Driller:	_	R. Va	arno		65-70 d	legrees F, light
Geolo	gist:	T. Burme	eier			Drill Rig:		Concor	rd 9200		rain	
Depth		I	Sample	<u> </u>		-	Sar	nole		Field	1.4/-11	Groundwater
(it.) 0	No.	Depth (ft.)	Blows /6*	-N-	(ft.)		Desc	ription		Readings	Details	Observations
	S1	0-4			2.3	0.0'-1.0' TOP	SOIL.					NO ODOR OBSERVED IN
						1.0'-4.0' Yellov CLAY.	w/brown and g	ray, stiff, slightly m	noist			SAMPLES 0'-12'
						1						
	52	4.9			37	4.0'-7.0' Grad	es to sandy CL	AY.				
5 -	52	4-0			5.7	-						
						-						
						7.0'-10.3' Yello	ow/brown, loos	e, clayey, fine SAM	ND.			
						-						
	<u>S3</u>	8-12			4.0	-						8.0'
10 -						10 2' 11 5' Yo	llow/brown fire					
						10.3-11.5 18	now/brown, nn	IL SINY CLAT.				
						11.5'-12.0' Me	dium gray, fine	SAND.				
			· · · · · · · · · · · · · · · · · · ·			-						12' = BOTTOM OF BORING
												-
15 -												
			•									
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Sampl	e Tvr	es:		L		L			F	Backfill Well	I Kev	
P		S=Split S	poon:	2'	۱ 							Nativa Fill
		R= Rock	Core:		<u>-</u> -					Cement		
		N = ASTN	1 D1586							Sand		Bentonite

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E					Out a set		Hole No.	:3	Date Starte	d:	06/03/96
PROD	DUCT	S & SERVIC	CES, INC.		Subsuna	ice Log					00/03/90
					1		Sheet	10f 1	Date Finish	ed:	06/10/96
Clier	nt:	NYSDEC	; 	<u></u>	Method of	Investigatio	n: Direct pus	sh method, Geoprobe to	poling, 2-inch	diameter	, 4-foot long soil
	Ga	Tonawan	da NV	Club	·		probe.				
Droioc	on: • No	D1112	iua, n. i.			Drilling Co		wironmontal Products	R Sanvicas	Mosth	
Proi	lar	D Filswo	orth			Driller	) LI	R Varno	& Services	65-70 c	learees Eiliabt
Geolo	nist. nist.	T Burme	ier			Drill Rig		Concord 9200		rain	
Depth	9101.	T. Dunne	Samole			Dini Kig.			Field	1	Groundwater
(ft.)			Blows	r	Recovery		San	nple	Analytical	Well	and Other
0	No.	Depth (ft.)	/6"	"N"	(ft.)		Desci	ription	Readings	Details	Observations
	S1				40	0.0'-2.0' Dark	brown TOP S	SOIL.			
	•	0-4			4.0	{					
						2.0-4.0 Tello	w/brown, mot	tied, sitty CLAT.			
						4.0'-6.0' Medi	ium yellow/bro	wn, sandy CLAY.			
5 –	S2	4-8			3.3	4					
											ODOR AND SHEEN
					•	6.0'-11.5' Gra	ay, sandy CLA at 10.0'	Y. Grades to			OBSERVED IN SAMPLES 6 (7-8 5)
			<u> </u>			]					0.411 220 0.0 0.0
	<u>S3</u>	8-12			4.0						
			:								
10 -											
						1					
						11.5'-16.0' M	edium gray/bro	own, firm, silty SAND.			
	S4 12-16 4.0										
						1.					
15 -						-					
								A lass was fee CAND			
	S5	16-20			4.0	10.0-17.7 16	allow/blown, w	et, iouse, very line SAND.			
] [						17 7 19 5' D	ndraen v modi	SAND			
						19 5' 10 4' Da	ark gray, meun	CLAY			
	·					10.5-19.4 Da	ark gray/brown				
20 -	<u> </u>					19.4'-20.0' S/	ND and GRA	VEL.			
						20.0°-21.0° Re	ed/brown, soft	CLAY.			
										600000000	
						-					21' = BOTTOM OF
											201110
				·	1	1					
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						4					
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Sampi	е Тур	es:							Backfill Well	Kev	
	- 1	S=Split S	poon:	2"	·						
		R= Rock	Core:						Cement		
	N = ASTM D1586								Sand		Bentonite
1								en de la constanti de la consta			

-				T			I		r		
PRO	DUCT	'ONMEN 'S & SERVI	<b>tal</b> Ces, INC.		Subsurfa	ce Log	Hole No.:4		Date Starte	d:	06/03/96
							Sheet	1of 1	Date Finish	ed:	06/03/96
Clie	nt:	NYSDEC			Method of	Investigatio	n:Direct push method	l, Geoprobe	tooling, 2-ir	ch diam	eter, 4-foot long
	Ga	stown Spo	ortsmen's	Club			soil probe.		•		, and
Locat	ion:	Tonawa	nda, N.Y.								
Projec	ct No.	: B1113				Drilling Co	b.: Environment	al Products	& Services	Weath	er:
Proj. I	Mgr:	D. Ellsw	orth			Driller:	R.	Varno		65-70 d	legrees F, light
Geolo	gist:	T. Burm	eier			Drill Rig:	Conc	cord 9200		rain	
Depth		<del></del>	Sample	r —		4	Commute.		Field		Groundwater
(ft.)			Blows		Recovery		Sample		Analytical	Well	and Other
0_	No.	<u>Depth (ft.)</u>	/6*	"N"	(ft.)	<u> </u>			Readings	Details	Observations
	S1	0-4			3.8	0.0'-1.8' TOP	SOIL, trace coal.				
					•	1 8'-4 4' Voliou	ulbroum firm alighthy maint .		BY RAIN		
							worowa, iam, sigaliy moist, i	Silly CLAT.			
		<u> </u> -				-					
_	S2	4.8			34	4.4'-5.5' Sandy	CLAY.				
> -						E EL O DIATO IL	····	_			
		<u> </u>				clayey, fine SA	m gray/prown, mottled, loose	э.			FAINT PETROLEUM
											ODOR OBSERVED
											6.5'
	S3 8-12					1					6.5'
	<u>S3</u>	8-12			4.0	4					
10 -						9.3'-10.1' Yello	ow/brown, firm, silty CLAY.				
						10.1'-11.3' Yell	low, medium SAND.				
					<u> </u>	11.3'-12.0' Gra	ay, medium SAND.				
					-						
											12' = BOTTOM OF
											BORING
15 –											
			······		<b> </b>						
20 -									1		
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Sample	зтур	es: S=Snlit S	0000	<b>.</b>				В	ackfill Well H	Key	.
		R= Rock	Core:	2					Cement		Native Fill
									Sand		
	1	N = ASTM	D1586						Sand		Dentonite

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E	nvir	onment	tal					·	Data Starta		
PROD	DUCT	S & SERVI	CES, INC.		Subsurfa	ce Log	Fiole No.	.J 1 of 1	Date Starte	u. od:	06/03/96
Clier	 nt:	NYSDEC			Method of	Investigatio	Direct pu	ish method Geoprot	e tooling 2-ir	eo. Ich diam	eter 4-foot long
	Gast	town Spor	tsmen's C	lub		U	soil prob	e.			, resting
Locati	on: t No	Tonawan	ida, N.Y.			Drilling Co	 	wironmental Product	s & Senvices	Mosth	
Proj. N	Agr:	D. Ellswo	orth			Driller:	) CI	R. Varno	s a services	65-70 c	legrees F. light
Geolo	gist:	T. Burme	eier			Drill Rig:		Concord 9200		rain	·····
Depth		I	Sample	r	1	<b>.</b>	San	nole	Field	14/-14	Groundwater
(n.)	No.	Depth (ft.)	Blows /6*	-N"	Recovery (ft.)		Desci	ription	Readings	vveii Details	Observations
	S1	0-4			4.0	0.0'-2.0' TOP	SOIL, trace co	al .			
									RAIN		SAMPLES 0.0 - 12.0
			-			2.0'-8.0' Light	gray/brown to t	yellow/brown to red/brown,			
					<u>_</u>		.,				
_	S2	4.8			3.6						
5 -											
					*	-					
											6.5'
	S3 8-12 4.0					8.0'-9.5' Yello	w/red, silty CL/	AY with loose, very fine			
		0-12			4.0	sand.					
10 -						19.5-11.0 Yelli	ow/brown, mor	lied, silly CLAY.			
						11.0'-12.0' Me	dium gray/brov	wn, fine SAND.			
										AIIIIIIIIII	12' = BOTTOM OF
	<u>.</u>					-					BORING
						-					
15 -						-					
						-					
						-					
20 -						1					
			; 			-					
						-					
						-					
						-					
						-					
ļ											
Sampl	е Тур	bes:							Backfill Well	Key	
		S=Split S	Spoon: : Core:	2"					Cement		Native Fill
		N = ASTA	1 D1586						Sand		Bentonite
									111 <b>1</b>		

PRO	Environmental PRODUCTS & SERVICES, INC.				Subsurfa	ce Log	Hole No. : 6	Date Starte	ed:	06/03/96
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				5	Sheet 1of 1	Date Finish	ied:	06/03/96
Clier	nt:	NYSDEC	2		Method of	Investigatio	n: Direct push method, Geoprobe to	oling, 2-inch diame	ter, 4-foot	long soil
	Ga	stown Spo	ortsmen's	Club			probe.			-
Locati	on:	Tonawa	nda, N.Y.		<u> </u>				1	·····
Projec	X NO.	: 81113 D Ellew	orth			Drilling Co	D.: Environmental Produ	cts & Services	Weathe	
Geolo	aist <sup>.</sup>		eier			Drill Rig	R. varno Concord 920	n	rain	legrees F, light
Depth	<u>]</u>		Sample					Field		Groundwater
(ft.)		[	Blows	I	Recovery	1	Sample	Analytical	Well	and Other
0_	No.	Depth (ft.)	/6*	-N-	(ft.)		Description	Readings	Details	Observations
	S1	0-4			2.5	0.0'-1.5' TOP	SOIL, trace coal.			
						1.5'-6.5' Tan,	yellow/brown, mottled, firm to soft,	RAIN		
						silty CLAY.				
						-				
						-				
5 _	S2	4-8			4.0	1				
				:	1					
	•				1	  6 5'-8 0' Grade	s to medium grav			PETROLEUM ODOR
				<u> </u>			s to mouldin gray.			AND SHEEN OBSERVED AT 6.7
			<u> </u>							
						-				8' = BOTTOM OF BORING
10 -				ļ		-				
						]				
						1				
					<b>+</b>	-				
15 -			<u>.</u>							
						1				
						-				
						-				ľ
20 -					·					
						-				
					<u> </u>					
Sampl	e Tvn	es:	I		•	L		Backfill Molt	I. Kov	
p/	, P	S=Split S	poon:	2"					Aunum	
		R= Rock	Core:					Cement		Native Fill
	I	N = ASTM	I D1586					Sand		Bentonite

<u> </u>							· · · · · · · · · · · · · · · · · · ·			
EI PROI	Environmental PRODUCTS & SERVICES, INC.				Subsurfa	ce Log	Hole No. : 7	Date Started	d:	06/03/96
						-	Sheet 1of 1	Date Finishe	ed:	06/03/96
Clien	t: Gasi	NYSDEC town Sport	c tsmen's Cl	lub	Method of I	nvestigation	Direct push method, Geoprobe to probe.	ooling, 2-inch dian	neter, 4-fo	oot long soil
Location	on:	Tonawar	nda, N.Y.		<u> </u>					
Projec	t No.:	B1113				Drilling Co.	.: Environmental Product	s & Services	Weathe	eri
Proj. N	Agr:	D. Ellswo	orth			Driller:	R. Varno		65-70	degrees F, light rain
Geolog	gist:	T. Burme	eier			Drill Rig:	Concord 9200	) 		
Depth		<del></del>	Sample	T	1	4	Sampla	Field		Groundwater
(ft.) 0_	No.	Depth (ft.)	Blows /6*	"N"	Recovery (ft.)		Description	Analytical Readings	Well Details	and Other Observations
	\$1	0-4			3.4	0.0'-2.0' TOP	SOIL.	MICROTIP PID AFFECTED BY		
						2.0'-6.0' Yello	w/brown and gray, firm to soft, slightly	rcally .		
						moist, silty CL	AY.			
5 -	<u>\$2</u>	4-8			4.0					
		[				6.0'-8.0' Grade	es to sandy CLAY.			
						-				AND SHEEN OBSERVED AT 6.8'
										8' = BOTTOM OF
10 -	-					-				Dortanto
						-				
									:	
									i	
15 -						-				
						] -				
						-				
20 -						-				
						]				
						4				
					 	ł				
					1	1				
					+	-				
Sample	е Тур	es:	L	L	<u></u>	I		Backfill Well K	l Key	
		S=Split S R= Rock	poon: Core:	2"				Cement		Native Fill
		N = ASTN	1 D1586					Sand		Bentonite

PRO			tal CES. INC.		Subsurfa	ce Log	Hole No.	: 8	Date Started	d:	06/03/96
						0	Sheet	1of 1	Date Finishe	ed:	06/03/96
Clier	nt: Gast on:	NYSDEC own Spor Tonawar	; tsmen's C nda, N.Y.	lub	Method of I	nvestigation	Direct pu soil probe	sh method, Geoprobe e.	tooling, 2-inch	diameter	r, 4-foot long
Projec	t No.:	B1113		-	1	Drilling Co.	.: Fr	vironmental Products	& Services	Weathe	er:
Proj. N	/lgr:	D. Ellswo	rth			Driller:		R. Varno		65-70 0	degrees F.
Geolo	gist:	T. Burme	ier			Drill Rig:		Concord 9200		light rai	n
Depth			Sample	•					Field		Groundwater
(ft.)			Blows		Recovery		Sar	nple	Analytical	Well	and Other
0	No.	Depth (ft.)	/6*	"N"	(ft.)		Desci	ription	Readings	Details	Observations
ľ	S1	0-4			4.0	0.0'-2.0' TOP	SOIL.		MICROTIP PID		NO ODOR OR
					1				RAIN		SHEEN OBSERVED
	2 0'-6 0' Tan vellow/							silty CLAY.			
							,				
	62	4.0			3.4	1					
5 -	52	4-8			3.4	1					
								- 1-4-4-4 - 10 - <del>-</del>			
						some black bl	green with tai ebs.	n interbeds, silty CLAY,			
					· · ·						8' = BOTTOM OF
10 -											
15 -											
					····						
20 -											
										•	
					·····						•
					· ··· · ···						
								r <del></del>			
Sampl	е Тур	es:							Backfill Well	Key	
		S=Split S	poon:	2"					Comost		Native Fill
		R= Rock	Core:								
	I	N = ASTM	D1586						Sand		Bentonite

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PROI	nvir	onmen S & SERVIO	tal ces. inc.		Subsurfa	ce Log	Hole No.	.: 9		Date Starte	d:	06/03/96
						Ū	Sheet	1of 1		Date Finish	ed:	06/03/96
Clier	nt: Gast	NYSDEC town Sport	; tsmen's C ada: N Y	lub	Method of	Investigatio	n:Direct pus probe.	sh method, Geoprol	be toolir	ng, 2-inch diai	meter, 4-	foot long soil
Projec	t No	· B1113	idd, it. i.		1	Drilling Co	<u>۲</u>		ducte	. Services	Weathe	
Proi	Mar <sup>.</sup>	D Fllswa	orth			Driller		R Varo	naucis i	& Services	65-70	dearees F
Geolo	aist:	T. Burme	eier			Drill Rig		Concord 9	200		light ra	ain
Depth			Sample							Field	·	Groundwater
(ft.)		ľ	Blows	T	Recovery	1	Sa	mple		Analytical	Well	and Other
	No.	Depth (ft.)	/6*	-N-	(ft.)		Desc	ription		Readings	Details	Observations
	S1	0-4			4.0	0.0'-2.8' TOP	SOIL.					NO ODOR OR SHEEN OBSERVED
			•			4			F	RAIN		0.0' - 8.0'
			•			2.8'-8.0' Tan,	yellow/brown,	mottled, silty CLAY.				
						-						
5 -	<u>\$2</u>	4-8			3.6	-						
				ļ		_						8' = BOTTOM OF BORING
10 -				ļ					Ì		:	
						]			.			
						-						
						-						
				ļ		-						
15 -						1						
						]						
			·••-			-						
						-						
20 -	· ·					-						
						1						
					<u> </u>	4			·			
				ļ		-						
						4						
						J						
			<u>.                                    </u>									
						-						
Sampl	е Тур	es:				· · ·			B	ackfill Well	Key	
		S=Split S	Spoon:	2''						Cement		Native Fill
		R-ROCK					•			Sand		Bentonite
		N = ASTN	1 D1586							Sand		Dentonite

							· · · · · · · · · · · · · · · · · · ·					
PRO		vironme	ntal		Subsurfa	ce Log	Hole No.	: 10		Date Starte	d:	06/03/96
			20, 110.			Ŭ	Sheet	10	f 1	Date Finishe	ed:	06/03/96
Clier	nt:	NYSDEC	;	· ·	Method of	Investigation	n: Direct p	ush method,	Geoprob	e tooling, 2-ii	nch diar	neter, 4-foot long
	Gast	town Spor	tsmen's (	Club			soil pro	be.				-
Locati	on:	Tonawar	ida, N.Y.									· · ·
Projec	t No.:	B1113				Drilling Co	o.: Er	nvironmental	Products	& Services	Weathe	er:
Proj. N	ngr:	D. Eliswo	ortn Nor			Driller:		R. Vi	arno		light ra	aegrees F, lin
Denth	gist.	I. Dunne	Sample				•	COLCO	10 9200	Field		Groundwater
(ft.)			Blows		Recovery	1	Sa	mple		Analytical	Well	and Other
0	No.	Depth (ft.)	/6"	"N"	(ft.)		Desc	ription		Readings	Details	Observations
	S1	0.4			35	0.0'-2.2' TOP	SOIL.			MICROTIP PID		NO ODOR OR
		0.4		<u> </u>		1				AFFECTED BY		0.0' - 8.0'
								Game all shalls and				
						CLAY.	yenow/brown	, ann, signuy me	oist, siity			
								•				
L C	S2	4-8			3.0	4.0'-8.0' Tan,	gray, yellow/t	prown, silty CLAN	Y.			
						4						
						-						
												8' = BOTTOM OF
						-						BORING
10 -												
						-						
				ļ								
						1						
15 -						-						
		····-										
				ļ								
						-						
20 -						-						
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						]						
						1						
						-						
						4						
				L								
						1						
						4						
						4						
						L						
Sampl	е Тур	es:							£	Backfill Well I	<еу	
		S=Split S	Spoon:	2"						Cement		Native Fill
		R= Rock	Core:	·								
		N = ASTN	1 D1586							Sand		Bentonite

PROD		vironme s & SERVIC	ental CES, INC.		Subsurfa	ice Log	Hole No.	: 11	4	Date Starte	d:	06/03/96
Clien	nt: Gast on:	NYSDEC town Spor Tonawar	; tsmen's C nda, N.Y.	L Club	Method of	Investigation	: Direct p soil prot	ush method, Ge be.	eoprobe t	cooling, 2-inch	diamete	er, 4-foot long
Projec Proj. N Geolo	t No. /gr: gist:	: B1113 D. Ellswo T. Burme	orth sier			Drilling Co Driller: Drill Rig:	.: E	nvironmental Pro R. Var Concord	oducts & no I 9200	Services	Weathe 65-70 de light rain	er: egrees F,
Depth (ft.) 0	No.	Depth (ft.)	Sample Blows /6*	-N-	Recovery (ft.)		Sa Desc	mple ription		Field Analytical Readings	Well Details	Groundwater and Other Observations
	S1	0-4			3.6	0.0'-2.0' TOP 2.0'-8.0' Yellor Grades to me	SOIL. w/brown, mo dium gray at	ttled, silty CLAY. 4.0'.		MICROTIP PID AFFECTED BY RAIN		NO ODOR OR SHEEN OBSERVED 0.0' - 8.0'
5 -	S2	4-8			1.2							·
10 -												8' = BOTTOM OF BORING
5												
) _												
						,						
ample	e Typ	es: S=Split S R= Rock (	poon: Core:	2"		L		Ē	E	Backfill Well F Cement	Key	Native Fill Bentonite

PRO		vironme s & SERVIO	ental CES, INC.		Subsurfa	ce Log	Hole No.	.: 12		Date Starte	d:	06/03/96
		· · ·					Sheet	1of 1		Date Finish	ned:	06/03/96
Clie	nt: Gasi	NYSDEC	; tsmen's C	lub	Method of	Investigatio	on: Direct p soil pro	bush method, Geo be.	oprobe	e tooling, 2-i	inch diai	meter, 4-foot long
Locat	ion:	Tonawan	ida, N.Y.			r						
Projec	x No.	: B1113				Drilling Co	o.: E	nvironmental Proc	ducts	& Services	Weath	er:
Proj. I	Mgr:	D. Eliswo	orth			Driller:		R. Varno			65-70 d	egrees F,
Geolo	gist:	I. Burm	eier			Drill Rig:	. <u> </u>	Concord 92	200		ilyra raii	
Depth			Sampl	e	1 _	-	Sa	mnle		Field		Groundwater
(π.)			Blows		Recovery		Desc	ription	1	Analytical	Well	and Other
0	No.	Depth (ft.)	/6"	- <u>N-</u>	(ft.)					Readings	Details	Observations
	S1	0-4			3.6	0.0'-2.2' TOP	SOIL.		۸ بر	AFFECTED BY RAIN		NO ODOR OR SHEEN OBSERVED 0.0' - 8.0'
					-	2.2'-8.0' Tan,	yellow/brown,	mottled, silty CLAY.				
5 -	<u>\$2</u>	4-8			3.7	-						
						<u> </u>						
												8' = BOTTOM OF BORING
10 -												
			· ·									
15 –												
										:		
20 -												
				~								
			·····		·				ľ			
			,									
									1			
Samp	le Ty	pes:			4	I <u></u>			L B	ackfill Well	Key	
		S=Split S	Spoon:	2"						Cement		Native Fill
										Sand		Bentonite
[		N = ASTN	1 D1586							Sana		

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		vironme			Subsurfa	celoa	Hole No	.:13	Date Starte	ed:	06/04/96
		IS & SERV	10E3, INC.		Oubsund	oc Log	Sheet	1of 1	Date Finist	hed.	06/04/96
Clie	nt: Gas	NYSDEC town Spor	tsmen's (	Club	Method of	Investigatio	on: Direct J soil pro	bush method, Geopro be.	be tooling, 2-	inch dia	meter, 4-foot long
Proie	ct No.	: B1113	<u>iua, iv. r.</u>			Drilling C	o: F	nvironmental Product	s & Services	Weath	er
Proj.	Mgr:	D. Ellsw	orth			Driller:		R. Varno		65-70	degrees F
Geolo	gist:	T. Burm	eier			Drill Rig:		Concord 9200		cloudy	
Depth	ļ		Sampl	e	····	1	•		Field		Groundwater
(ft.)			Blows		Recovery		Sa Desc	mple	Analytical	Well	and Other
0	No.	Depth (ft.)	/6"	<u>"N"</u>	<u>(ft.)</u>				Readings	Details	Observations
	S1	0-4			3.2	0.0'-1.8' Crus	shed limeston	e GRAVEL and CLAY, FILL			
						1.8'-4.2' Medi trace slightly i	um gray/green moist sand.	and yellow/brown CLAY,			
						]					
5 -	S2	4-8			2.2	4.2'-11.0' Tar	n, yellow/brov	m, silty CLAY.			1
ļ						. 					
						-					
	S3 8-12 4.0										SAMPLES WET
	<u>\$3</u>				4.0	4					AT 8.0' PETROLEUM
10 -						-					ODOR AND SHEEN OBSERVED IN
						11.0°-14.0° M	edium brown,	fine to medium SAND.			SAMPLES 8.0' - 10.0'
	S4	12-16			4.0						
						1					
15 -						14.0'-16.0' Gi some fine bla	rades to gray, ck particles (ı	fine to very fine SAND, unknown).			
	S5	16-20			4.0	16.0'-19.0' Me SAND.	dium yellow/b	rown, loose, medium			
						1					Hydrocarbon odor at
						19.0'-20.0' Gr	ades to medi	um gray, firm, fine SAND.			18.0' Free oily substance
20 -						20.0'-22.0' Gr	ades to medi	um SAND.			19.0' - 22.0'
	S6	20 -22			2.0						
						22.0' Refusal	on black, rou				22' = BOTTOM OF
											BORING
					<u> </u>						
					<u>_</u>						
							•	······			
Samp	le Typ	es: S=Split S	poon.	ייכ					Backfill Well	Кеу	
		R= Rock	Core:						Cement		Native Fill
		N = ASTM	D1586				·		Sand		Bentonite

PR		vironme			Subsurfa	ice Loa	Hole No.	:14	Date Starte	ed:	06/04/96
			1020, 110	<i>.</i>			Sheet	1of 1	Date Finish	ed:	06/04/96
Clie	nt: Gas	NYSDEC	; tsmen's C	lub	Method of	Investigatio	on: Direct p soil pro	oush method, Geop be.l	robe tooling, 2-i	nch dian	neter, 4-foot long
Locati	ion:	Tonawar	nda, N.Y.		1					1	<u> </u>
Projec	t No.	: B1113	orth			Drilling Co	).: El	nvironmental Produ	cts & Services	Weathe	er:
Goolo	vigr. aist:	D. Eliswo	brin			Drill Bim		R. Varno	0	65 deg	rees ⊢, cloudy
Denth	yısı.	1. Durne	Sampl					Concord 920	U Field		Groundwater
(ft)			Blows		Recovery		Sa	mple	Analytical	Wall	and Other
0	No.	Depth (ft.)	/6"	"N"	(ft)		Desc	ription	Readings	Details	Observations
-	S1	0-4			3.3	0.0'-0.5' GRA' 0.5'-4.0' Medi	VEL FILL. um yellow/bro	wn, silty CLAY.			
						-					
						4 0'-10 0' Top	vellow/brow	mottled sandy silty			
5 -	S2	4-8			3.2	CLAY.	, jenomonom	, momen, sandy, siny			
						-					
						-					
10 -											
						10.0'-15.0' Ye medium SAN	llow/brown, <b>i</b> o D.	ose, fine to			SAMPLES WET AT 10.0'
	S4	12-16			4.0						
15 -						15.0'-16.0' Me	dium gray, fin	e, clayey SAND.			
	S5	16-20			4.0	16.0'-22.5' Gra yellow/brown, from 18.0'-19.0	ay, loose, wet firm, medium D'.	, fine SAND. Grades to to fine SAND			
20 -											Free oily substance 19.5' - 22.5'
	S6	20 -22			4.0						
						22.5'-22.7' Dai 22.7'-24.0' Re	rk gray GRAV ddish brown, s	EL. soft CLAY.			Strong petroleum odor in gravel
								·			24' = BOTTOM OF
											BORING
	<u>а</u> т										
Sampi	e i yp	S=Split S R= Rock	Spoon: Core:	2"					Backfill Well	кеу	Native Fill
1		N = ASTN	D1586						Sand		Bentonite

	Env	vironme	ental	-	Cubaufa		Hole No.	:15	Date Starte	ed:	06/04/00
PR	ODUC	TS & SER\	/ICES, INC		Subsuna	ce Log	Sheet	1of 1	Date Finish	ed.	06/04/96
Clier		NYSDEC			Method of	Investigatio	Direct pus	h method. Geoprobe tor	ling 2-inch dia	meter 4-1	foot long soil
	Gast	town Spor	tsmen's C	lub			probe.				eeeling een
Locati	on:	Tonawar	nda, N.Y.	-		1				1	· · · · · · · · · · · · · · · · · · ·
Projec	t No.:	: B1113	th			Drilling Co	o.: Er	vironmental Product	s & Services	Weathe	er: Iroop F. elevatu
Geolo	vigr: aist:	T Burme	prin Pier			Drill Rig		R. varno Concord 9200		65 deg	rees F, cloudy
Depth			Sampl		~	Dimiting.		00110010 0200	Field		Groundwater
(ft.)			Blows		Recovery		Sar	nple	Analytical	Well	and Other
0_	No.	Depth (ft.)	/6*	"N"	(ft.)		Desci	ription	Readings	Details	Observations
	S1	0-4			4.0	0.0'-2.0' Crust	ned GRAVEL a	ind CLAY FILL.			
ļ											
						2.0'-8.0' Mediu	um yellow/brov	m, mottled, silty CLAY,			
						-					
5 –	<u>\$2</u>	4-8			4.0	-					
						-					
											7.0°
	<b>S</b> 3	8-12			4.0	8.0'-10.0' Yellow/brown, loose to firm, sandy, silty CLAY.					
	0										
10 -					[	10.0'-10.5' Me	dium SAND.				
						10.5°-11.5° Me	edium gellow/b	rown, sandy, silty CLAY.			
							<b>9 , ,</b>				
	<u>\$4</u>	12-16	· · .		4.0	-					
						13.5'-15.0' Gra	ay/brown CLAY	<b>.</b>			
15 -											
						yellow/brown a	dium/gray, me at 16.0°.	dium SAND, Grades to			Free oily substance 15.0' - 20.0'
	<b>S</b> 5	16-20			4.0						
	-					]					
						19.0'-20.0' Me	dium gray, silty	SAND.			
20 -											
						4					20" = BOTTOM OF
											DOMING
					<u>                                      </u>						
					·						
Sampl	Sample Types:							- to <b></b>	Backfill Well	Kev	
·	S=Split Spoon:2"										Matina Fill
		R= Rock	Core:						Cement		
		N = ASTN	1 D1586						Sand		Bentonite

PR	En	vironme			Subsurfa	ice Log	Hole No.:16	Date Started	<b>i</b> :	06/05/96
						- 3	Sheet 1 of 1	Date Finishe	d:	06/05/96
Clier	nt: Gas	NYSDEC town Spor	; tsmen's C	lub	Method of I	nvestigation:	Direct push method, Geoprobe probe.	tooling, 2-inch	i diamet	er, 4-foot long soil
Projec	on: t No ·	B1113	ida, N. T.			Drilling Co.	Environmental Products	& Sonvicos	Maath	
Proj. N	Agr:	D. Ellswor	rth			Driller:	R. Varno	a Services	55 d	egrees F, cloudy
Geolo	gist:	T. Burmei	er			Drill Rig:	Concord 9200		and w	indy
Depth	· _	,	Sample					Field		Groundwater
(fL) 0_	No.	Depth (ft.)	Blows /6*	"N"	Recovery (ft.)		Sample Description	Analytical Readings	Well Details	and Other Observations
	<u></u> S1	0-4			3.3	0.0'-3.0' Crusł	ned, fine GRAVEL FILL.	MICROTIP PID BACKGROUND		
						-				
						3.0'-4.0' Greer	n/gray CLAY with black patches.			
5 _	S2	4-8			0.0	4				
						-				
						8.0'-9.0' Greer	Vorav CLAY.	14.4 ppm		
	<u>S3</u> 8-12			3.4	9.0'-12.0' Yello	ow/brown, firm to loose, fine to				
10 -						medium SAN	7.8 ppm		Madamta	
										Hydrocarbon Odor and Sheen at
	S4	12-16		. <u> </u>	3.4	12.0'-16.0' Gre interbeds.	en/gray, fine SAND, occasional clay			8.0'-9.0'
15 -		-								
						16.0'-19.5' Green/gray, loose, medium to fine SAND.		8.0 ppm		Free oily substance
	55	16-20			3.7	Grades to firm	at 17.0', clay interbeds, thin black zones.			16.0' - 23.0'
20 -						19.5'-23.0' Loo	se, wet, fine to silty SAND.	20-55 ppm		
	S6	20 -24			3.0					
						23.0'-24.0' Rec	Idish brown, soft, plastic CLAY.			
										24' = BOTTOM OF BORING
					**					
Sample	е Туре	es:	I	ł	,	L		Backfill Well K	] ey	
		S=Split Sp R= Rock (	000n: Core:	2"	··			Cement		Native Fill
		N = ASTM	D1586					Sand		Bentonite

PR		vironme	ental VICES, INC	c.	Subsurfa	ce Log	Hole No.:17	Date Starte	Date Started: Date Finished:		
					1 4 - 4 - 4 - 6	1	Sheet 1of 1	Date Finish	ned:	06/05/96	
	n: Gas	NYSDEC	; tsmen's (	Club	Method of	Investigatio	n:Direct push method, Geoprobe probe.	tooling, 2-inch	diamete	r, 4-foot long soil	
Locati	on:	Tonawar	nda, N.Y.			•					
Projec	t No.	: B1113	• • • •			Drilling Co	D.: Environmental Product	s & Services	Weath	er:	
Proj. N	/gr.	D. Ellswo	orth			Driller:	R. Varno		55 deg	grees F, cloudy	
Geolo	gist:	T. Burme	eier			Drill Rig:	Concord 9200		and wi	indy	
Depth		·····	Sampl	e		_	Sampla	Field		Groundwater	
(ft.)			Blows		Recovery		Description	Analytical	Well	and Other	
0 _	No.	Depth (ft.)	/6"	<u>"N"</u>	<u>(ft.)</u>			Readings	Details	Observations	
	S1	0-4			3.4	0.5'-3.1' White	VEC FILL. 9 to green GRANULAR MATERIAL.				
1					1	1					
					<u> </u>	3.1'-4.2' Light	brown to yellow/brown, silty CLAY.				
				[		4					
Б ·	S2	4-8		ļ	4.0	4.2'-8.0' Black	to dark gray/green SILT.				
5 -											
						-					
						4					
	<b>S</b> 3	8-12			40	8.0'-9.2' Medi	um gray, silty CLAY.				
1						9.2'-11.0' Blac	k to dark gray/green, silty CLAY.	1			
10 -						-	•				
						110'105'0-					
						fine SAND.	aygreen to yenow/brown, mottled,			WATER AT 10.5	
	<b>S4</b>	12-16			40						
		12-10			4.0	12 5' 10 0' 7-					
						- 13.5-10.0 20	ne of tan, loose, tine SAND.				
15 -											
							·				
	\$5	16.20			4.0	16.0'-19.5' No	n-cohesive.			Free oily substance	
		10-20			4.0	1				16.0 - 22.0	
				ŀ		-		15 0000			
								10 ppm			
20						19.5'-20.0' Me	dium brown CLAY.				
20 7					2.0	20.0'-22.0' Loo	ose, fine SAND.				
	S6	20 -22			3.0	-					
						22.0-24.0' Re scattered 2" d	aaisn brown, solt CLAY, some ameter pebbles.				
						1	-				
						<b> </b>		· · · ·			
						4				BORING	
						-					
						-					
						ł					
				•							
Sampl	e Tyr	bes:						Backfill Well	Kev		
	- 1	S=Split S	poon:	2"							
		R= Rock	Core:	**				Cement			
		N = ASTN	l D1586					Sand		Bentonite	

PR	Environmental PRODUCTS & SERVICES, INC. Client: NYSDEC Gastown Sportsmen's Cl			>.	Subsurfa	ce Log	Hole No	.:18	Date Starte	əd:	06/05/96
		·					Sheet	1of 1	Date Finish	ied:	06/05/96
Clier	nt: Gasi	NYSDEC town Sport	; ismen's C ida, N.X	lub	Method of	Investigatio	n:Direct pu probe.	ish method, Geoprobe	e tooling, 2-inch	diamete	r, 4-foot long soil
Projec	t No	· B1113	ua, N.T.			Drilling Co	· F	nvironmental Produc	te & Services	Weath	
Proj. I	Mgr.	D. Ellswo	orth			Driller:	·	. R. Varno	as a services	55 d	egrees F. cloudy
Geolo	gist:	T. Burme	ier			Drill Rig:		Concord 9200		and v	vindy
Depth			Sampl	e					Field		Groundwater
(ft.)			Blows	1	Recovery		Sar	nple	Analytical	Well	and Other
0_	No.	Depth (ft.)	/6"	"N"	(ft.)		Desc		Readings	Details	Observations
	S1	0-4			3.2	0.0' -2.2' Crus	hed GRAVE	L FILL.			NO ODOR DETECTED 0.0'-24.0'
						- 2.2' - 3.0' CLA	Y FILL.				
						3.0' -3.5' COA 3.5' - 5.0' Gre	L. en/gray CLA`	Y, some wood.			
5	S2	4-8			4.0						
						5.0' - 6.2' Yello	ow/brown, cru	mbly SILT, non-cohesive.			
						6.2' - 9.0' Gre gray/black.	en/gray, silty (				
						-		•			
10	_ 53	8-12			4.0	9.0' - 11.0' Lig	ht green/gray				
10 -						-					
						11.0' - 12.0' Y	ellow/brown C	CLAY.			
	<b>S4</b>	12-16			0.5	12.0' -17.5' Me	dium gray, lo	ose, fine SAND.			
	-					,					
15 -						; 					
	S5	16-20			3.0	17.5' 20.0' M	dium acoutor				, _
					<u> </u>	17.5 - 20.0 1016	sulum gray/bh	Son CLAT.			
20 -						20.0' -21.5' Me	dium gray/bro	own SAND.			
	S6	20 -24			4.0	-					
			·			21.5' - 22.5' S	AND and sub	rounded GRAVEL.			
						22.3 - 24.0 Re	aaisn brown,	SON CLAY.			
											24' = BOTTOM OF
						] -					BORING
						-					
Sampl						<u> </u>					
camp	S=Split Spoon:2"									rey Allan	
	R= Rock Core:								Cement		
		N = ASTM	D1586						Sand		Bentonite

PR		vironm	ental VICES, INC		Subsurfa	ce Log	Hole No	.:19	Date Starte	ed:	06/05/96
Clie	nt:	NYSDEC			Method of	Investigatio	Sheet	10f 1	Date Finish	ned: diametor	06/05/96
	Gast	town Spor	tsmen's C	lub			probe.	si metiod, Geoplobe	- tooling, 2-inch		, 4-1000 10/1g Soli
Locat	on:	Tonawar	nda, N.Y.							T	
Projec	x NO. Mar	D Fllswa	orth				).: Е	nvironmental Produc	ts & Services	Weathe	er: earees El cloudy
Geolo	gist:	T. Burme	eier			Drill Ria:		Concord 9200	)	and w	/indy
Depth			Sampl	е		<u>J</u>			Field	1	Groundwater
(ft.)			Blows		Recovery		Sar	mple	Analytical	Well	and Other
0_	No.	Depth (ft.)	/6"	אי	<u>(ft.)</u>		Desc	ription	Readings	Details	Observations
	S1	0-4			3.3	0.0° -3.0° GRA	VEL FILL.				NO ODOR DETECTED
											0.0'-24.0'
					-	3.0' -4.0' Tan,	silty CLAY.				
						4.0' - 8.0' Blac	k, organic, cla	iyey SILT, partly crumbly an	d		
5 -	<u>\$2</u>	4-8			4.0	granular. Gra	des to gray/gi	reen and yellow/brown,			
							•				
	S3	8-12			34	8.0' - 10.0' Lig	ht gray/green,	silty CLAY.			
10 -						10.0' -10.5' Ma	ottled, fine to n	nedium SAND.	1		
						] 10.5' - 10.9' G 10.9' - 12.0' Fi	Fray/green CL	AY · · · · · · · · · · · · · · · · · · ·			
						12 0' - 15 5' G	rav/brown too	so wot fing SAND			
	S4	12-16			4.0	12.0 4 10,0 0	ay/010001, 100	se, wei, inte SAND.			
15 -						15.5' - 16.0' Gi	rav/brown, silt	CLAY.			
						16.0' - 22.5' Lo	oose, fine SAN	ND. Grades to sitty	:		
	35	16-20			2.0	at 18.5' - 20.0'.	,				
						-					
20 -											
	S6	20 - 24			4.0						
					-	4					
						27 5' - 23 2' G	ov angular to				
						23.2 - 24.0 Re	eddish brown,	soft CLAY.			
											24' = BOTTOM OF BORING
	_										
				•							
						L					
Sampl	Sample Types:								Backfill Well	Кеу	
	S=Split Spoon: <u>2"</u> R= Rock Core								Cement		Native Fill
									Sand		Bentonite
	i	N = ASTN	I D1586						Juli Sanu		

<b></b>										
PR	Env ODUC	vironme TS & SERV	ental /ICES, INC		Subsurfa	ce Log	Hole No.:20	Date Starte	d:	06/06/96
							Sheet 1of 1	Date Finish	ed:	06/06/96
Clier	nt:	NYSDEC	;		Method of I	nvestigation:	Direct push method, Geoprobe tool	ing, 2-inch diam	eter, 4-foo	t long soil
	Gast	town Sport	smen's Cl	ub			probe.			-
Locati	on:	Tonawan	da, N.Y.				·		<b></b>	
Projec	t No.:	B1113				Drilling Co.	Environmental Product	s & Services	Weathe	er:
Proj. N	/lgr:	D. Ellswo	rth			Driller:	T. Osier		68	-80 degrees F,
Geolo	gist: .	T. Burme	ier		<u>z.</u>	Drill Rig:	Concord 9200		sui	ny
Depth		r	Sample	<u>e</u>	- <b>-</b>	1		Field		Groundwater
(fL)			Blows		Recovery		Sample	Analytical	Well	and Other
0_	No.	Depth (ft.)	/6"	"N"	(ft.)		Description	Readings	Details	Observations
	S1	0-4			2.3	0.0'-1.1' GRA\	/EL FILL.			NO ODOR
						1.1'-4.5' COAL	., white GRANULATED MATERIAL,			0.0 - 24.0
						black SILT FI	LL.			
	ļ					_				
						1				
						4 5'-6 0' Yellov	w/brown mottled dense CLAX			
5 –	52	4-8	•		3.5	-				
	ļ									
						6.0'-8.0' Gray/	prown to yellow/brown, mottled, soft,			
							i interbedded, inin, line SAND layers.			
						] 180'-94' Талу	ellow/brown_silty_CLAY			
	<u>S3 8-12 4.0</u>									
			:		1	9.4'-12.0' Yello	w/brown, soft to dense, silty SAND.			
10 -						-				
						]				
						_				
	S4	12-16			4.0	12.0'-13.4' Yel	low/brown, loose, wet, fine SAND.			
					1	13.4'-16.0' Me	dium gray/brown, silty CLAY with fine			
					·	sand.				
15 -										
					10	16.0'-19.1' Yell	ow/brown, loose, fine SAND.			
	\$5	16-20			4.0					
						19.1'-19.9' Gra	y/brown, sandy SILT.			
20 -						19.9'-20.0' Sut   20.0'-23.2' Mer	angular GRAVEL, 2" in diameter. lium to fine SAND			
	S6	20 - 24			4.0					
				-			*			
	·					23.2 -23.4 GR	AVEL and SAND. Idish brown CLAY.			
<b>i</b> i						·		1	<u>Community</u>	24' - BOTTOM OF
						-				BORING
ĺ										
Samol	ample Types:					4		Парісі і і і і і і і і і і і і і і і і і і		·····
Cample	S=Split Spoon: 2"							Backtill Well P	.ey	
		R= Rock	Core:					Cement		Native Fill
			D1600					— Ⅲ Sand		Bentonite
		N = ASTM	D1586							

PR	Env	vironme	ental /ICES, INC		Subsurfa	ce Log	Hole No.:21		Date Started	d:	06/06/96
							Sheet 1o	of 1	Date Finishe	ed:	06/06/96
Clier	nt: Gasi	NYSDEC town Sport	smen's C	lub	Method of I	nvestigation:	Direct push method, G probe.	Geoprobe to	ooling, 2-inch	diamete	er, 4-foot long soil
Projec	on: t No '	R1113	<u>ua, N. F.</u>			Drilling Co		Products	8 Sanvicas	Mosth	
Proj. N	Aar:	D. Ellswoi	rth			Driller:		sier	a Services	68 to 8	si. 80 degrees E
Geolo	gist:	T. Burmei	er			Drill Rig:	Conco	rd 9200		sunny	
Depth			Sample	e					Field		Groundwater
(ft.)			Blows		Recovery		Sample		Analytical	Well	and Other
0_	No.	Depth (ft.)	/6"	<u>"N"</u>	(ft.)		Description		Readings	Details	Observations
	S1	0-4			2.6	0.0'-5.8' CINDI	ERS, FILL.		MICROTIP PID		
						1					
						-					
5 -	S2	4-8			2.3						
						5.8'-8.0' Black,	, soft SILT.				HYDROCARBON
											ODOR OBSERVED AT 5.8'- 8.0'
						1					
						8.0'-11.0' Blacl	K PEBBLY MATERIAL.				SATURATED WITH
	53 8-12 3.6			3.6			1:	20.0-30.0 ppm		OILY SUBSTANCE	
10 -						-					
						11.0'-12.0' Tan	, soft SILT.				
							· · · · · · · · · · · · · · · · · · ·				12 - POTTON OF
					· · · · ·						BORING
15 -											
20 -											
											•
									•		
			_								
				•	·						ŀ
ŀ											
Sample	e Type	es:						h D	ackfill \A/all K		
	¥ 11 - 2	S=Split Sp	oon:	_2"				D	COUL AACIE V		
		R= Rock (	Core:						Cement		Native Fill
		N = ASTM	D1586						Sand		Bentonite

PR	Environmental PRODUCTS & SERVICES, INC. Client: NYSDEC Gastown Sportsmen's C				Subsurfa	ce Log	Hole No	.:22	Date Starte	ed:	06/06/96
							Sheet	1of 1	Date Finish	ned:	06/06/96
Clier	nt: Gasi	NYSDE0	C rtsmen's C	Club	Method of	Investigatio	n:Direct pu probe.	ish method, Geoprob	e tooling, 2-inch	i diamete	r, 4-foot long soil
Locati	on:	Tonawa	nda <u>, N.Y.</u>			<u> </u>				r	
Projec	t No.	: B1113				Drilling Co	ь.: Е	nvironmental Produc	cts & Services	Weath	er:
Proj. r	vigr:	D. Eliswo				Driller:		I. Osier		68 to 8	30 degrees F,
Geolo	gist.	I. Burme						Concord 9200	)	sunny	
Depin		r	Sampi	e 		-{	Sa	mole	Field		Groundwater
(10)			Blows		Recovery		Desc	ription	Analytical	Detaile	and Other
° -	INO.		/6		<u>μ. (π.)</u>	0.0'-2.0' GRA		S BRICK and tan	Readings	Details	Observations
	51	0-4			3.0	GRANULAR	ATERIAL, FI	LL.			
						2.0'-4.0' Tan, :	sandy, silty Cl	LAY.			
						-			i l		
											N/DDOGADDON
5 -	S2	4-8			1.6	silty CLAY.	ium gray/gree	n to yellow/brown, mottled,			ODOR OBSERVED AT
ľ											4.0' to 11.0'
	·					1					
						-					
	63	8 1 2			1.0						
		0-12			4.0						
10 -						-					
											SATURATED WITH
						12.0'-13.0' Fin	e, sandy GRA	VEL.			AT 11.0' TO 20.0'
	<u>\$4</u>	12-16			3.5	13.0'-14.0' Gm	v to vollow/br				
						13.0-14.0 012	ay to yenow or	own, son CLAT.			
1.5						14.0'-16.0' Me	dium gray/gre	en, fine, clayey SAND.			
15 -											
		· - · · · · · · · · · · · ·				16.0'-17.0' Mei	dium grav/bro	wn, semi-firm SILT,			
	<u>S5</u>	16-20			2.8						
						17.0°-20.0° Med	dium gray/brov	wn, sandy CLAY.			
						]					
20 -						Ļ					
											20' = BOTTOM OF
											BURING
										ĺ	
				•							
		<u> </u>									
								(			
Sampl	ample Types:								Backfill Well	Kev	
	S=Split Spoon:2"										
	R= Rock Core:								Cement		Native Fill
	i	N = ASTN	1 D1586						Sand		Bentonite

<u></u>											
PRO	Environmental PRODUCTS & SERVICES, INC. Client: NYSDEC Gastown Sportsmen's C				Subsurfa	ace Log	Hole No.:	23	Date Starte	d:	06/07/96
				_			Sheet	1of 1	Date Finish	ed:	06/07/96
Clien	t: Gas	NYSDE0 town Spo	C rtsmen's ·	Club	Method of I	nvestigation:	Direct pus probe.	h method, Geoprobe tooli	ng, 2-inch dian	neter, 4-fo	ot long soil
Locatio	on:	Tonawa	nda, N.Y.	_							
Projec	t No.:	B1113				Drilling Co.	: Er	vironmental Products	& Services	Weathe	er:
Proj. N	lgr:	D. Ellswo	rth			Driller:		T. Osier		68 to 7	75 degrees F,
Geolog	gist:	T. Burme	ier			Drill Rig:		Concord 9200		cloudy a	and rainy
Depth			Sample	9	_				Field		Groundwater
(fL)			Blows		Recovery		San	nple intine	Analytical	Weli	and Other
0	No.	Depth (ft.)	/6"	<u>"N"</u>	(ft.)		Desci		Readings	Details	Observations
	S1	0-4			1.4	0.0'-4.0' Crust	hed GRAVEL,	BRICK, and tan silty CLAY			
						7					
						-1					
				L		-					
	52	4.0			3.2	4.0'-8.0' Light	brown, silty C	LAY.			
5 –	52	4-0			5.2	Grades to blac	ck of grayigier	si at /.2.			
						4					
						1					
			·······			-{					OILY SUBSTANCE
	<u>S3</u>	8-12			0.0						AT 7.2' TO 24.0'
10 -					·	-					
						-					
1											
	<b>S4</b>	12-16			4.0	12.0'-15.5' Yel	llow/brown, so	ft, silty CLAY.			
		12-10			4.0	-					
						4					
15						1					
13						15 5'-20 0' Me	dium arav/bro	wn fine SAND Becomes			
				<u> </u>		wet at 16.0'. G	rades to silty	SAND at 18.0'.			
	<u>\$5</u>	16-20			4.0	4					
					· · · · · · · · · · · · · · · · · · ·	-					
20 -						20.0' 20.8' Cra					
	S6	20 - 24			4.0	20.8'-21.2' Cor	area SAND an	d rounded GRAVE			
						21.2'-24.0' Red	ddish brown, v	very soft CLAY.			
						-					
						4					24' = BOTTOM OF
						]				· ·	DURING
					1						
l t						1					
						-					
Sec. 1	т	l			L	J			L	l	
Sample	e type	95) 95)		2"					Backfill Well F	<ey< td=""><td></td></ey<>	
	S=Split Spoon:2" R= Rock Core:								Cement		Native Fill
									a 1		TITA Bartanita
		N = ASTM	D1586						Sand		Benionite

	<b>.</b>			~						Г		
PR	PRODUCTS & SERVICES, INC.				Subsurfa	ice Log	Hole No.	24		Date Started	d:	06/07/96
L							Sheet	1of	1	Date Finishe	ed:	06/07/96
Clien	t	NYSDEC	;		Method of	Investigation:	Direct pus	h method, Geopr	robe toolin	g, 2-inch diame	eter, 4-foo	t long soil
I	Gas	town Sport	tsmen's C	lub			probe.					
Locati	on:		ida, N.Y.		<u> </u>			· · · · · · · · · · · · · · · · · · ·				
Projec	t NO.: Aar		eth			Drilling Co.	: El	nvironmental F	Products	& Services	Weathe	er:
Goolo	rigi. niet:	T Rurmo	ior						ler		68 to	5 degrees F,
Denth	jist.	T. Dunne	Sampl					Concord	19200		cioudy	Groupdwater
(ft)		1	Blows		Recovery	-	Sa	mple				and Other
0	No.	Depth (ft.)	/6"	-N-	(A)		Desci	ription		Readings	Netaile	Observations
Ŭ -	S1					0.0'-2.0' Black	CINDERS, G	RAVEL, CLAY and	SAND.	MICROTIP PID		
	- 51	0-4			4.0	-{				AFFECTED BY		
									:	RAIN		
						Grades to med	green to yello dium brown w	w/brown, mottled C ith gravel at 4.0°.	LAY.			
				]		Grades to yello	ow/brown at 7	. <b>0'</b> .				
						-						HYDROCARBON
5 -	_\$2	4-8			4.0	4						ODOR OBSERVED AT
												5.5
				· ·								
	````		·			7.0'-12.0' Yello	w/brown and	gray,				
						semi-firm SILT	", Increasing   1 - 12 0'	percent of				
	<u>\$3</u>	8-12			3.0		5-12.0.					
	)											
10 -						-				, i		
						1						
					·				ĺ			
	S4	12-16			3.0	fine SAND, tra	y and yellow/l ce coarse sar	prown, firm to soft, id.				
[									Ì			
					· · · · · · · · · · · · · · · · · · ·	{						
15 -						-				ľ		
						_						
	S5	16-20			4.0	16.0'-20.0' Gray/brown to speckled,						
					·	-						
						-						
20												
	<b>SE</b>	20.24			10	20.0'-24.0' Fine	e to medium S	SAND.				
	- 50	20 - 24				-						
						-						
										1		
						24.0' Roddich						
-						24.0 1(0001511	DIOWITCLAT	, 				
						1						24' = BOTTOM OF
												BORING
					1					ł		
ŀ					ł						1	
	·											
Sample		L	I		· · · · · · · · · · · · · · · · · · ·				ـــــــــــــــــــــــــــــــــــــ			
Sample	- ype	S=Split Sr	ooon:	2"					8	acknil vveli K	ey	
	R= Rock Core:									Cement		Native Fill
								ſ		Sand		Bentonite
		MICA - M	01200					L				

	Env	vironme			Subsurfa	celoa	Hole No.:25	Date Starte	d:	06/10/96
	0000		1020, 110		Oubound		Sheet 1of 1	Date Finish	ed:	06/10/96
Clien	it:	NYSDEC	;		Method of I	nvestigation:	Direct push method, Geoprobe too	ling, 2-inch dian	neter, 4-f	oot long soil
Locati	on <sup>.</sup>	Tonawan	ada NY	uD			probe.			
Proiec	t No.:	B1113			I	Drilling Co.	Environmental Produc	ts & Services	Weath	er
Proj. N	Agr:	D. Ellswo	rth			Driller:	T. Osier		75 dec	rees F. overcast
Geolo	gist:	T. Burme	ier			Drill Rig:	Concord 9200			
Depth			Sample	e				Field		Groundwater
(ft.)			Blows	[	Recovery		Sample	Analytical	Well	and Other
0_	No.	Depth (ft.)	/6"	"N"	(ft.)	ļ	Description	Readings	Details	Observations
	S1	0-4			3.0	0.0'-4.0' Tan, g	granular FILL.	MICROTIP PID		
						1				
						4 0'-5 5' Mediu	um brown to black, granular FILL			
5 -	S2	4-8			3.1			54.0 ppm		ODOR OBSERVED AT
						5.5'-12.0' Gray	green, slightly mottled,			4.0 10 23.2
						firm to soft (at Grades to ligh	8.0'), silty CLAY. t pink to vellow/brown_mottled			
						<b>.</b>		20.0 ppm		
						-				
	<u>S3</u> 8-12 2			2.7	_					
10 -										
								· .		
						12.0'-15.2' Yeli	low/brown, very fine to fine SAND.			
	<u>54</u>	12-16			4.0					
15										
15 -						15.2'-16.0' Gra	y/brown, silty, sandy CLAY.			
						16.0'-18.9' Med	lium gray/brown, loose, wet, very fine			
	S5	16-20			3.0	to fine SAND.				
						-				
						18.9'-20.0' Find	e SAND.			SATI IPATED WITH
										OILY SUBSTANCE
20 -						20.0'-23.0' Fine	e to Medium SAND.			AT 18.9° TO 23.2°
	S6	20 - 24		•	3.2					
						22 0' 22 2' Pou				
						23.2'-24.0' Red	dish brown CLAY on the tip of the			23.2' = BOTTOM OF
						sampler.	· · · · · · · · · · · · · · · · · · ·			BORING
						-				
						1				
				<u> </u>		-				
		ll				L				
Sample	е Тур	es:						Backfill Well K	(ey	
		S=Split Sp R=Rock	20001: Core:					Cement		Native Fill
			DACOO					≓ ∭ Sand		Bentonite
	N = ASTM D1586									

								·-·····				
Environmental PRODUCTS & SERVICES, INC. SU					Subsurface Log		Hole No.:26	ole No.:26		Date Started: 0		
						Sheet 1of 1 Date Finished:				06/10/96		
Client: NYSDEC Method of						Investigation:Direct push method, Geoprobe tooling, 2-inch diameter, 4-foot long soil						
	Gas	town Spor	tsmen's C	lub			probe.				-	
Locat	ion:	Tonawar	nda, N.Y.							F		
Project No.: B1113 Proj Mar: D. Elloworth						Drilling Co	Drilling Co.: Environmental Products & Services   Weather:					
Proj. Mgr. D. Elisworth Coologist: T. Rurmoior						Drill Rig: Concert 0200				75 deg	rees F, overcast	
Depth Sample					· · · · · · · · · · · · · · · · · · ·	Concord 9200						
(ff )	<u> </u>		Sampi		Baaaaaa	-	Samp	le	Field	14/-11	Groundwater	
	No	Depth (ft)	J6ª		(A)	Description		Readings	Details			
° -	<u> </u>	Deputition	/0		(ii.)	0.0'-1.5' Medi	um brown TOP SC	DIL.	- ricadings		NO HYDROCARBON	
	51	0-4			3.1						ODOR AT	
		4-8				1.5'-4.5' Medium brown SILT and tan granular material. 4.5'-8.0' Medium brown to yellow/brown SILT. Grades to sandy SILT at 7.0'.				0.0 - 20.0		
5 _	S2				4.0							
	\$3	8-12	8-12			8.0'-16.0' Medium gray/brown, silty CLAY, some plant debris and sandy interbeds with fossil fragments						
					4.0	at 12.0'.						
10 -					÷	-						
1												
	64											
	54	12-16			4.0	-		·				
						-						
15												
15 -						· ·						
					+	] 16.0'-17.8' Dai	16.0'-17.8' Dark oray/brown, very soft CLAY and SAND					
		16-20	•		4.0							
						17.8'-19.5' Dark gray/brown SILT, numerous fossil						
						fragments.	fragments. 19.5'-19.7' GRAVEL.					
<b> </b>					1	19.5'-19.7' GR						
20 -						19.7'-20.0' Rei	ddish brown, soft (	CLAY.	ļ			
											20.0' = BOTTOM OF	
											BURING	
						1						
				<u> </u>		ł						
		-		·	<u> </u>	Į				i		
Samel	 ۵ Tur				·	·						
S=Split Spoon: 2"								Backfill Well Key				
R= Rock Core:									Cement		Native Fill	
								<u>וווזזות ווווווו</u>	— III Sand		Bentonite	
		N = ASIM	000101									

#### **APPENDIX B**

Laboratory Analytical Results (June 4, 6, and 11, 1996)







