



**CONESTOGA-ROVERS
& ASSOCIATES**

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B-1743

December 9, 2004

Reference No. 38006

Mr. Randy Zorgel
City of Ottawa
Coordinator, ROW Information Centre
100 Constellation Crescent
Ottawa, ON K2G 6J8

Dear Mr. Zorgel:

Re: Off-Site Focused Phase II Environmental Site Assessment
Elmvale Acres Shopping Centre
1910 St. Laurent Boulevard, Ottawa, Ontario (Site)

Conestoga-Rovers & Associates (CRA) has prepared this letter, on behalf of 2058280 Ontario Limited, to provide the City of Ottawa with the results of the Off-Site Focused Phase II Environmental Site Assessment (ESA) for the above-referenced Site. The report is being submitted in accordance with the requirements of the City of Ottawa Road-Cut Permit that was issued based on CRA's September 27, 2004 application. CRA conducted this work for the previous owner and has prepared this report for 2058280 Ontario Limited, who acquired the Site in November 2004.

Based on the results of the Off-Site Focused Phase II ESA, CRA's primary conclusion is that there is limited off-Site soil and groundwater impact beneath Othello Avenue due to chlorinated volatile organic compound (VOC) contamination in on-Site soil and groundwater at the western side of the Site. In addition, the interim remedial action of removing groundwater from on-Site monitoring wells has provided contaminant reduction as well as reducing the potential migration of contaminants both on and off-Site. CRA is proceeding with continued groundwater purging, in situ groundwater treatment/remediation, and monitoring activities at the Site.

The Off-Site Focused Phase II ESA activities were designed to obtain additional information on the nature and extent of chlorinated VOC contamination associated with the former dry cleaning operations at the Site. The objective of the investigation activities was to determine if contamination extended off-Site above applicable standards, and if so the horizontal and vertical extent of the contamination.



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This letter is formatted in the following sections:

- 1.0 Background;
- 2.0 Scope of Work;
- 3.0 Field Investigation;
- 4.0 Results; and
- 5.0 Conclusions.

1.0 BACKGROUND

1.1 SITE DESCRIPTION

The Site is located at 1910 St. Laurent Boulevard in Ottawa, Ontario, near the northeast corner of the intersection of St. Laurent and Smyth Road. The Site is legally described as Plan 643, Part of Block E and G irregular. The Site has a total area of approximately 55,000 square metres (m²), or 5.5 hectares (ha). The Site currently has a one-story, concrete block, steel frame slab on grade shopping centre with partial basements at the north and south ends of the building. The total area of the building is approximately 31,000 m². The Site also includes paved parking areas, recyclable and municipal waste storage areas, and minor landscaped areas along the Site boundaries.

1.2 REGULATORY CRITERIA

The Off-Site Focused Phase II ESA analytical data were compared to criteria for a non-potable groundwater condition in the document entitled "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*" [Ministry of Environment (MOE, 2004)], Table 3 titled "Full Depth Generic Site Conditions Standards in a Non-Potable Groundwater Condition" for industrial/commercial/community property use (March 2004).

2.0 SCOPE OF WORK

The objective of the Off-Site Focused Phase II ESA investigation activities was to determine if contamination extended off-Site above applicable standards, and if so the horizontal and vertical extent of the VOC contamination. The Off-Site Phase II ESA Scope of Work (SOW) is discussed in the following subsections.



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CRA is committed to safeguarding the health and safety of its employees and the public surrounding any project site. CRA adhered to high safety standards to protect the health and safety of all employees, our clients, and the community in which the work was conducted. This included the preparation of a project-specific Health and Safety Plan (HASP) for the Site, which was prepared as part of the Focused Phase II ESA activities.

The field component of the Off-Site Focused Phase II ESA investigation work was completed in October 2004. The field component consisted of the following activities:

- verification of groundwater flow direction on-Site;
- on-Site groundwater purging;
- off-Site private well survey;
- off-Site utility locates;
- preparation and submittal of the Road-Cut Permit application to the City of Ottawa;
- off-Site subsurface borehole advancement, and monitoring well installation and development;
- off-Site soil and groundwater sampling and analyses; and
- transportation and off-Site treatment/disposal of investigation-derived waste.

The locations of the boreholes and monitoring wells were selected based on the following:

- close vicinity (west and downgradient) to the former dry cleaning operations on-Site;
- close vicinity (west) to on-Site groundwater monitoring wells where chlorinated VOCs were detected in soil and groundwater; and
- actual field conditions encountered (i.e., underground utility locations, width of boulevard along the west side of the Site and Othello Avenue, and aboveground features such as trees, street lights, and overhead power lines).

Each of these activities is discussed in the following sections.

3.0 FIELD INVESTIGATION

3.1 VERIFICATION OF GROUNDWATER FLOW DIRECTION

The groundwater elevation in on-Site groundwater monitoring wells was measured in October 2004 to confirm groundwater flow direction. The field observations and measured water levels indicate an approximate northeast to southwest groundwater flow direction.



3.2 GROUNDWATER PURGING

An interim remedial action was implemented to remove chlorinated VOC contaminated groundwater from three on-Site monitoring wells that contain groundwater above applicable standards. This action also provides containment and prevents potential migration of contaminated groundwater both on and off-Site.

3.3 PRIVATE WELL SURVEY

CRA conducted a survey of private wells located within a ½ mile radius of the Site. Based on discussions and records obtained by CRA from the City of Ottawa, there are no private wells within a ½ mile radius of the Site that are currently used for drinking water purposes. Based on discussions with the City of Ottawa, there are a few private wells that exist that may be used for lawn watering purposes if the wells are used at all.

3.4 ROAD-CUT PERMIT

Subsurface investigations conducted within the City of Ottawa's right-of-way require the approval of a Road-Cut Permit application. CRA and ALTECH Drilling & Investigative Services Limited (ALTECH) prepared and submitted the application on September 27, 2004 that included a letter of credit/bond, insurance, a traffic management plan, and a project summary report to the City of Ottawa prior to project commencement. The City of Ottawa approved the Road-Cut Permit application on September 28, 2004.

3.5 SUBSURFACE INVESTIGATION

The Off-Site Focused Phase II SOW is designed to collect information to determine the presence of chlorinated VOCs that may have migrated off-Site from the former dry cleaning operations. The subsurface investigation SOW included the following:

- utility locates within the surround area of the borehole advancement and monitoring well installations;
- advancement of nine boreholes and the installation of five monitoring wells; and
- analysis of groundwater and soil samples for VOCs to investigate potential chlorinated VOCs contamination of off-Site soil and groundwater identified on-Site.

The results of the Off-Site Focused Phase II ESA were used to evaluate the presence of off-Site chlorinated VOC contamination and the downgradient extent of off-Site impacts due to the soil and groundwater contamination from the former on-Site dry cleaner operations.



3.5.1 UTILITY LOCATES

Utility locates were performed by National Capital Locates (NCL) in the surrounding area of the off-Site borehole and monitoring well locations prior to advancement and installation.

3.5.2 BOREHOLE ADVANCEMENT AND SOIL SAMPLING

The drilling and sampling equipment was reported by ALTECH to be decontaminated prior to mobilization to the Site and was confirmed by CRA to be visually clean prior to use. The split spoon samplers were thoroughly cleaned between sampling intervals usingalconox soap and a potable water rinse. Wash water was stored on-Site in 45-gallon metal drums for subsequent characterization and off-Site disposal.

ALTECH advanced nine boreholes (SB-101, SB-102, SB-103, SB-104, SB-105, SB-106, SB-107, SB-108, and SB-109) within the City of Ottawa right-of-way along the east and west boulevards of Othello Avenue (between Wingate Road and Chapman Boulevard) under CRA supervision on October 5-8, 2004. Boreholes SB-101, SB-102, SB-103, SB-104, SB-105, and SB-106 were located along the east boulevard of Othello Avenue, and boreholes SB-107, SB-108, and SB-109 were located within the west boulevard of Othello Avenue. The boreholes were installed at a lateral spacing of approximately 12 meters.

ALTECH advanced the boreholes with a Geoprobe 6610DT probe equipped with a MacroCore sampler to facilitate the collection of subsurface samples. Boreholes were advanced using 3-inch dual tube casings. Boreholes were advanced between 12.95 meters (42.49 feet) bgs and 13.72 meters (45.01 feet) bgs. A 25 mm (1 inch) diameter, 1.52 meters (5 foot) long split-spoon sampler was used to collect soil samples from each borehole. Soil samples were collected continuously, and CRA classified the soil geologically according to the Unified Soil Classification System (USCS). The split spoon samples were field screened using a photoionization detector (PID), as well as visual, and olfactory evidence for field determination of potential contamination.

3.5.3 MONITORING WELL INSTALLATION

Temporary Monitoring Wells

Nine temporary groundwater monitoring wells were installed within boreholes SB-101 through SB-109 as part of the Off-Site Focused Phase II ESA activities. The locations of the temporary monitoring wells (boreholes) are shown on Figure 1. Boreholes were advanced between 12.95 meters (42.49 feet) bgs and 13.72 meters (45.01 feet) bgs. The groundwater monitoring wells were constructed using 25 mm (1 inch) diameter Schedule 40 polyvinyl chloride (PVC) riser and 3.05 meters (10 foot), 10-slot screens. The screens were set within the more highly saturated or permeable layer of the till. Following groundwater sampling, the temporary



monitoring wells were backfilled to ground surface with a bentonite seal. The borehole stratigraphic logs are provided in Attachment A.

Permanent Monitoring Well Installation

Five groundwater monitoring wells (MW101-04, MW102S-04, MW102D-04, and MW103-04 on the east side, and MW104-04 on the west side) were installed as part of the Off-Site Focused Phase II ESA activities. The locations of the groundwater monitoring wells are shown on Figure 1. Groundwater monitoring wells MW101-04 and MW104-04 were installed at an approximate depth of 11.43 meters (37.5 feet) bgs, monitoring wells MW102D-04 and MW103-04 were installed at an approximate depth of 9.14 meters (30 feet) bgs, and monitoring well MW102S-04 was installed at an approximate depth of 3.66 meters (12 feet) bgs. The groundwater monitoring wells were constructed using 25 mm (1 inch) diameter Schedule 40 polyvinyl chloride (PVC) riser and 3.05 meters (10 foot), 10-slot screens. The screens were set within the more highly saturated or permeable layer of the till. The monitoring wells were constructed with #3 silica sand pack around the well screen interval. A bentonite gravel hydraulic seal was placed directly above the sand pack and extended to within 0.3 meters (1 foot) of the ground surface. A protective, lockable, steel flush-mount cover and concrete road boxes were installed at each groundwater monitoring well location. To complete the instrumentation, a j-cap and lock were installed on the riser style casing to cover the top of the riser pipe to protect against debris falling into the well. The monitoring well stratigraphic and instrumentation logs are provided in Attachment A.

3.5.4 MONITORING WELL DEVELOPMENT AND GROUNDWATER SAMPLING

Temporary Monitoring Wells

Nine groundwater samples were collected from the nine temporary monitoring wells that were installed within boreholes SB-101 through SB-109 on October 5-7, 2004. For quality assurance/quality control (QA/QC) purposes, one duplicate groundwater sample and one trip blank sample were collected. The samples were delivered to Caduceon Environmental Laboratories (Caduceon) in Ottawa, Ontario under chain of custody (COC) protocols.

Permanent Monitoring Wells

Five groundwater monitoring wells (MW101-04, MW102S-04, MW102D-04, MW103-04, and MW104-04) were developed on October 8, 2004 to provide subsequent groundwater samples that are representative of formation groundwater on-Site. Development activities involved the removal of between three and six well volumes, depending on the groundwater availability and recharge characteristics of each respective groundwater monitoring well, and the demonstration of groundwater stabilization for pH, conductivity and temperature. Well volumes were



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determined by measuring the depth of water between the static groundwater level and the bottom of the well.

Four groundwater samples were collected from groundwater monitoring wells MW101-04, MW102D-04, MW103-04, and MW104-04 on October 8, 2004. One groundwater sample was collected from each monitoring well and submitted for analysis of VOCs. The samples were delivered to Caduceon in Ottawa, Ontario under COC protocols. No groundwater sample was collected from groundwater monitoring well MW102S-04 since it went dry during development and did not recover. Therefore, there was insufficient groundwater available for laboratory analysis.

3.5.5 GROUNDWATER CHARACTERIZATION SAMPLING

Groundwater samples were collected from groundwater monitoring wells MW2-04, MW4-04, and MW102D-04 on October 8, 2004 and submitted for analysis of iron, manganese, sulfate, total organic carbon (TOC), and VOCs. The non-VOC parameters were analyzed to provide data to evaluate the natural attenuation conditions and the potential applicability of various in situ remediation technologies.

CRA initiated a bench-scale treatability study on October 20, 2004 on a portion of the groundwater purged from MW8-04 to evaluate the effectiveness of permanganate (KMnO_4) in situ chemical oxidation for the treatment/destruction of chlorinated VOCs. The treatability study indicated that the relatively high concentrations of chlorinated VOCs in on-Site groundwater could be effectively treated.

3.6 WASTE MANAGEMENT AND OFF-SITE DISPOSAL

Soil cuttings and purge/wash water were contained in 45-gallon metal drums for subsequent characterization and appropriate off-Site disposal. The soil cuttings and wash/purge water were analyzed for VOCs and the results were compared to Ontario Regulation 558/00 Leachate Quality Criteria (Schedule 4) to determine the appropriate disposition mode.

4.0 RESULTS

4.1 GROUNDWATER PURGING

On September 23 and 30, and October 8, 2004, groundwater was removed by purging from monitoring wells MW2-04, MW7-04, and MW8-04. To date a total of 276.5 liters of contaminated groundwater has been purged and disposed at a permitted off-Site disposal facility. The interim remedial action will be continued as part of the final remedial action plan being implemented to address contaminated groundwater at the Site.



4.2 SUBSURFACE INVESTIGATION

4.2.1 SOIL QUALITY

No subsurface soil samples were collected during the borehole advancement component of the fieldwork. Borehole depths are discussed in Section 3.5.2. Organic vapor screening concentrations generally were low and ranged from non-detect to 39 parts per million (ppm) by volume, in comparison to up to 450 ppm for some on-Site locations. The results of the soil sample screening are included in the stratigraphic and instrumentation logs in Attachment A under the "PID" heading and represent the concentrations of undifferentiated VOCs in ppm relative to isobutylene PID calibration gas. No significant soil staining or odors were observed in the soil samples collected from the soil borings.

4.2.2 GROUNDWATER QUALITY

East Boulevard of Othello Avenue

Tetrachlorethylene (PCE) was not detected in the groundwater samples from the temporary or permanent monitoring wells. Trichlorethylene (TCE) was detected in each of the six temporary monitoring wells and trans 1,2-dichloroethene (DCE) was detected in two of the six temporary monitoring wells but both compounds were at concentrations below the applicable Standards. Cis 1,2-DCE and vinyl chloride were detected in the temporary monitoring well SB-103 at concentrations of 311 micrograms per liter ($\mu\text{g}/\text{L}$) or parts per billion (ppb), which exceed the applicable Standards of 70 and 1.3 $\mu\text{g}/\text{L}$, respectively. Vinyl chloride (VC) was detected at 4.8 $\mu\text{g}/\text{L}$ in temporary monitoring well SB-102, which exceeds the applicable Standard of 1.3 $\mu\text{g}/\text{L}$. VC was detected at 12.8 $\mu\text{g}/\text{L}$ in the permanent monitoring well MW102D-04, which exceeds the applicable Standard of 1.3 $\mu\text{g}/\text{L}$. There was insufficient groundwater recharge in the shallow monitoring well MW102S-04 to enable sample collection. The locations of the monitoring wells where exceedances of applicable groundwater Standards were observed are downgradient or adjacent/cross-gradient to the on-site monitoring wells where exceedances were observed. The analytical data for detected parameters is provided in Table 1.

West Boulevard of Othello Avenue

There were no detections of chlorinated or non-chlorinated VOCs in the three temporary monitoring wells located in the west boulevard of Othello Avenue. At the permanent monitoring well location MW104-04, TCE was detected at a concentration of 0.3 $\mu\text{g}/\text{L}$, which is below the applicable Standard of 50 $\mu\text{g}/\text{L}$. The analytical data for detected parameters is provided in Table 1.



4.2.3 GEOLOGY/HYDROGEOLOGY

The stratigraphy encountered in order of depth from surface was typically topsoil; sand and gravel (fill); silty clay; and silt (till). A more permeable till layer was found during previous on-Site soil boring activities at approximately 10.7 meters (35 feet) bgs. Based on previous CRA investigations within the surrounding area, bedrock is approximately 13.7 meters (45 feet) bgs. The static groundwater elevation range from approximately 0.90 meters (3 feet) to 2.90 meters (9.5 feet) bgs. The field observations and measured water levels indicate an approximate northeast to southwest groundwater flow direction. Measured water levels before and after purging activities indicate a groundwater recharge of approximately eight hours per well. Based on the soil stratigraphy and groundwater recharge time, the hydraulic conductivity is expected to range from approximately 10^{-8} to 10^{-6} centimeters per second (cm/s), which is relatively low.

4.3 WASTE MANAGEMENT AND OFF-SITE DISPOSAL

The soil cuttings from drilling activities were transported off-Site to a permitted disposal facility by SARP Sewer-Matic Inc. (Sewer-Matic) as non-hazardous waste based on toxic characteristic leachate procedure (TCLP) analyses. The analytical laboratory report is provided in Attachment B. Sewer-Matic obtained a hazardous waste generation ID (ON8484300) on behalf of the previous owner for the Site. Approximately 2,955 liters (L) of wash and purge water from the investigation activities were transported off-Site by Sewer-matic as hazardous waste and disposed of at a permitted off-Site treatment disposal facility.

5.0 CONCLUSIONS

Based on the results of the Off-Site Focused Phase II ESA, CRA's primary conclusion is that there is limited off-Site soil and groundwater impact beneath Othello Avenue due to chlorinated VOC contamination in on-Site soil and groundwater at the western property boundary of the Site. The observation of significant concentrations of breakdown or daughter products (i.e., DCE and VC) of PCE and TCE also indicates that significant biodegradation of the dry cleaning solvent releases has occurred over time. In addition, the interim remedial action of removing groundwater from on-Site monitoring wells and off-Site disposal provides contaminant reduction as well as reducing the potential migration of contaminants both on and off-Site. The on-going purging, in situ groundwater treatment/remediation, and monitoring activities focussed on the source areas at the Site will address the chlorinated VOC contamination.



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Should you have any questions on the above, please do not hesitate to contact us.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Fred Taylor, P. Eng.

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Encl.

c.c. Greg Montcalm, City of Ottawa
John Saguy, 2058280 Ontario Limited
Jason Rice, CRA

TABLE 1

GROUNDWATER ANALYTICAL RESULTS-DETECTED COMPOUNDS (1)
 FOCUSED OFF-SITE PHASE II ESA
 ELMVALE ACRES SHOPPING CENTER
 1910 ST. LAURENT BOULEVARD
 OTTAWA, ONTARIO

Parameter	Sample Date	Units	MOE Table 3 Standard (2)	SB-102	SB-103	SB-104
Dichloroethene, 1,1-	5-Oct-04	µg/L	4.1	ND (0.1)	ND (1)	0.1
Dichloroethene, cis-1,2-	5-Oct-04	µg/L	70	3.2	311	36
Dichloroethene, trans-1,2-	5-Oct-04	µg/L	100	ND (0.1)	4	0.4
Tetrachloroethylene	5-Oct-04	µg/L	5.0	ND (0.2)	ND (2)	ND (0.2)
Trichloroethylene	5-Oct-04	µg/L	50	0.3	32	1.2
Vinyl Chloride	5-Oct-04	µg/L	1.3	4.8	311	7.5
Toluene	5-Oct-04	µg/L	5,900	ND (0.5)	ND (5)	ND (0.5)
m,p-xylene	5-Oct-04	µg/L	5,600	ND (1)	ND (10)	ND (1)

Parameter	Sample Date	Units	MOE Table 3 Standard (2)	SB-105	SB-106	SB-101	SB-108
Dichloroethene, 1,1-	6-Oct-04	µg/L	4.1	ND (0.1)	ND (0.1)	ND (1)	ND (1)
Dichloroethene, cis-1,2-	6-Oct-04	µg/L	70	ND (0.1)	ND (0.1)	29	ND (1)
Dichloroethene, trans-1,2-	6-Oct-04	µg/L	100	ND (0.1)	ND (0.1)	ND (1)	ND (1)
Tetrachloroethylene	6-Oct-04	µg/L	5.0	ND (0.2)	ND (0.2)	ND (2)	ND (2)
Trichloroethylene	6-Oct-04	µg/L	50	0.2	0.2	27	ND (1)
Vinyl Chloride	6-Oct-04	µg/L	1.3	ND (0.2)	ND (0.2)	ND (2)	ND (2)
Toluene	6-Oct-04	µg/L	5,900	ND (0.5)	1	ND (5)	ND (5)
m,p-xylene	6-Oct-04	µg/L	5,600	ND (1.0)	11.4	ND (10)	ND (10)

Parameter	Sample Date	Units	MOE Table 3 Standard (2)	SB-107	SB-109
Dichloroethene, 1,1-	7-Oct-04	µg/L	4.1	ND (0.1)	ND (0.1)
Dichloroethene, cis-1,2-	7-Oct-04	µg/L	70	ND (0.1)	ND (0.1)
Dichloroethene, trans-1,2-	7-Oct-04	µg/L	100	ND (0.1)	ND (0.1)
Tetrachloroethylene	7-Oct-04	µg/L	5.0	ND (0.2)	ND (0.2)
Trichloroethylene	7-Oct-04	µg/L	50	ND (0.1)	ND (0.1)
Vinyl Chloride	7-Oct-04	µg/L	1.3	ND (0.2)	ND (0.2)
Toluene	7-Oct-04	µg/L	5,900	ND (0.5)	ND (0.5)
m,p-xylene	7-Oct-04	µg/L	5,600	ND (1.0)	ND (1.0)

Parameter	Sample Date	Units	MOE Table 3 Standard (2)	MW101-04	MW102D-04	MW103-04	MW104-04
Dichloroethene, 1,1-	8-Oct-04	µg/L	4.1	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Dichloroethene, cis-1,2-	8-Oct-04	µg/L	70	0.6	7.7	5.4	ND (0.1)
Dichloroethene, trans-1,2-	8-Oct-04	µg/L	100	ND (0.1)	0.3	ND (0.1)	ND (0.1)
Tetrachloroethylene	8-Oct-04	µg/L	5.0	0.2	0.4	0.4	ND (0.2)
Trichloroethylene	8-Oct-04	µg/L	50	0.2	3.2	0.5	0.3
Vinyl Chloride	8-Oct-04	µg/L	1.3	ND (0.2)	12.8	3.7	ND (0.2)
Toluene	8-Oct-04	µg/L	5,900	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
m,p-xylene	8-Oct-04	µg/L	5,600	ND (1)	ND (1)	ND (1)	ND (1)

Notes:

- (1) VOC parameters in accordance with analytical method EPA 8260 (Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
- (2) Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", (MOE, March 9, 2004).
- (3) Insufficient groundwater present in MW102-S shallow well to collect sample for chemical analysis.

MOE = Ministry of the Environment

NC = No criteria provided in MOE Guideline

ND (0.1) = Non-detect, with detection limit in ()

BOUND = Concentration exceeds the MOE Guideline Table B criterion

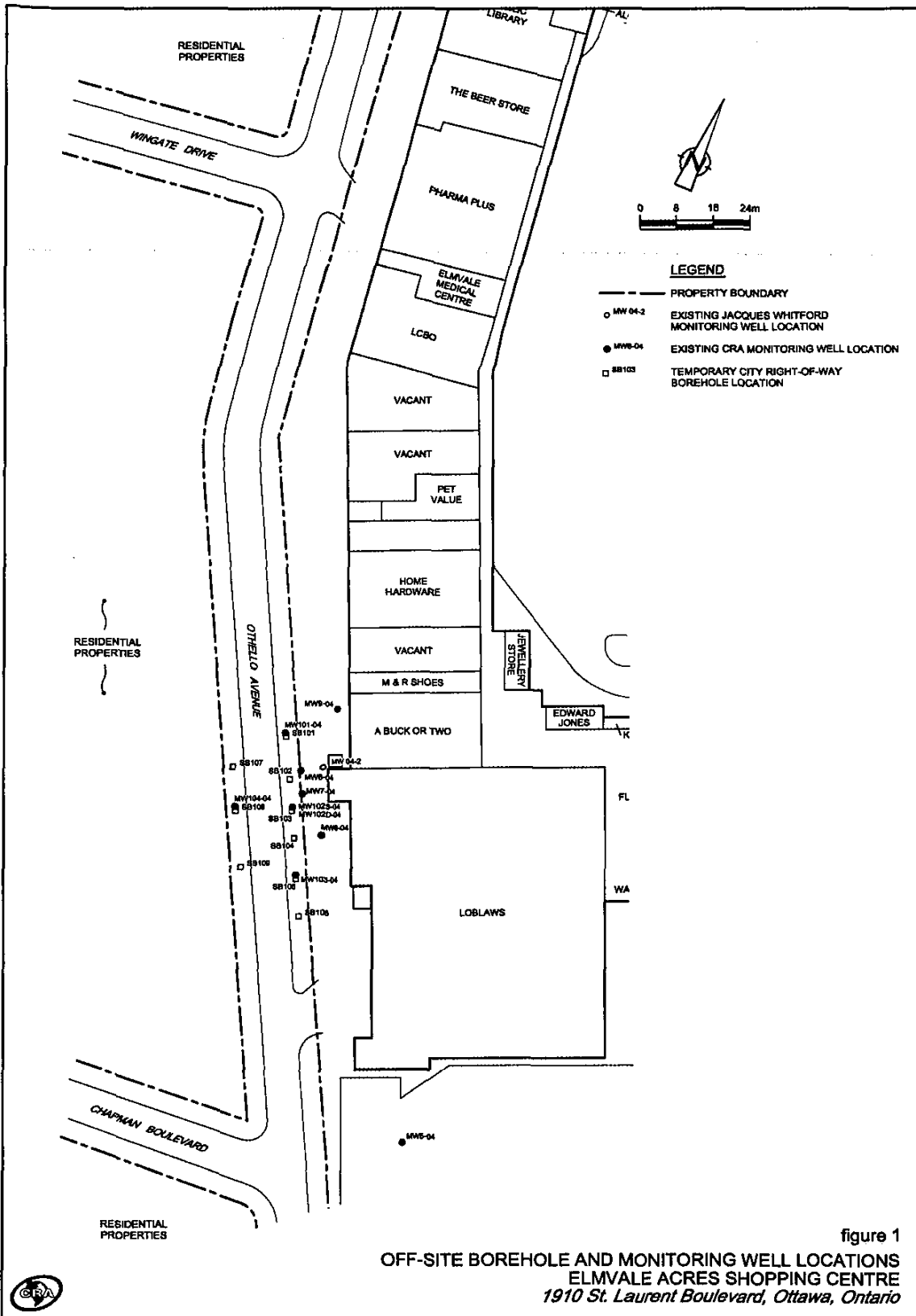


figure 1
OFF-SITE BOREHOLE AND MONITORING WELL LOCATIONS
ELMVALE ACRES SHOPPING CENTRE
 1910 St. Laurent Boulevard, Ottawa, Ontario



ATTACHMENT A
STRATIGRAPHIC AND INSTRUMENTATION LOGS



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: SB101-04
 DATE COMPLETED: October 6, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE				
			NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
	GROUND SURFACE	30.70					
	TOPSOIL	30.60					
	SAND, GRAVEL, CLAY (FILL), brown, moist		1A				2.0
1	ML/CL-SILTY CLAY, stiff, brown, moist	29.79	1	P/S	100		1.1
	- brown grey at 1.52m BGS		1B				
2			2A				1.4
			2	P/S	100		
			2B				2.2
3	- mottled brown grey at 3.05m BGS		3A				2.8
			3	P/S	80		
			3B				2.2
4			4A				1.8
	- grey, soft at 4.57m BGS		4	P/S	100		
			4B				1.8
5			5A				2.0
			5	P/S	100		
			5B				1.8
6			6A				1.8
			6	P/S	100		
			6B				2.2
7			7A				2.2
			7	P/S	100		
			7B				2.2
8			8A				2.2
			8	P/S	100		
			8B				2.2
9			9				
	ML-SILT (TILL), with sand, with gravel, grey, saturated	18.51	9A	P/S	15		2.1
10							
11							
12							
13	END OF BOREHOLE @ 13.26m BGS	17.44					
14							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GFI CRA CORP. SGT. 12/3/04



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: SB102-04
 DATE COMPLETED: October 6, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE			
			NUMBER	INTERVAL	REC (%)	'N' VALUE
	GROUND SURFACE	30.64				
	TOPSOIL	30.54				
	FILL - sand and gravel, brown, moist - sand at 0.61m BGS	29.87	1A	P/S	100	0.0
1	ML/CL - SILTY CLAY, mottled brown/grey, moist		1B			0.0
2			2A	P/S	100	0.0
3			2B			0.0
4	- soft, increased plasticity, grey at 3.81m BGS		3A	P/S	100	0.7
5			3B			1.1
6	- sand and gravel seam (2 inches thick) at 5.27m BGS		4A	P/S	100	0.5
7			4B			0.6
8			5A	P/S	100	0.5
9			5B			0.1
10			6A	P/S	100	0.0
11			6B			0.2
12	ML - SILT (TILL), with sand, with gravel, with clay, soft, grey, saturated - no clay, hard, moist at 12.19m BGS	19.05	7A	P/S	100	0.0
13			7B			2.0
14			8A	P/S	100	1.6
			8B			1.3
			9A	P/S	50	0.9
	END OF BOREHOLE @ 12.95m BGS	17.68				
	Temporary monitoring well installed with screen interval at 25 to 35ft bgs.					
	After groundwater samples collected, temporary well removed and borehole backfilled with bentonite.					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: SB103-04
 DATE COMPLETED: October 5, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE				
			NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
	GROUND SURFACE	30.64					
	SAND (FILL), brown, moist		1A				2.9
	CLAY (FILL), brown, moist	30.19	1	P/S	100		
1	ML/CL-SILTY CLAY, brown, moist	29.73	1B				1.9
	- brown grey at 1.52m BGS		2A				3.4
2			2	P/S	100		
			2B				3.6
3	- mottled brown grey at 3.05m BGS		3A				6.7
	- grey at 3.51m BGS		3	P/S	100		
4			3B				34
			4A				4.2
5			4	P/S	100		
			4B				5.3
6			5A				5.1
			5	P/S	100		
7			5B				5.0
			6A				5.1
8			6	P/S	100		
			6B				3.9
9			7A				3.6
			7	P/S	100		
10			7B				4.4
			8A				4.2
11			8	P/S	100		
			8B				4.4
12	ML-SILT (TILL), with sand, with gravel, grey, saturated	18.45	9A				5.0
			9	P/S	43		
13	END OF BOREHOLE @ 13.26m BGS	17.38	9B				3.0
14							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: SB104-04
 DATE COMPLETED: October 5, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE			
			NUMBER	INTERVAL	REC (%)	'N' VALUE PID (ppm)
	GROUND SURFACE	30.82				
	TOPSOIL	30.73				
1	FILL - sand and clay, with gravel, brown, moist		1A	P/S	70	4.5
			1B			4.1
2	ML/CL - SILTY CLAY, mottled brown/grey, moist	29.30	2A			3.8
			2B	P/S	100	4.6
3			3A			6.3
			3B	P/S	100	5.7
4	- soft, grey at 4.11m BGS		4A			5.6
			4B	P/S	100	6.2
5			5A			6.1
			5B	P/S	100	5.4
6	- increased plasticity, wet at 6.10m BGS		6A			6.6
			6B	P/S	100	6.0
7			7A			6.5
			7B	P/S	100	6.4
8			8A			5.5
			8B	P/S	100	4.9
9			9A			3.7
			9B	P/S	25	4.2
10						
11						
12	ML- SILT (TILL), with sand, with gravel, grey, saturated	19.55				
13						
14	END OF BOREHOLE @ 13.72m BGS	17.11				
	Temporary monitoring well installed with screen interval at 25 to 35ft bgs.					

NOTES: ~~After groundwater samples collected, temporary well removed and borehole backfilled~~
 MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA

HOLE DESIGNATION: SB104-04

PROJECT NUMBER: 38006

DATE COMPLETED: October 5, 2004

CLIENT: 2058280 ONTARIO LTD.

DRILLING METHOD: GEOPROBE

LOCATION: ELMVALE MALL

FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE				
			NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
16	with bentonite.						
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: SB105-04
 DATE COMPLETED: October 5, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE				
			NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
	GROUND SURFACE	30.62					
	TOPSOIL	30.46					
	CLAY (FILL), brown, moist	30.16	1A				3.1
	SAND (FILL), brown, moist	30.01	1	P/S	100		
1	ML/CL-SILTY CLAY, stiff, brown, moist		1B				3.1
	- brown grey at 1.52m BGS						
2			2A				2.8
			2	P/S	100		
			2B				2.3
3	- mottled brown grey at 3.05m BGS		3A				4.3
			3	P/S	100		
4			3B				5.8
	- grey, soft at 4.57m BGS						
5			4A				4.4
			4	P/S	100		
			4B				3.3
6	- stiff at 6.10m BGS						
			5A				3.3
			5	P/S	100		
7	- mottled brown grey at 7.01m BGS		5B				5.6
	- grey at 7.62m BGS						
8			6A				4.8
			6	P/S	100		
			6B				4.4
9	- soft, tacky at 9.14m BGS						
			7A				5.4
			7	P/S	100		
10			7B				4.0
	- moist to wet at 10.67m BGS						
11			8A				4.8
			8	P/S	100		
12			8B				3.1
13			9A				3.5
			9	P/S	100		
			9B				2.5
	ML-SILT (TILL), with sand, with gravel, grey, saturated	17.27					
14	END OF BOREHOLE @ 13.72m BGS	16.90					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/23/04



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: SB106-04
 DATE COMPLETED: October 6, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE			
			NUMBER	INTERVAL	REC (%)	N' VALUE PID (ppm)
	GROUND SURFACE	30.60				
	TOPSOIL	30.45				
	FILL - clay and sand, with gravel, brown, moist		1A			2.1
	- sand, brown, moist at 0.46m BGS	29.84		P/S	90	
1	ML/CL - SILTY CLAY, stiff, brown, moist		1B			1.8
	- sand seam (10 inches thick), fine grained, brown, moist at 1.52m BGS					
2	- mottled brown/grey at 1.83m BGS		2A			1.6
				P/S	100	
3			2B			1.8
4	- grey at 3.81m BGS		3A			2.1
				P/S	100	
5			3B			0.5
6	- soft, increased plasticity at 6.10m BGS		4A			0.5
				P/S	60	
7	- sand seam with roots (2 inches thick) at 6.55m BGS		4B			0.6
8			5A			0.8
				P/S	100	
9			5B			1.5
10			6A			1.3
				P/S	100	
11			6B			1.5
12			7A			2.1
				P/S	100	
13	- very soft, wet at 10.67m BGS		7B			1.6
14			8A			2.0
				P/S	60	
			8B			2.2
		17.65	9A			0.6
	ML - SILT (TILL), with sand, with gravel, hard, grey, moist			P/S	86	
	END OF BOREHOLE @ 13.26m BGS	17.34	9B			0.5
	Temporary monitoring well installed with screen interval at 30 to 40ft bgs.					
	After groundwater samples collected, temporary well removed and borehole backfilled with bentonite.					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: SB107-04
 DATE COMPLETED: October 7, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE				
			NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
	GROUND SURFACE	30.61					
	TOPSOIL	30.55					
	- clay and sand, with gravel at 0.15m BGS		1A				1.8
	FILL - sand, brown, moist	30.00	1B	P/S	100		1.8
1	ML/CL - SILTY CLAY, stiff, brown, moist		2A				1.9
	- sand seam with roots (1 inch thick) at 1.68m BGS		2B	P/S	97		1.9
2	- mottled brown/grey at 2.29m BGS		3A				3.1
	- sand seam (0.5 inches thick) at 3.44m BGS		3B	P/S	93		3.1
3	- increased plasticity at 3.66m BGS		4A				2.9
	- sand seam (4 inches thick) at 5.33m BGS		4B	P/S	100		3.5
4	- grey at 5.49m BGS		5A				3.6
	- soft at 6.10m BGS		5B	P/S	100		3.5
5			6A				3.0
			6B	P/S	100		3.8
6			7A				4.0
	- moist to wet at 9.14m BGS		7B	P/S	100		3.7
7			8A				4.7
			8B	P/S	100		2.5
8	- trace to with sand at 11.73m BGS		9A				2.9
	- with sand, with gravel, soft, grey, wet at 12.19m BGS	18.26	9B	P/S	100		2.3
9	ML - SILT (TILL), with sand, with gravel, hard, grey, moist						
10	END OF BOREHOLE @ 13.26m BGS	17.35					
11	Temporary monitoring well installed with screen interval at 27.5 to 37.5ft bgs.						
12	After groundwater samples collected, temporary well removed and borehole backfilled with bentonite.						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: SB108-04
 DATE COMPLETED: October 6, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE				
			NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
	GROUND SURFACE	30.58					
	TOPSOIL	30.50					
	CLAY (FILL), brown, moist	30.12	1A				1.3
	SAND (FILL), brown, moist	29.82	1	P/S	100		
1	ML/CL-SILTY CLAY, stiff, brown, moist		1B				1.9
	- brown grey at 1.52m BGS		2A				2.9
2			2	P/S	100		
			2B				1.8
3	- brown at 3.05m BGS		3A				2.8
			3	P/S	100		
4			3B				2.1
	- grey, tacky at 4.57m BGS		4A				2.4
5			4	P/S	100		
			4B				2.4
6			5A				2.9
			5	P/S	100		
7			5B				3.2
	- grey at 7.62m BGS		6A				3.5
8			6	P/S	100		
			6B				39
9	- soft at 9.14m BGS		7A				37
			7	P/S	100		
10	- with sand, with gravel from 9.91 to 10.67m BGS		7B				37
			8A				3.9
			8	P/S	100		
12	ML-SILT (TILL), with sand, with gravel, grey, saturated	18.69	8B				3.6
			9A				2.1
13	END OF BOREHOLE @ 13.11m BGS	17.47	9	P/S	86		
			9B				1.3

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: SB109-04
 DATE COMPLETED: October 6, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	SAMPLE				
			NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
	GROUND SURFACE	30.59					
	TOPSOIL	30.50					
	FILL - sand, brown, moist		1A				1.7
	- clay at 0.24m BGS			P/S	90		
1	- sand at 0.61m BGS	29.68	1B				2.1
	ML/CL - SILTY CLAY, stiff, brown, moist						
	- sand seam (8 inches thick), compact, brown, moist at 1.52m BGS						
2	- mottled brown/grey at 1.83m BGS		2A				1.8
				P/S	100		
			2B				2.6
3							
	- sand seam (1 inch thick), trace rootlets at 3.20m BGS		3A				3.6
4				P/S	97		
			3B				2.9
5							
	- soft, grey at 4.72m BGS		4A				2.8
	- sand seam (1 inch thick), trace rootlets at 5.33m BGS			P/S	100		
6			4B				3.9
	- increased plasticity at 6.10m BGS						
7			5A				3.2
				P/S	100		
			5B				3.8
8							
			6A				3.6
				P/S	100		
9			6B				3.5
	- moist to wet at 9.14m BGS						
10			7A				3.6
				P/S	100		
			7B				2.5
11							
	- trace to with sand, wet at 10.67m BGS		8A				2.9
				P/S	100		
12			8B				3.3
			9A				2.0
				P/S	100		
13	ML - SILT (TILL), with sand, with gravel, hard, grey, moist	17.79	9B				2.0
	END OF BOREHOLE @ 13.11m BGS	17.49					
14	Temporary monitoring well installed with screen interval at 20 to 32.5ft bgs.						
	After groundwater samples collected, temporary well removed and borehole backfilled with bentonite.						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: MW101-04
 DATE COMPLETED: October 8, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	MONITORING WELL	SAMPLE					
				NUMBER	INTERVAL	REC (%)	'N' VALUE	P/D (ppm)	
	GROUND SURFACE TOP OF RISER	30.70 30.68							
	TOPSOIL	30.60	<p style="font-size: small;">BENTONITE GRAVEL 25 mm Ø RISER PIPE 75 mm Ø BOREHOLE SAND PACK WELL SCREEN</p>	1A				2.0	
1	SAND, GRAVEL, CLAY (FILL), brown, moist			1	P/S	100			1.1
	ML/CL-SILTY CLAY, stiff, brown, moist - brown grey at 1.52m BGS	29.79		2A					1.4
2				2	P/S	100			2.2
	- mottled brown grey at 3.05m BGS			3A					2.8
3				3	P/S	80			2.2
	- grey, soft at 4.57m BGS			3B					1.8
4				4	P/S	100			1.8
				4A					2.0
5				5	P/S	100			1.8
				5A					2.0
6				5B					1.8
				6A					1.8
7				6	P/S	100			2.2
				6B					2.2
8				7A					2.2
			7	P/S	100			2.2	
9			7B					2.2	
			8	P/S	100			2.2	
10			8A					2.2	
11	END OF BOREHOLE @ 11.43m BGS	19.27							
12	Note: Stratigraphy same as SB101-04		<p>WELL DETAILS Screened interval: 22.32 to 19.27m 8.38 to 11.43m BGS Length: 3.05m Diameter: 25mm Slot Size: 10 Material: SCH 40 PVC Seal: 30.40 to 23.08m 0.30 to 7.62m BGS Material: BENTONITE GRAVEL Sand Pack: 23.08 to 19.27m 7.62 to 11.43m BGS Material: #3 SILICA SAND</p>						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: MW102D-04
 DATE COMPLETED: October 8, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
	GROUND SURFACE TOP OF RISER	30.64 30.64						
1	SAND (FILL), brown, moist	30.19	<p style="font-size: small;">WELL DETAILS Screened interval: 24.55 to 21.50m 6.10 to 9.14m BGS Length: 3.05m Diameter: 25mm Slot Size: 10 Material: SCH 40 PVC Seal: 30.34 to 25.16m 0.30 to 5.49m BGS Material: BENTONITE GRAVEL Sand Pack: 25.16 to 21.50m 5.49 to 9.14m BGS Material: #3 SILICA SAND</p>	1A			2.9	
	CLAY (FILL), brown, moist			1	P/S	100		
	ML/CL-SILTY CLAY, brown, moist	29.73		1B			1.9	
2	- brown grey at 1.52m BGS			2A			3.4	
				2	P/S	100		
				2B			3.6	
3	- mottled brown grey at 3.05m BGS			3A			6.7	
	- grey at 3.51m BGS			3	P/S	100		
4				3B			34	
				4A			4.2	
5	- with silt, soft, tacky at 4.57m BGS			4	P/S	100		
				4B			5.3	
6				5A			5.1	
				5	P/S	100		
7			5B			5.0		
8			6A			5.1		
			6	P/S	100			
9			6B			3.9		
	END OF BOREHOLE @ 9.14m BGS	21.50						
10	Note: Stratigraphy same as SB103-04							
11								
12								
13								
14								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA

HOLE DESIGNATION: MW102S-04

PROJECT NUMBER: 38006

DATE COMPLETED: October 8, 2004

CLIENT: 2058280 ONTARIO LTD.

DRILLING METHOD: GEOPROBE

LOCATION: ELMVALE MALL

FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
	GROUND SURFACE TOP OF RISER	30.64 30.63						
	SAND (FILL), brown, moist	30.19	<p>WELL DETAILS Screened interval: 28.51 to 26.99m 2.13 to 3.66m BGS Length: 1.52m Diameter: 25mm Slot Size: 10 Material: SCH 40 PVC Seal: 30.34 to 29.12m 0.30 to 1.52m BGS Material: BENTONITE GRAVEL Sand Pack: 29.12 to 26.99m 1.52 to 3.66m BGS Material: #3 SILICA SAND</p>					
	CLAY (FILL), brown, moist	29.73		1A				2.9
1	MUCL-SILTY CLAY, brown, moist - brown grey at 1.52m BGS			1	P/S	100		
				1B				1.9
2				2A				3.4
				2	P/S	100		
				2B				3.6
3	- mottled brown grey at 3.05m BGS - grey at 3.51m BGS			3	P/S	100		
				3A				6.7
4	END OF BOREHOLE @ 3.66m BGS	26.99						
5	Note: Stratigraphy same as SB103-04							
6								
7								
8								
9								
10								
11								
12								
13								
14								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP GDT 12/3/04



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: MW103-04
 DATE COMPLETED: October 8, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	MONITORING WELL	SAMPLE					
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PI/D (ppm)	
	GROUND SURFACE TOP OF RISER	30.62 30.60							
	TOPSOIL	30.46	<p style="font-size: small;">BENTONITE GRAVEL 25 mm Ø RISER PIPE 75 mm Ø BOREHOLE SAND PACK WELL SCREEN</p>						
	CLAY (FILL), brown, moist	30.16		1A					3.1
	SAND (FILL), brown, moist	30.01		1	P/S	100			
1	ML/CL-SILTY CLAY, stiff, brown, moist			1B					3.1
	- brown grey at 1.52m BGS			2A					2.8
2				2	P/S	100			
				2B					2.3
3	- mottled brown grey at 3.05m BGS			3A					4.3
				3	P/S	100			
4				3B					5.8
	- grey, soft at 4.57m BGS			4A					4.4
5				4	P/S	100			
	- stiff at 6.10m BGS			4B					3.3
6				5A					3.3
	- mottled brown grey at 7.01m BGS		5	P/S	100				
7			5B					5.6	
	- grey at 7.62m BGS		6A					4.8	
8			6	P/S	100				
9	END OF BOREHOLE @ 9.14m BGS	21.47	6B					4.4	
10	Note: Stratigraphy same as SB105-04		WELL DETAILS Screened interval: 24.52 to 21.47m 6.10 to 9.14m BGS Length: 3.05m Diameter: 25mm Slot Size: 10 Material: SCH 40 PVC Seal: 30.31 to 25.13m 0.30 to 5.49m BGS Material: BENTONITE GRAVEL Sand Pack: 25.13 to 21.47m 5.49 to 9.14m BGS Material: #3 SILICA SAND						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA CORP.GDT 12/3/04



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ELMVALE PHASE II ESA
 PROJECT NUMBER: 38006
 CLIENT: 2058280 ONTARIO LTD.
 LOCATION: ELMVALE MALL

HOLE DESIGNATION: MW104-04
 DATE COMPLETED: October 8, 2004
 DRILLING METHOD: GEOPROBE
 FIELD PERSONNEL: B. CAREW

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. m	MONITORING WELL	SAMPLE					
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)	
	GROUND SURFACE TOP OF RISER	30.58 30.57							
	TOPSOIL	30.50	<p style="font-size: small;">BENTONITE GRAVEL 25 mm Ø RISER PIPE 75 mm Ø BOREHOLE SAND PACK WELL SCREEN</p>						
	CLAY (FILL), brown, moist	30.12		1A					1.3
	SAND (FILL), brown, moist	29.82		1	P/S	100			
1	ML/CL-SILTY CLAY, stiff, brown, moist - brown grey at 1.52m BGS			1B					1.9
2				2A					2.9
				2	P/S	100			
3	- brown at 3.05m BGS			2B					1.8
4				3A					2.8
				3	P/S	100			
4	- grey, tacky at 4.57m BGS			3B					2.1
5				4A					2.4
				4	P/S	100			
6				4B					2.4
7				5A					2.9
				5	P/S	100			
8	- grey at 7.62m BGS			5B					3.2
9			6A					3.5	
			6	P/S	100				
9	- soft at 9.14m BGS		6B					39	
10	- with sand, with gravel from 9.91 to 10.67m BGS		7A					37	
			7	P/S	100				
11			7B					37	
			8	P/S	100				
			8A					3.9	
	END OF BOREHOLE @ 11.43m BGS	19.15							
12	Note: Stratigraphy same as SB108-04		<p>WELL DETAILS Screened interval: 22.20 to 19.15m 8.38 to 11.43m BGS Length: 3.05m Diameter: 25mm Slot Size: 10 Material: SCH 40 PVC Seal: 30.27 to 22.96m 0.30 to 7.62m BGS Material: BENTONITE GRAVEL Sand Pack: 22.96 to 19.15m 7.62 to 11.43m BGS Material: #3 SILICA SAND</p>						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 38006.GPJ CRA_CORP.GDT 12/3/04

ATTACHMENT B

WASTE DISPOSAL LABORATORY REPORT

Conestoga-Rovers & Associates
Bathurst
651 Colby Dr
Waterloo, ON
N2V 1C2

Attention: Crystal Harte

Report Date: 2004/08/24

Your Project #: 37032
Your C.O.C. #: NA

ANALYTICAL REPORT

MAXXAM JOB #: A437693

Received: 2004/08/17, 14:16

Sample Matrix: LIQUID
Samples Received: 1

<u>Analyses</u>	<u>Quantity</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>	<u>Laboratory Method</u>	<u>Method Reference</u>
Volatile Organic Compounds	1	N/A	2004/08/24	Ont SOP 0126	EPA 8260

Sample Matrix: SOLID
Samples Received: 1

<u>Analyses</u>	<u>Quantity</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>	<u>Laboratory Method</u>	<u>Method Reference</u>
TCLP Zero Headspace Extraction	1	2004/08/24	2004/08/24		

MAXXAM ANALYTICS INC.

SAMI JAMOKHA, M.Sc., C.Chem.

SJA/lt
encl.

Total cover pages: 1

Mississauga Env: 5540 McAdam Road L4Z 1P1 Telephone(905) 890-2555 FAX(905) 890-0370

Maxxam Job #: A437693
Report Date: 2004/08/24

Conestoga-Rovers & Associates
Client Project #: 37032
Project name:
Sampler Initials:

VOLATILE ORGANICS BY GC-MS (LIQUID)

Maxxam ID		D37490		
Sampling Date		2004/08/12		
	Units	S-37032-ILM-081104-011	DL	QA Batch

VOLATILES				
1,1-Dichloroethylene	ug/L	ND	0.5	627715
1,2-Dichlorobenzene	ug/L	ND	0.5	627715
1,2-Dichloroethane	ug/L	ND	0.5	627715
1,4-Dichlorobenzene	ug/L	ND	0.5	627715
Benzene	ug/L	ND	0.5	627715
Carbon Tetrachloride	ug/L	ND	0.5	627715
Chlorobenzene	ug/L	ND	0.5	627715
Chloroform	ug/L	ND	0.2	627715
Dichloromethane(Methylene Chloride)	ug/L	ND	1	627715
2-Butanone (Methyl Ethyl Ketone)	ug/L	ND	15	627715
Tetrachloroethylene	ug/L	2.6	0.5	627715
Trichloroethylene	ug/L	0.6	0.5	627715
Vinyl Chloride	ug/L	ND	0.2	627715
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	98		627715
D4-1,2-Dichloroethane	%	101		627715
D8-Toluene	%	103		627715

ND = Not detected
QC Batch = Quality Control Batch
Please check for attached comments

Maxxam Job #: A437693
Report Date: 2004/08/24

Conestoga-Rovers & Associates
Client Project #: 37032
Project name:
Sampler Initials:

VOLATILE ORGANICS BY GC-MS (SOLID)

Maxxam ID		D37490		
Sampling Date		2004/08/12		
	Units	S-37032-ILM-081104-011	DL	QA Batch

WHEN NONE APPLIES				
Amount Extracted (Wet Weight) (g)	N/A	SEECOMMENT	N/A	627713
Volume of Leachate Solution (ml)	N/A	SEECOMMENT	N/A	627713

QC Batch = Quality Control Batch
Please check for attached comments

Maxxam Job #: A437693
Report Date: 2004/08/24

Conestoga-Rovers & Associates
Client Project #: 37032
Project name:
Sampler Initials:

GENERAL COMMENTS

Sample D37490-01: VOC Analysis: The Zero Headspace extraction was done by PSC Analytical Services. The VOC-WTR portion was analyzed at Maxxam Analytics.

Results relate only to the items tested.

Conestoga-Rovers & Associates
 Attention: Crystal Harte
 Client Project #: 37032
 P.O. #:
 Project name:

Quality Assurance Report
 Maxxam Job Number: MA437693

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
627715 SSS	Method Blank	4-Bromofluorobenzene	2004/08/24		104	%	75 - 115
		D4-1,2-Dichloroethane	2004/08/24		102	%	85 - 120
		D8-Toluene	2004/08/24		105	%	75 - 115
		1,1-Dichloroethylene	2004/08/24	ND		ug/L	
		1,2-Dichlorobenzene	2004/08/24	ND		ug/L	
		1,2-Dichloroethane	2004/08/24	ND		ug/L	
		1,4-Dichlorobenzene	2004/08/24	ND		ug/L	
		Benzene	2004/08/24	ND		ug/L	
		Carbon Tetrachloride	2004/08/24	ND		ug/L	
		Chlorobenzene	2004/08/24	ND		ug/L	
		Chloroform	2004/08/24	ND		ug/L	
		Dichloromethane(Methylene Chloride)	2004/08/24	ND		ug/L	
		2-Butanone (Methyl Ethyl Ketone)	2004/08/24	ND		ug/L	
		Tetrachloroethylene	2004/08/24	ND		ug/L	
		Trichloroethylene	2004/08/24	ND		ug/L	
		Vinyl Chloride	2004/08/24	ND		ug/L	

ND = Not detected

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