Ottawa Carleton District School Board

Earl of March Secondary School
No.4 The Parkway, Kanata, ON

Phase II Environmental Site Assessment

MM1083

October 8th, 2013

CM3 Environmental Inc.
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1.0 INTRODUCTION

This report presents the results of the Phase II Environmental Site Assessment (ESA), completed by CM3 Environmental Inc. (CM3) for Earl of March Secondary School located at No. 4 The Parkway, Kanata, Ontario.

The Phase II ESA was conducted in support of a Site Plan Control Application related to a new proposed addition at the southern end of the existing building.

A Phase I ESA was conducted by CM3 entitled "Phase I Environmental Site Assessment – Earl of March Secondary School - No. 4 The Parkway, Kanata, Ontario" dated June 4th, 2013. The findings of the Phase I ESA recommended a Phase II ESA based on the following Areas of Potential Environmental Concern (APEC):

- Two former underground storage tanks (USTs) located on the west side of the school outside the mechanical room; and,
- Diesel fuel spillage in the vicinity of the emergency generator.

2.0 METHODOLOGY

2.1 Phase II ESA

CM3 performed the Phase II ESA in accordance with Ontario Regulation 153/04 and the CSA standard Z768. The Canadian Standard, CAN/CSA-Z769-00 (R2008) *Phase II Environmental Site Assessment,* is the acceptable standard in Canada and is a derivative of and based on the ASTM standard, therefore ensuring that the Phase II ESAs completed will be acceptable to any regulatory agent or prospective future purchaser.

The Phase II ESA was also performed in general accordance with Ontario Regulation 511/09 for Phase II Environmental Assessments.

The scope of work for this ESA included:

- Preparation of a site specific health and safety plan;
- Determination of the location of the underground utilities;
- The advancement of 24 boreholes with 23 converted to monitoring wells;
- The continuous collection of soil samples during the drilling and on-site analysis of all soil samples for vapours with a combustible gas meter;
- The selection of soil samples from the boreholes for analysis of petroleum hydrocarbons (PHC) in the F1 to F4 ranges and Polycyclic Aromatic Hydrocarbons (PAHs);
- The collection and analysis of groundwater samples from the monitoring wells for PHCs and PAHs;
- The determination of the depth to groundwater and inferred groundwater flow direction; and,
- The preparation of a detailed report on the above.

The objective of this Phase II ESA was to identify environmental impacts to soil and groundwater (if present).

3.0 SITE INFORMATION

3.1 Site Location

The site is located south of The Parkway, west of Teron Road and north of Campeau Drive in Kanata. The civic address is 4 The Parkway.

3.2 Site Description

The site is approximately 24.08 acres in size and consists of a two storey brick, concrete and metal siding school constructed in 1971. The legal description is PT LT 3, CON 3, AS IN CT116346; KANATA/MARCH. A paved asphalt parking lot is located on the east side of the building with open field areas are located primarily to the north and west of the building. Site location and site plans are provided as **Figure 1** and **Figure 2**.

4.0 REMEDIAL STANDARDS CRITERIA

The results of the soil chemical analyses were compared to The Ontario Ministry of Environment (MOE) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, dated July 27, 2009 and revised April 15, 2011 (under Ontario Regulation 153/04, and amended under Ontario Regulation 511/09).

More specifically, the Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition (Coarse Textured Soils and Residential, Parkland, Institutional Property Use) were selected for comparison.

The MOE Table 3 Standards were used for the following reasons:

- Contaminants of concern are petroleum products;
- No environmentally sensitive areas are located on site;
- No surface water is located within 30 m of the site;
- Bedrock is generally greater than 2 m from ground surface in the area of investigation;
- Groundwater is municipally supplied; and,
- The site land use is Institutional.

5.0 PHASE II ASSESSMENT ACTIVITIES

5.1 Borehole Drilling and Monitoring Well Installation

CM3 supervised the advancement of 24 boreholes from July 9th, to July 25th, 2013 to assess the soil and groundwater conditions at the site. Drilling services were provided by OGS Inc. of Almonte, Ontario. Under supervision of CM3, OGS utilized portable drilling equipment with split spoon samplers and electric coring to advance the boreholes. All boreholes with the exception of MW4, advanced in the basement) were advanced around the outside the building and are shown on **Figure 3**.

Soil samples were collected continuously throughout the depth of each borehole for combustible soil vapour analysis. At the time of collection, each borehole soil sample was split in the field with the first half placed in a polyethylene bag for headspace combustible vapour analysis, and a portion of the other half was immediately methanol preserved in a 40 mL vial according to protocol outlined in Ontario Regulation 179/11 for VOC and PHC F1 analysis. The remaining portion of the sample was placed in a labelled laboratory supplied glass jar for analysis of PHCs and/or PAHs. The samples were immediately placed in a chilled cooler pending submittal to Paracel Laboratories Ltd. (Paracel), of Ottawa, ON for analysis.

Relative combustible vapour concentrations were measured and recorded from the bag sample headspace using an RKI Eagle combustible vapour meter, calibrated to hexane. The results of the headspace combustible vapour analysis and field evidence of environmental impacts were used in selecting which soil samples were submitted for laboratory analysis.

Field evidence of petroleum impacts (both visual and olfactory) was observed in monitoring wells MW1, MW2, MW3, MW5, MW6-13, MW6, MW7, MW13 and MW21. Combustible vapour analysis showed vapour concentrations were between 0 and 450 parts per million (ppm) for the soil samples.

All boreholes with the exception of BH22 were completed as monitoring wells consisting of flush threaded 32 mm diameter, schedule 40 PVC well screens and riser pipe. A threaded cap was fitted to the bottom of the well screen and a j-plug was used on the top of the riser. A clean number 2 silica sand pack was placed around the well screen to approximately 0.3 metres above the screened interval when possible. A bentonite seal was then placed above the sand pack to prevent surface water infiltration into the monitoring well sand pack. All monitoring wells were fitted with flush mount covers. The monitoring well completion details are provided on the borehole logs in **Appendix A**.

The locations of all boreholes/monitoring wells were referenced to existing site features. The monitoring well top of casing (TOC) and ground surface elevations were referenced to an arbitrary site benchmark of 100 m. Elevations were measured to the nearest 0.001 m using a CST/Berger SAL Series automatic level. The borehole/monitoring well locations are illustrated on **Figure 3** and elevations are shown on **Table 3**.

5.2 Soil Sampling Results

Soils on-site primarily consisted of a silty clay or clay. Bedrock was encountered during drilling from a depth of 0.91 to 4.27 meters below grade.

- The soil laboratory analytical results indicated soil samples submitted for PHCs were found to exceed MOE Table 3 Standards in soil samples MW1-SA5, MW2-SA6, MW3-SA5, MW5-SA4, MW6-SA5, MW6-13-SA4, MW7-SA2, MW13-SA3, MW18-SA1 and MW21-SA3.

- The soil laboratory analytical results indicated soil samples submitted for PAHs were below the MOE Table 3 standards in all samples.

The soil analytical results are included in **Tables 1** and **Table 2** respectively. The laboratory reports are included in **Appendix B** for reference. The borehole/monitoring well locations are illustrated on **Figure 3,** soil exceedances are illustrated on **Figure 5**, and borehole logs are provided in **Appendix A**.

5.3 Liquid Phase Hydrocarbon (LPH) and Groundwater Level Monitoring

On August 7th, 2013 CM3 personnel measured the depth to LPH (if present) and groundwater using a Heron Instruments oil/water interface probe. Prior to monitoring, the interface probe was inspected and tested for proper operation. The interface probe was cleaned with an Alconox and water solution and then rinsed with distilled water between each well to prevent cross contamination. Actual product thicknesses were difficult to measure due to the viscous nature of the contaminant.

5.4 Groundwater Sampling

On August 7th, 2013, CM3 developed/purged all monitoring wells. Well development/purging was completed to reduce groundwater turbidity and to remove fine-grained sediments that may have accumulated inside the well casing subsequent to the drilling program.

Well development was accomplished by removing water from the wells at a rate fast enough to hydraulically stress the formation and to re-suspend and extract sediment from the bottom, where present. The pumping rate was generally between 1.0 and 1.5 L/minute or as fast as the well could recharge. Development was conducted using dedicated 1/4" LDPE tubing and a spectra-pro peristaltic pump. The tubing intake was positioned at the bottom of each well and was agitated during pumping to disturb and extract any sediment. The outlet from the pump was directed into a graduated 15L pail for cumulative purge volume measurements.

CM3 completed groundwater sampling on August 7th, 2013 following development. For sample collection, groundwater was transferred from the polyethylene tubing at the outlet of the peristaltic pump into clean, laboratory prepared sample containers that were labelled prior to sample collection. A clean pair of disposable nitrile gloves was worn during sample collection and a new pair of gloves was used at each sample location. CM3 personnel sampled all monitoring wells for laboratory analysis of PHCs F1 to F4 fractions, and select wells for PAH analysis.

Following collection, the sample containers were immediately placed into sealed coolers with ice packs. Completed Chain-of-Custody (COC) forms and the coolers were shipped directly to Paracel Laboratories.

5.5 Groundwater Monitoring and Sampling Results

LPH was detected in monitoring wells **MW2, MW3, MW5, MW6, MW6-13 and MW13**.

Groundwater levels were found to be between 1.452 m and 4.723 m below top of the monitoring well casings.

Water levels and LPH monitoring results are shown on **Table 3**.

The groundwater contour plan from water levels collected on August 7th, 2013 indicates mounding in the source area and inferred groundwater flow directions to the north and south (see **Figure 4**).

- The groundwater laboratory analytical results indicated exceedances for PHCs in monitoring wells MW1, MW7 and MW10. LPH was detected in monitoring wells MW2, MW3, MW5, MW6, MW6-13 and MW13 and are therefore also considered above the MOE Table 3 Standards.

- Select monitoring wells (MW7, MW11, MW18, MW19 and MW21) were sampled for PAHs. The groundwater laboratory analytical results indicated all samples were below the MOE Table 3 Standards.

The results of the groundwater laboratory analyses are summarized in **Tables 4** and **Table 5**. Groundwater exceedances are illustrated on **Figure 5**. The laboratory reports are included in **Appendix B** for reference.

6.0 CONCLUSIONS

CM3 Environmental Inc. conducted a Phase II ESA on behalf of the Ottawa Carleton District School Board for Earl of March Secondary School located at No. 4 The Parkway, Kanata, Ontario.

CM3 advanced 24 boreholes and the soil samples from the boreholes were analysed for PHCs in all boreholes and PAHs in a select number of boreholes.

23 boreholes were converted to monitoring wells for collection of groundwater samples. Groundwater samples from wells not containing LPH were analysed for PHCs and a select number of wells were analysed for PAHs.

The results of the investigation indicate the following:

SOILS

- The soil laboratory analytical results indicated soil samples submitted for PHCs were found to exceed MOE Table 3 Standards in soil samples MW1-SA5, MW2-SA6, MW3-SA5, MW5-SA4, MW6-SA5, MW6-13-SA4, MW7-SA2, MW13-SA3, MW18-SA1 and MW21-SA3.

- The soil laboratory analytical results indicated soil samples submitted for PAHs were below the MOE Table 3 standards in all samples.

GROUNDWATER

- Groundwater levels were found to be between 1.452 m and 4.723 m below top of the monitoring well casings;
- The groundwater contour plan from water levels collected on August 7th, 2013, indicates an inferred groundwater flow direction to the north and south based on mounding in the source area.
- LPH was detected in monitoring wells MW2, MW3, MW5, MW6, MW6-13 and MW13 and are considered to be above the MOE Table 3 Standards.
- The groundwater analytical results for PHC analysis indicated groundwater exceeded the MOE Table 3 Standards in monitoring wells MW1, MW7 and MW10.
- The groundwater analytical results for PAH analysis indicated groundwater samples were non-detect or contained concentrations below the MOE Table 3 Standards.

7.0 RECOMMENDATIONS

Based on the exceedances in both soil and groundwater, CM3 recommends further investigation and remedial efforts to bring the site to within MOE Standards. Remedial options will be presented under separate cover.

CLOSURE

This report has been prepared and the work referred to in this report has been undertaken by CM3 Environmental Inc. for the OCDSB. It is intended for the sole and exclusive use of the OCDSB, its affiliated companies and partners and their respective insurers, agents, employees and advisors. Any use, reliance on, or decision made by any person other than the OCDSB based on this report is the sole responsibility of such other person. The OCDSB and CM3 Environmental Inc. make no representation or warranty to any other person with regard to this report and the work referred to in this report, and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by CM3 Environmental Inc. with respect to this report and any conclusions or recommendations made in this report reflect CM3 Environmental Inc.'s judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site, substances addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the location from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by the OCDSB, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of CM3 Environmental Inc. Nothing in this report is intended to constitute or provide a legal opinion.

We trust that the above is satisfactory for your purposes at this time. Please feel free to contact the undersigned if you have any questions.

Yours sincerely
CM3 Environmental Inc.

Marc MacDonald, P. Eng. EP, QP
Principal

Bruce Cochrane P.Geo. EP, QP
Principal

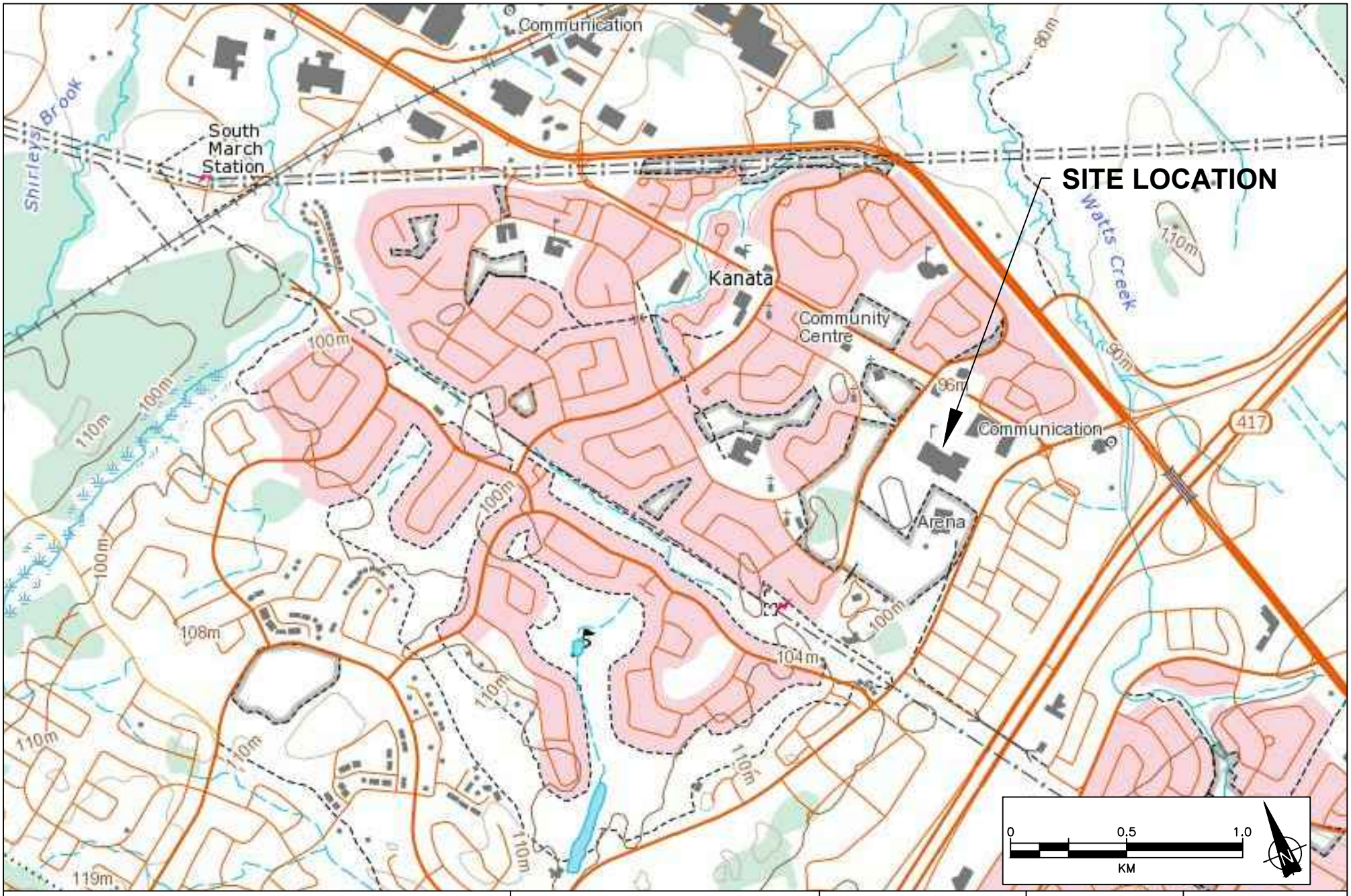
FIGURES

Phase II Environmental Site Assessment

Earl of March Secondary School

No. 4 The Parkway, Kanata, ON

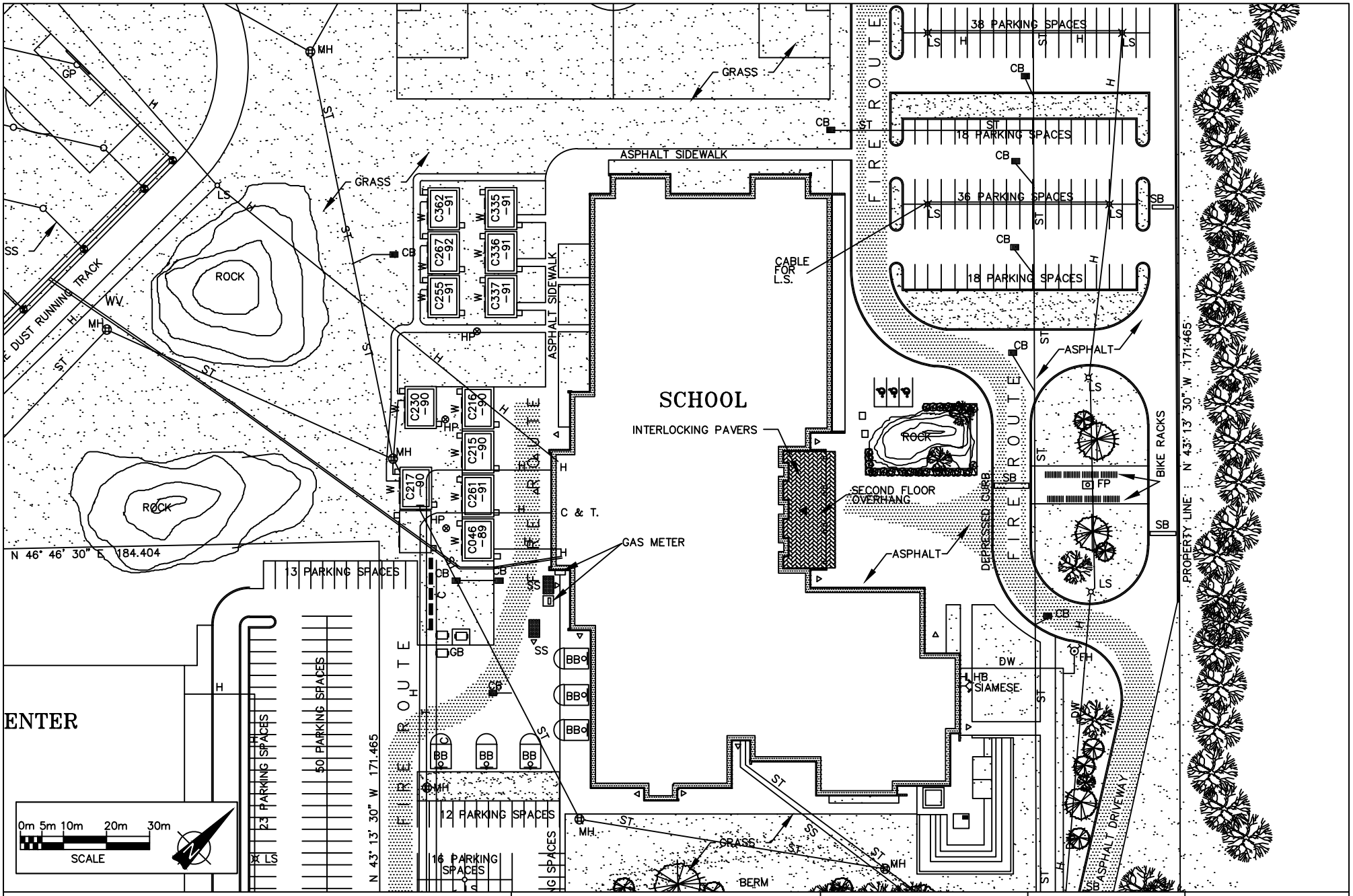
MM-1083



OTTAWA CARELTON DISTRICT SCHOOL BOARD
EARL OF MARCH SECONDARY SCHOOL
No. 4 THE PARKWAY, KANATA, ON

CM3 ENVIRONMENTAL
2120 ROBERTSON ROAD
SUITE 208
OTTAWA, ON
K2H 5Z1

DATE: SEPTEMBER 2013	**SCALE:** AS SHOWN
PROJECT: MM1083	**FIGURE: 4** SITE LOCATION PLAN



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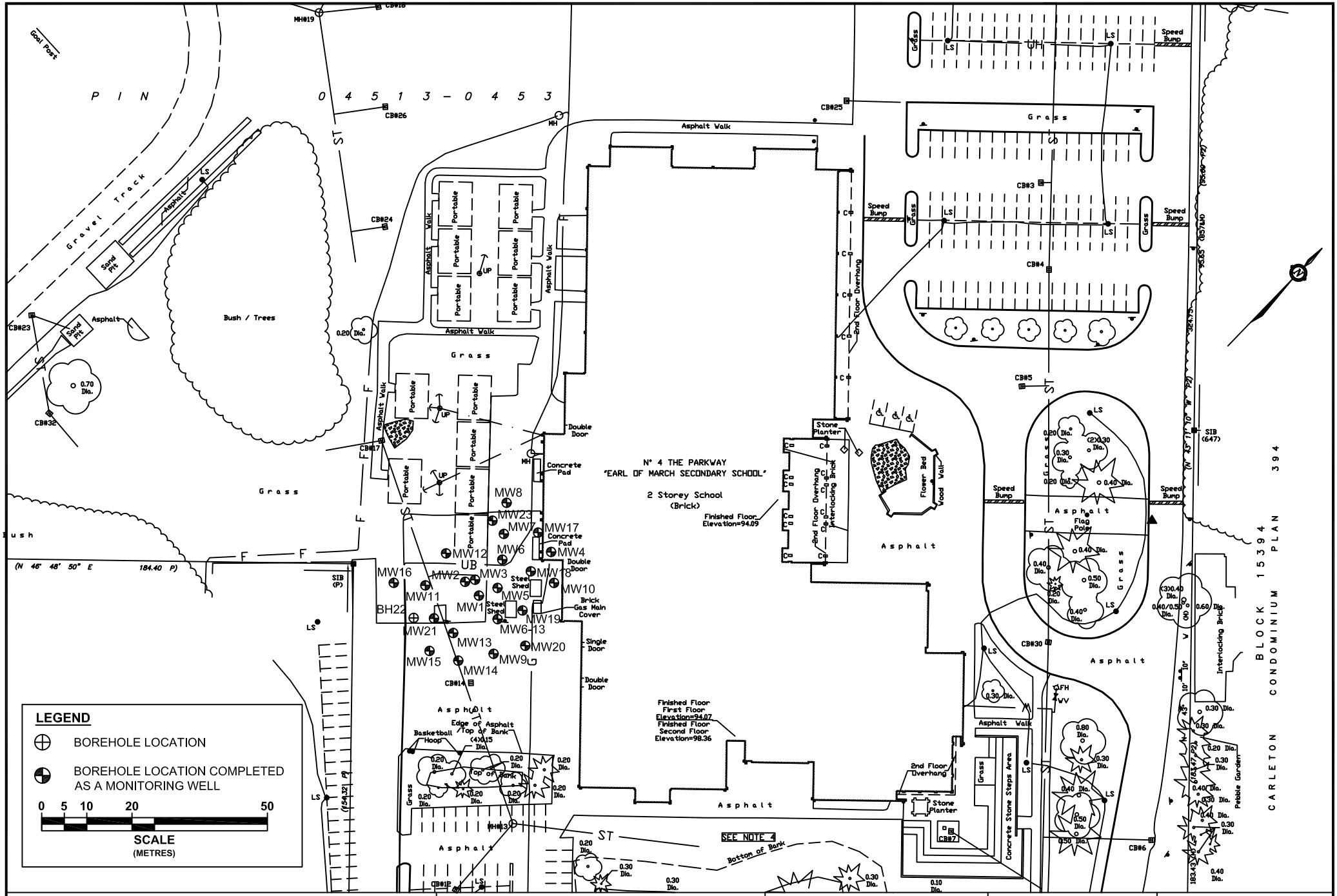
K2H 5Z1

DATE: SEPTEMBER 2013

SCALE: AS SHOWN

PROJECT: MM1083

FIGURE: 2
SITE LAYOUT PLAN



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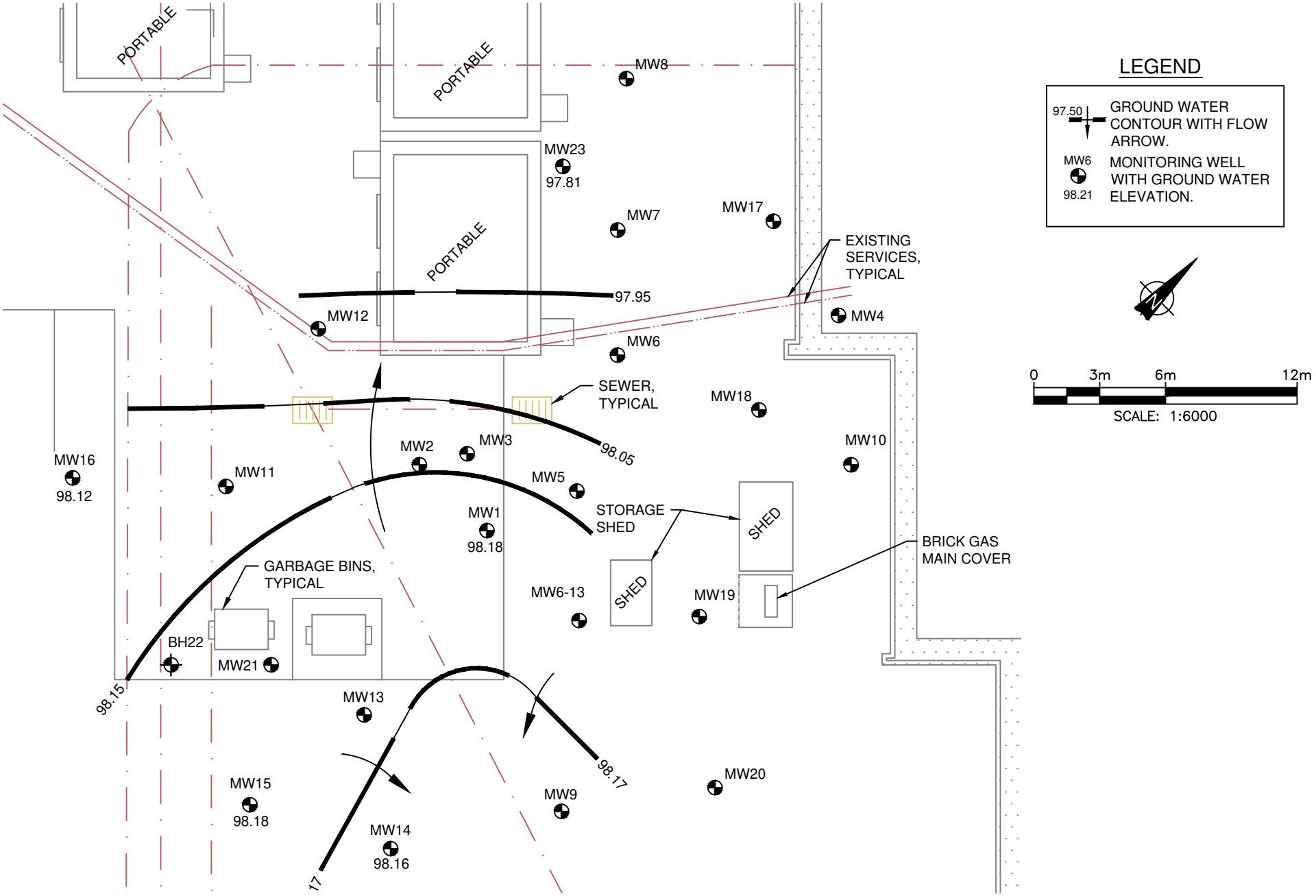
DATE: JULY 2013

SCALE: AS SHOWN

PROJECT: MM1083

FIGURE: 3
MW LOCATIONS



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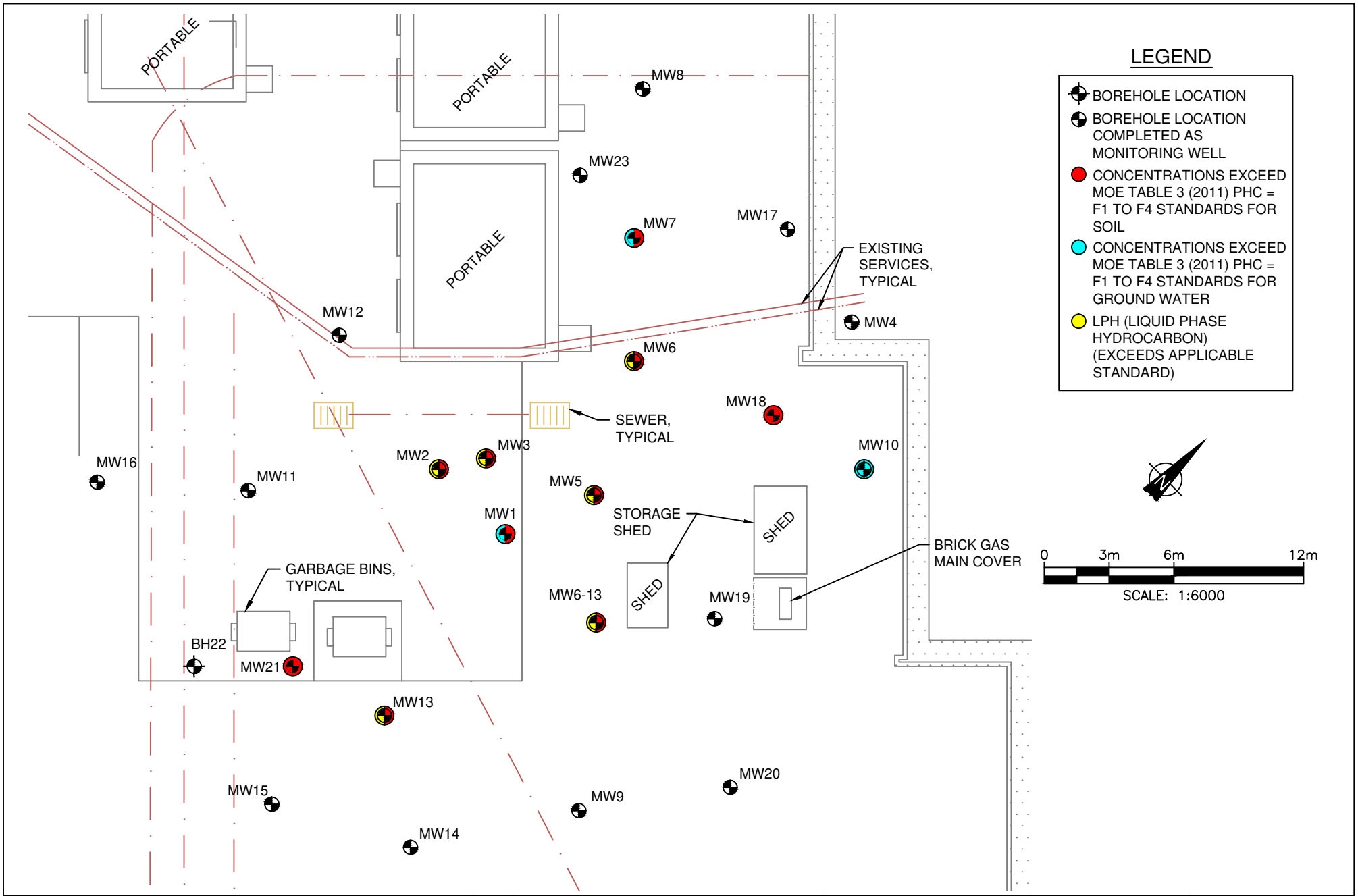
DATE: OCTOBER 2013	**SCALE:** AS SHOWN
PROJECT: MM1083	**FIGURE: 4** GROUNDWATER FLOW



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No. 4 THE PARKWAY, KANATA, ON

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SUITE 208
OTTAWA, ON
K2H 5Z1

DATE: SEPTEMBER 2013	**SCALE:** AS SHOWN
PROJECT: MM1083	**FIGURE: 5** EXCEEDANCES

TABLES

Phase II Environmental Site Assessment

Earl of March Secondary School

No. 4 The Parkway, Kanata, ON

MM-1083

Table 1:
Summary of Soil Analytical Results
BTEX and Petroleum Hydrocarbons F1 to F4 Fractions (mg/kg or ppm)
4 The Parkway, Kanata, ON - Earl of March Secondary School
MM-1083

Sample ID	Date	Depth (m)	Benzene	Ethyl Benzene	Toluene	m,p-Xylene	o-Xylene	Xylene (Total)	PHC F1 (C6-C10)	PHC F2 (C10-C16)	PHC F3 (C16-C34)	PHC F4 (>C34)
MOE Standards Table		**MDL (ug/g)**	0.02	0.05	0.05	0.05	0.05	0.05	7	4	8	6
Reg 153/04 (2011)-Table 3 Residential, coarse			**0.21**	**2**	**2.3**	**nv**	**nv**	**3.1**	**55**	**98**	**300**	**2800**
Borehole Samples												
MW1-SA5	4-Jul-13	2.74 - 3.35	<0.02	0.32	<0.05	<0.05	<0.05	<0.05	***61***	***235***	***927***	***138***
MW2-SA6	4-Jul-13	3.35 - 3.96	<0.02	0.47	<0.05	<0.05	<0.05	<0.05	***63***	***454***	***1300***	174
MW3-SA5	4-Jul-13	2.74 - 3.35	<0.02	1.13	<0.05	<0.05	<0.05	<0.05	48	***680***	***1640***	178
MW4-SA2	4-Jul-13	0.43 - 0.61	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	32	65
MW5-SA4	5-Jul-13	2.13 - 2.74	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	20	***269***	***574***	<6
MW6-13-SA4	5-Jul-13	2.13 - 2.74	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	48	***309***	***801***	112
MW6 SA5	9-Jul-13	2.44 - 3.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	28	***309***	***857***	<6
MW7-SA2	9-Jul-13	1.52- 2.13	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	***70***	***422***	***1140***	<6
MW8-SA4	9-Jul-13	2.44 - 3.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW9-SA5	9-Jul-13	3.05 - 3.66	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW10-SA1	10-Jul-13	0.61 - 1.22	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW11-SA3	10-Jul-13	1.52 - 1.98	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW12 SA5	16-Jul-13	2.13 - 2.74	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW13 SA3	16-Jul-13	1.83 - 2.44	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	***617***	***1640***	96
MW14-SA4	17-Jul-13	2.44 - 3.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW15-SA4	17-Jul-13	2.74 - 3.35	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW16-SA4	17-Jul-13	1.83 - 2.44	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW17-SA4	24-Jul-13	2.74 - 3.35	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW18 SA1	24-Jul-13	0.61 - 1.22	<0.02	***3.20***	***5.25***	13.70	4.42	***18.10***	***136***	<4	<8	<6
MW19 SA4	24-Jul-13	2.13 - 2.44	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW20 SA3	25-Jul-13	1.83 - 2.44	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW21 SA3	25-Jul-13	1.83 - 2.13	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	***536***	***1330***	<6
MW22 SA2	25-Jul-13	1.22 - 1.83	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6
MW23 SA4	25-Jul-13	2.13 - 2.74	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<7	<4	<8	<6

Notes:

ppm	- All concentrations provided in parts per million (micrograms per gram - µg/g)
"<"	- Less than detection limits indicated (refer to laboratory report)
NV	- No standard listed
MOE Standards Table	- Standards from the Ontario Ministry of Environment (MOE) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA Reg 153/04 (2011)-Table 3 Residential, coarse
Bold / Italics	- Indicates exceedance of MOE Table Standards.

Table 2:
Soil Laboratory Analytical Results - Polycyclic Aromatic Hydrocarbons (PAHs)
4 The Parkway, Kanata, ON - Earl of March Secondary School
MM-1083

Sample ID	Date	Depth (m)	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene	Benzo[k]fluoranthene	1,1-Biphenyl	Chrysene	Dibenzo[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Methylnaphthalene (1&2)	Naphthalene	Phenanthrene	Pyrene
MDL (ug/g)			0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.01	0.02	0.02
MOE Table 3 (2011)			**7.9**	**0.15**	**0.67**	**0.5**	**0.3**	**0.78**	**6.6**	**0.78**	**0.31**	**7**	**0.1**	**0.69**	**62**	**0.38**	**0.99**	**0.99**	**0.99**	**0.6**	**6.2**	**78**
MW6 SA5	09-Jul-13	2.44 - 3.05	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.02	0.19	<0.02	0.06	<0.02	0.06	<0.01	0.58	0.05
MW7 SA2	09-Jul-13	1.52 - 2.13	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.34	<0.02	<0.02	<0.02	<0.04	<0.01	<0.02	0.16
MW8 SA4	09-Jul-13	2.44 - 3.05	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.04	<0.01	<0.02	<0.02
MW9 SA5	09-Jul-13	3.05 - 3.66	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.04	<0.01	<0.02	<0.02
MW13 SA3	16-Jul-13	1.83 - 2.44	0.09	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.04	<0.01	<0.02	0.14
MW21 SA3	25-Jul-13	1.83 - 2.13	0.08	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.47	<0.02	<0.02	<0.02	<0.04	<0.01	0.26	0.13

Notes:

ppm - All concentrations provided in parts per million (micrograms per gram µg/g)
MDL - Method detection limit
"<" - Less than detection limits indicated
NV - No Value
MOE Table 3 - Table 3 Standards from the Ontario Ministry of Environment (MOE) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, for residential land use in a non-potable groundwater situation, for coarse textured soils.
Red Bold - Indicates exceedance of MOE Table 3 standards.

Table 3:
Groundwater Level Measurements
4 The Parkway, Kanata, ON - Earl of March Secondary School
MM-1083

Well ID	Date	TOC	Depth to		Elevation			LPH Thickness	Comments
		(marl)	LPH (mbtoc)	GW (mbtoc)	LPH (marl)	GW (marl)	Corr. GW (marl)	(m)	
MW1	7-Aug-13	99.849	--	1.672	--	98.177	98.177	---	
MW2	7-Aug-13	99.837	--	1.725	--	98.112	98.112	---	LPH noted
MW3	7-Aug-13	99.820	--	1.818	--	98.002	98.002	---	LPH noted
MW4	7-Aug-13	NS	--	1.462	--			---	
MW5	7-Aug-13	99.909	--	1.931	--	97.978	97.978	---	LPH noted
MW6	7-Aug-13	99.953	--	2.015	--	97.938	97.938	---	LPH noted
MW6-13	7-Aug-13	99.833	--	1.883	--	97.950	97.950	---	LPH noted
MW7	7-Aug-13	99.873	--	2.075	--	97.798	97.798	---	
MW8	7-Aug-13	99.916	--	2.335	--	97.581	97.581	---	
MW9	7-Aug-13	99.738	--	1.618	--	98.120	98.120	---	
MW10	7-Aug-13	99.993	--	4.723	--	95.270	95.270	---	
MW11	7-Aug-13	99.778	--	1.745	--	98.033	98.033	---	
MW12	7-Aug-13	99.813	--	1.785	--	98.028	98.028	---	
MW13	7-Aug-13	99.852	--	1.722	--	98.130	98.130	---	LPH noted
MW14	7-Aug-13	99.686	--	1.523	--	98.163	98.163	---	
MW15	7-Aug-13	99.790	--	1.611	--	98.179	98.179	---	
MW16	7-Aug-13	99.882	--	1.761	--	98.121	98.121	---	
MW17	7-Aug-13	99.996	--	NM	--	NV	NV	---	dry
MW18	7-Aug-13	99.963	--	4.705	--	95.258	95.258	---	
MW19	7-Aug-13	99.955	--	2.165	--	97.790	97.790	---	
MW20	7-Aug-13	99.752	--	1.650	--	98.102	98.102	---	
MW21	7-Aug-13	99.854	--	1.805	--	98.049	98.049	---	
MW23	7-Aug-13	99.828	--	2.020	--	97.808	97.808	---	

Notes:
TOC - top of casing
marl - metres above arbitrary reference level
mbtoc - metres below top of casing
LPH - liquid phase hydrocarbons
GW - groundwater
Corr. GW - corrected water level calculated for monitoring wells containing LPH, assuming an LPH density of 0.86 g/ml
NM - not measured
NV no value
-- - no value/LPH not present

Table 4:
Summary of Groundwater Analytical Results
BTEX and Petroleum Hydrocarbons F1 to F4 Fractions (ug/L or ppb)
4 The Parkway, Kanata, ON - Earl of March Secondary School
MM-1083

Sample ID		Benzene	Ethyl Benzene	Toluene	m,p-Xylene	o-Xylene	Xylene (Total)	PHC F1 (C6-C10)	PHC F2 (C10-C16)	PHC F3 (C16-C34)	PHC F4 (>C34)
MOE Standards Table	**MDL (ug/L)**	0.5	0.5	0.5	0.5	0.5	0.5	25	100	100	100
Reg 153/04 (2011)-Table 3 Non-Potable	**Date**	**44**	**2300**	**18000**	**nv**	**nv**	**4200**	**750**	**150**	**500**	**500**
Monitoring Well Samples											
MW1	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	***201***	***980***	<100
MW2	**LPH**										
MW3	**LPH**										
MW4	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW5	**LPH**										
MW6	**LPH**										
MW6-13	**LPH**										
MW7	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	***414***	***1140***	<100
MW8	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW9	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW10	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	***555***	<100
MW11	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW12	**DRY**										
MW13	**LPH**										
MW14	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW15	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW16	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW17	**DRY**										
MW18	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW19	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW20	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW21	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100
MW23	07-Aug-13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<25	<100	<100	<100

Notes:

ppb - All concentrations provided in parts per billion (micrograms per gram - µg/L)
"<" - Less than detection limits indicated (refer to laboratory report)
NV - No standard listed
MOE Standards Table - Standards from the Ontario Ministry of Environment (MOE) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act Reg 153/04 (2011)-Table 3 Non-Potable Groundwater, coarse
Bold / Italics - Indicates exceedance of MOE Table Standards.

Table 5:
Groundwater Laboratory Analytical Results - Polycyclic Aromatic Hydrocarbons (PAHs)
4 The Parkway, Kanata, ON - Earl of March Secondary School
MM-1083

Sample ID	Date	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene	Benzo[k]fluoranthene	1,1-Biphenyl	Chrysene	Dibenzo[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Methylnaphthalene (1&2)	Naphthalene	Phenanthrene	Pyrene
	MDL (ug/L)	0.05	0.05	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.05	0.05	0.01	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.01
	MOE Table 3 (2011)	**600**	**1.8**	**2.4**	**4.7**	**0.81**	**0.75**	**0.2**	**0.4**	**1000**	**1**	**0.52**	**130**	**400**	**0.2**	**1800**	**1800**	**1800**	**1400**	**580**	**68**
MW7	7-Aug-13	<0.05	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	0.15	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05	0.17
MW11	7-Aug-13	<0.05	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	0.23	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05	<0.01
MW18	7-Aug-13	<0.05	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05	<0.01
MW19	7-Aug-13	<0.05	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.10	0.15	0.09	<0.01
MW21	7-Aug-13	0.16	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	0.09	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05	<0.01

Notes:

ppb - All concentrations provided in parts per billion (micrograms per gram µg/L)

"<" - Less than detection limits indicated

Table 3 standards - From the Ontario Ministry of Environment (MOE) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, July 2011, for institutional land use in a non-potable groundwater situation, coarse textured soils.

Bold / Italic - Indicates exceedance of applicable MOE standards.

Appendix A

Borehole and Monitoring Well Logs

Phase II Environmental Site Assessment

Earl of March Secondary School

No. 4 The Parkway, Kanata, ON

MM-1083

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW1
SURFACE ELEVATION: 99.92 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**FILL** SAND and GRAVEL, brown				roadbox, jplug, cement bentonite seal	
		SA1				25				
1		SA2				25			32 mm solid PVC pipe	99
		SA3				55			GW = 1.74 mbg (Water Level measured on Aug 7, 2013)	
2										98
		SA4			**silty SAND** brown, wet	95			32 mm 010 slot PVC pipe silica sand	
3		SA5				450				97
		SA6				200				
					End of borehole at 3.5 m					

Well Completion Details:
Screened interval from 1.0 m to 3.5 m below surface
Elevation at top of pipe (TOP) = 99.849 m

Groundwater Information:
Depth to groundwater from TOP = 1.67 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 4 LOGGED BY: DB

Notes: NO RECOVERY
SPLIT SPOON

BOREHOLE LOG

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE NO: MW2
SURFACE ELEVATION: 99.91 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**FILL** sand and gravel, brown				roadbox, jplug, cement bentonite seal	
		SA1			**SAND** LPH observed from 1.52 to 3.96 meters below grade, brown	5			32 mm solid PVC pipe	
1		SA2				75				99
		SA3				130		▼	GW = 1.79 mbg (Water Level measured on Aug 7, 2013)	
2		SA4				110			32 mm 010 slot PVC pipe silica sand	98
3		SA5				86				97
		SA6				170				
										96
					End of borehole at 4.0 m Well Completion Details: Screened interval from 0.9 m to 4.0 m below surface Elevation at top of pipe (TOP) = 99.837 m Groundwater Information: Depth to groundwater from TOP = 1.73 m (Water Level measured on Aug 7, 2013)					

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 4 LOGGED BY: DB

Notes: SPLIT SPOON

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW3
SURFACE ELEVATION: 99.89 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**FILL** sand and gravel, brown				roadbox, jplug, cement bentonite seal	
		SA1			**SAND** LPH observed from 1.52 to 2.13 meters below grade, brown	15			32 mm solid PVC pipe	
1		SA2				30				99
		SA3				130		▼	GW = 1.88 mbg (Water Level measured on Aug 7, 2013)	
2		SA4				180				98
									32 mm 010 slot PVC pipe	
3		SA5				320			silica sand	97
		SA6				150				
4		SA7				130				96
					End of borehole at 4.3 m Well Completion Details: Screened interval from 1.2 m to 4.3 m below surface Elevation at top of pipe (TOP) = 99.820 m Groundwater Information: Depth to groundwater from TOP = 1.82 m (Water Level measured on Aug 7, 2013)					

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 4 LOGGED BY: DB

Notes: NO RECOVERY
SPLIT SPOON

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW4
SURFACE ELEVATION:

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	DEPTH (m)
					Ground Surface					
0					**CONCRETE**	0			roadbox, jplug, cement bentonite seal	0.0
		SA1			**GRAVEL** fine to medium	0			32 mm solid PVC pipe	
		SA2								
1					**BEDROCK**				32 mm 010 slot PVC pipe silica sand	1.0

End of borehole at 1.9 m

Well Completion Details:
Screened interval from 0.9 m to 1.9 m below surface
Elevation at top of pipe (TOP) = m

Groundwater Information:
Depth to groundwater from TOP = 1.46 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 4 LOGGED BY: DB

Notes: NO RECOVERY
SPLIT SPOON

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW5
SURFACE ELEVATION: 99.94 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	100
					GRAVEL					
					silty SAND brown, wet				32 mm solid PVC pipe	
		SA1				0				
1		SA2				0			silica sand	99
		SA3				30			32 mm 010 slot PVC pipe	
2								▼	GW = 1.97 mbg (Water Level measured on Aug 7, 2013)	98
		SA4			**CLAY** grey, wet	100				
3		SA5				50				97

End of borehole at 3.4 m

Well Completion Details:
Screened interval from 0.9 m to 3.4 m below surface
Elevation at top of pipe (TOP) = 99.909 m

Groundwater Information:
Depth to groundwater from TOP = 1.93 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 5 LOGGED BY: DB

Notes: NO RECOVERY
SPLIT SPOON

BOREHOLE LOG

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE NO: MW6-13
SURFACE ELEVATION: 99.92 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	
					Gravel					
		SA1			**silty SAND** brown	0			32 mm solid PVC pipe	
1		SA2			**CLAY** grey	0				99
		SA3				25			GW = 1.97 mbg (Water Level measured on Aug 7, 2013)	
2		SA4				135			32 mm 010 slot PVC pipe	98
3		SA5				10			silica sand	97
		SA6				10				
4		SA7				5				96

End of borehole at 4.3 m

Well Completion Details:
Screened interval from 1.2 m to 4.3 m below surface
Elevation at top of pipe (TOP) = 99.833 m

Groundwater Information:
Depth to groundwater from TOP = 1.88 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 5 LOGGED BY: DB

Notes: NO RECOVERY
SPLIT SPOON

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW6
SURFACE ELEVATION: 100.02 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				
0		SA1			**ASPHALT** **GRAVEL** **Boulders and Cobbles**	10			roadbox, jplug, cement bentonite seal 32 mm solid PVC pipe	100
1		SA2			**SAND** brown, wet	25			silica sand	99
		SA3			**CLAY** LPH observed from 1.83 to 3.05 meters bgs, grey, wet	15			32 mm 010 slot PVC pipe	
2		SA4				5		▼	GW = 2.08 mbg (Water Level measured on Aug 7, 2013)	98
		SA5				10				
3										97

End of borehole at 3.1 m

Well Completion Details:
Screened interval from 0.9 m to 3.1 m below surface
Elevation at top of pipe (TOP) = 99.953 m

Groundwater Information:
Depth to groundwater from TOP = 2.02 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 9 LOGGED BY: SP

Notes: SPLIT SPOON

BOREHOLE LOG

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE NO: MW7
SURFACE ELEVATION: 99.93 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	
					GRAVEL					
					BOULDERS and COBBLES				32 mm solid PVC pipe	
1										99
		SA1			**SILT SAND and GRAVEL**	0				
					BOULDERS and COBBLES				32 mm 010 slot PVC pipe	
2										98
					silty CLAY				GW = 2.14 mbg (Water Level measured on Aug 7, 2013)	
		SA2			LPH and PHC odours, grey, wet	25			silica sand	
3		SA3				20				97
		SA4				35				
					End of borehole at 3.7 m					

Well Completion Details:
Screened interval from 0.6 m to 3.7 m below surface
Elevation at top of pipe (TOP) = 99.873 m

Groundwater Information:
Depth to groundwater from TOP = 2.08 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 9 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

BOREHOLE LOG

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

CM³ JOB NO: MM-1083

BOREHOLE NO: MW8
SURFACE ELEVATION: 99.99 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	100
					GRAVEL				32 mm solid PVC pipe	
1		SA1			**silty CLAY** trace sand from 0.61 to 1.22 meters bgs, wet at 2.44 meters bgs, grey	25				99
		SA2				15			32 mm 010 slot PVC pipe	
2		SA3				20				98
		SA4				10			GW = 2.41 mbg (Water Level measured on Aug 7, 2013)	
3		SA5				25			silica sand	97
4		SA6				25				96

End of borehole at 4.3 m

Well Completion Details:
Screened interval from 1.2 m to 4.3 m below surface
Elevation at top of pipe (TOP) = 99.916 m

Groundwater Information:
Depth to groundwater from TOP = 2.34 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 9 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

BOREHOLE LOG

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

CM³ JOB NO: MM-1083

BOREHOLE NO: MW9
SURFACE ELEVATION: 99.80 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	
					GRAVEL				32 mm solid PVC pipe	
1		SA1			**silty CLAY** wet at 1.83 meters bgs, grey	0				99
		SA2				20			32 mm 010 slot PVC pipe GW = 1.68 mbg (Water Level measured on Aug 7, 2013)	
2		SA3				30				98
		SA4				40			silica sand	
3		SA5				50				97

End of borehole at 3.7 m

Well Completion Details:
Screened interval from 0.6 m to 3.7 m below surface
Elevation at top of pipe (TOP) = 99.738 m

Groundwater Information:
Depth to groundwater from TOP = 1.62 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 9 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW10
SURFACE ELEVATION: 100.08 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface					
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	100
					GRAVEL					
					SILT SAND and GRAVEL					
1		SA1							32 mm solid PVC pipe	99
					BEDROCK					
2										98
									silica sand	
3										97
									32 mm 010 slot PVC pipe	
4										96
									GW = 4.81 mbg (Water Level measured on Aug 7, 2013)	
5										95

End of borehole at 5.9 m

Well Completion Details:
Screened interval from 2.1 m to 5.9 m below surface
Elevation at top of pipe (TOP) = 99.993 m

Groundwater Information:
Depth to groundwater from TOP = 4.72 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 16 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW11
SURFACE ELEVATION: 99.87 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface					100
0					**silty CLAY** trace sand, brown, moist				roadbox, jplug, cement bentonite seal	
		SA1			brown, wet					
1		SA2							32 mm solid PVC pipe	99
		SA3							GW = 1.84 mbg (Water Level measured on Aug 7, 2013)	
2					**BOULDERS and COBBLES** Cored to final depth					98
3									32 mm 010 slot PVC pipe silica sand	97
					End of borehole at 4.0 m					96

Well Completion Details:
Screened interval from 1.8 m to 4.0 m below surface
Elevation at top of pipe (TOP) = 99.778 m

Groundwater Information:
Depth to groundwater from TOP = 1.75 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 16 LOGGED BY: SP

Notes: SPLIT SPOON
NO RECOVERY

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW12
SURFACE ELEVATION: 99.88 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface					100
0		SA1			**SILT SAND and GRAVEL** trace cobbles, brown, moist	0			roadbox, jplug, cement	
		SA2			**silty CLAY** grey, wet	5			bentonite seal	
1		SA3				15			32 mm solid PVC pipe	99
									32 mm 010 slot PVC pipe	
		SA4				0		▼	GW = 1.85 mbg (Water Level measured on Aug 7, 2013)	98
2		SA5				0			silica sand	

End of borehole at 2.7 m

Well Completion Details:
Screened interval from 1.2 m to 2.7 m below surface
Elevation at top of pipe (TOP) = 99.813 m

Groundwater Information:
Depth to groundwater from TOP = 1.79 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 16 LOGGED BY: SP

Notes: GRAB SAMPLE
SPLIT SPOON

BOREHOLE LOG

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE NO: MW13
SURFACE ELEVATION: 99.92 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface					100
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	
					FILL brown				32 mm solid PVC pipe	
1		SA1			**silty CLAY** LPH and PHC odour, grey	40				99
		SA2				40			32 mm 010 slot PVC pipe	
2		SA3				50			GW = 1.79 mbg (Water Level measured on Aug 7, 2013)	98
		SA4				45			silica sand	
3		SA5			**SILT SAND and GRAVEL** grey	0				97

End of borehole at 3.7 m

Well Completion Details:
Screened interval from 0.6 m to 3.7 m below surface
Elevation at top of pipe (TOP) = 99.852 m

Groundwater Information:
Depth to groundwater from TOP = 1.72 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 16 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW14
SURFACE ELEVATION: 99.73 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	
					FILL brown				32 mm solid PVC pipe	
1		SA1			**SAND** medium, brown	15				99
		SA2			**SAND with gravel** wet	20		▼	GW = 1.56 mbg (Water Level measured on Aug 7, 2013)	98
2		SA3			**silty SAND** wet	10			32 mm 010 slot PVC pipe	
		SA4				25				97
3		SA5			**silty CLAY** wet	15			silica sand	
		SA6				25				96
4					End of borehole at 4.2 m					

Well Completion Details:
Screened interval from 0.5 m to 4.2 m below surface
Elevation at top of pipe (TOP) = 99.686 m

Groundwater Information:
Depth to groundwater from TOP = 1.52 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 17 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

CM³ JOB NO: MM-1083

BOREHOLE LOG

BOREHOLE NO: MW15
SURFACE ELEVATION: 99.89 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	
					FILL brown					
					SAND medium, brown					99
1		SA1			**silty CLAY** grey, moist	0			32 mm solid PVC pipe	
		SA2				5			GW = 1.71 mbg (Water Level measured on Aug 7, 2013)	98
2		SA3				10			32 mm 010 slot PVC pipe	
					sandy CLAY grey, wet					97
3		SA4				15			silica sand	
		SA5			**gravely CLAY** grey, wet	20				

End of borehole at 3.9 m

Well Completion Details:
Screened interval from 0.8 m to 3.9 m below surface
Elevation at top of pipe (TOP) = 99.790 m

Groundwater Information:
Depth to groundwater from TOP = 1.61 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 17 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW16
SURFACE ELEVATION: 99.92 m

CM³ JOB NO: MM-1083

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				
0		SA1			**TOPSOIL** organics	15			roadbox, jplug, cement bentonite seal	100
					SILT SAND and GRAVEL brown					
		SA2			**silty SAND** brown	10				
1										99
		SA3			**silty CLAY** grey, wet	5			32 mm solid PVC pipe	
								▼	GW = 1.80 mbg (Water Level measured on Aug 7, 2013)	
2		SA4				15				98
									32 mm 010 slot PVC pipe	
		SA5				5				
3									silica sand	97
		SA6			**SILT SAND and GRAVEL** grey, wet	5				
		SA7				0				

End of borehole at 3.9 m

Well Completion Details:
Screened interval from 0.8 m to 3.9 m below surface
Elevation at top of pipe (TOP) = 99.882 m

Groundwater Information:
Depth to groundwater from TOP = 1.76 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 17 LOGGED BY: SP

Notes: SPLIT SPOON

BOREHOLE LOG

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE NO: MW17
SURFACE ELEVATION: 100.09 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface					
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	100
					FILL brown				32 mm solid PVC pipe	
1		SA1			**SILT SAND and GRAVEL** brown, wet	0			32 mm 010 slot PVC pipe	99
2		SA2				15				98
		SA3				0			silica sand	
3		SA4			**sandy SILT** grey, wet	15				97
					End of borehole at 3.5 m					

Well Completion Details:
Screened interval from 1.1 m to 3.5 m below surface
Elevation at top of pipe (TOP) = 99.996 m

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 24 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

BOREHOLE LOG

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE NO: MW18
SURFACE ELEVATION: 100.04 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	100
					FILL brown					
		SA1			**SAND** brown	35				
1					**silty CLAY** brown				32 mm solid PVC pipe	99
					BEDROCK					
2									silica sand	98
3										97
									32 mm 010 slot PVC pipe	
4										96
									GW = 4.78 mbg (Water Level measured on Aug 7, 2013)	
5										95
6										94
7										93
					End of borehole at 7.1 m					

Well Completion Details:
Screened interval from 2.5 m to 7.1 m below surface
Elevation at top of pipe (TOP) = 99.963 m

Groundwater Information:
Depth to groundwater from TOP = 4.71 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 24 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

BOREHOLE LOG

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

CM³ JOB NO: MM-1083

BOREHOLE NO: MW19
SURFACE ELEVATION: 100.02 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	100
					FILL brown					
		SA1			**SILT SAND and GRAVEL** brown	0				
1		SA2			**SILT** grey, moist	0			32 mm solid PVC pipe	99
		SA3				0				
2		SA4				15			GW = 2.23 mbg (Water Level measured on Aug 7, 2013) silica sand	98
					BEDROCK					
3									32 mm 010 slot PVC pipe	97
4										96
5										95
6										94

End of borehole at 6.2 m

Well Completion Details:
Screened interval from 3.2 m to 6.2 m below surface
Elevation at top of pipe (TOP) = 99.955 m

Groundwater Information:
Depth to groundwater from TOP = 2.17 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 24 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

BOREHOLE LOG

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE NO: MW20
SURFACE ELEVATION: 99.85 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	
					FILL brown				32 mm solid PVC pipe	
1		SA1			**silty CLAY** wet at 1.83 meters bgs, grey	0			silica sand	99
		SA2				0				
									GW = 1.75 mbg (Water Level measured on Aug 7, 2013)	
2		SA3				35			32 mm 010 slot PVC pipe	98
		SA4				30				
					End of borehole at 2.9 m					97

Well Completion Details:
Screened interval from 0.8 m to 2.9 m below surface
Elevation at top of pipe (TOP) = 99.752 m

Groundwater Information:
Depth to groundwater from TOP = 1.65 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 25 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

CM³ JOB NO: MM-1083

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW21
SURFACE ELEVATION: 99.98 m

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface					
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	100
					FILL brown					
1		SA1			**silty CLAY** LPH and PHC odours encountered from 1.83 to 2.13 meters bgs, grey	0			32 mm solid PVC pipe	99
		SA2				0				
2		SA3			**BEDROCK**	20		▼	GW = 1.93 mbg (Water Level measured on Aug 7, 2013)	98
									silica sand	
3										97
									32 mm 010 slot PVC pipe	
4										96
5										95
6										94

End of borehole at 6.8 m

Well Completion Details:
Screened interval from 3.2 m to 6.8 m below surface
Elevation at top of pipe (TOP) = 99.854 m

Groundwater Information:
Depth to groundwater from TOP = 1.81 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 25 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: BH22

CM³ JOB NO: MM-1083

SURFACE ELEVATION:

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv) 1 10 100 1000	BOREHOLE COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	DEPTH (m)
					ASPHALT					
					FILL brown					
1		SA1			**silty CLAY** grey	25				1.0
		SA2				15				
					End of borehole at 1.8 m					

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 25 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

CLIENT: **Ottawa Carleton District School Board**
PROJECT: **Phase II Environmental Assessment**
Earl of March Secondary School
4 The Parkway, Kanata, Ontario

BOREHOLE LOG

BOREHOLE NO: MW23
SURFACE ELEVATION: 99.93 m

CM³ JOB NO: MM-1083

DEPTH (m)	SAMPLE TYPE	SAMPLE ID	SPT COUNT	SOIL TYPE	SOIL DESCRIPTION	FIELD TEST DATA: ORGANIC VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	WELL COMPLETION NOTES	ELEVATION (m)
					Ground Surface	1 10 100 1000				100
0					**ASPHALT**				roadbox, jplug, cement bentonite seal	
					FILL brown				32 mm solid PVC pipe	
		SA1			**SILT SAND and GRAVEL** brown, moist	5				
1		SA2				0			silica sand	99
		SA3				5			32 mm 010 slot PVC pipe	
2		SA4			**silty CLAY** grey, wet	15			GW = 2.12 mbg (Water Level measured on Aug 7, 2013)	98
					CLAY grey, wet	19				
3		SA5								97

End of borehole at 3.4 m

Well Completion Details:
Screened interval from 0.9 m to 3.4 m below surface
Elevation at top of pipe (TOP) = 99.828 m

Groundwater Information:
Depth to groundwater from TOP = 2.02 m (Water Level measured on Aug 7, 2013)

DRILLING METHOD: Portable Drilling
BOREHOLE DIAMETER: 0.032 m (OD)

DRILL DATE: 2013 July 25 LOGGED BY: SP

Notes: NO RECOVERY
SPLIT SPOON

Appendix B

Analytical Results

Phase II Environmental Site Assessment

Earl of March Secondary School

No. 4 The Parkway, Kanata, ON

MM-1083

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Certificate of Analysis

CM3 Environmental Inc.
2120 Robertson Road, Suite 208
Ottawa, ON K2H 5Z1
Attn: Marc MacDonald

Phone: (613) 820-4343
Fax: (613) 820-7695

Client PO:
Project: MM-1083
Custody: 11161

Report Date: 10-Jul-2013
Order Date: 4-Jul-2013
Order #: 1327176

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1327176-01	MW1-SA5
1327176-02	MW2-SA6
1327176-03	MW3-SA5
1327176-04	MW4-SA2

Approved By:

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 10-Jul-2013
Order Date:4-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Project Description: MM-1083

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	5-Jul-13	7-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	5-Jul-13	7-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	5-Jul-13	8-Jul-13
Solids, %	Gravimetric, calculation	6-Jul-13	6-Jul-13

PARACEL LABORATORIES LTD.

Order #: 1327176

Certificate of Analysis

Report Date: 10-Jul-2013
Order Date:4-Jul-2013

Client: **CM3 Environmental Inc.**

Client PO: Project Description: MM-1083

	Client ID:	MW1-SA5	MW2-SA6	MW3-SA5	MW4-SA2
	Sample Date:	04-Jul-13	04-Jul-13	04-Jul-13	04-Jul-13
	Sample ID:	1327176-01	1327176-02	1327176-03	1327176-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	87.2	80.6	89.0	88.8
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	0.32	0.47	1.13	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	102%	102%	98.3%	104%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	61	63	48	<7
F2 PHCs (C10-C16)	4 ug/g dry	235	454	680	<4
F3 PHCs (C16-C34)	8 ug/g dry	927	1300	1640	32
F4 PHCs (C34-C50)	6 ug/g dry	138	174	178	65

Certificate of Analysis

Report Date: 10-Jul-2013
Order Date:4-Jul-2013

Client: **CM3 Environmental Inc.**

Client PO: Project Description: MM-1083

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.56*		*ug/g*		*111*	*50-140*			

Certificate of Analysis

Report Date: 10-Jul-2013
Order Date:4-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Project Description: MM-1083

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	43	8	ug/g dry	87			68.0	30	QR-01
F4 PHCs (C34-C50)	12	6	ug/g dry	39			107.0	30	QR-01
Physical Characteristics									
% Solids	90.9	0.1	% by Wt.	91.7			0.9	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*2.18*		*ug/g dry*	*ND*	*106*	*50-140*			

Certificate of Analysis

Report Date: 10-Jul-2013
Order Date:4-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Project Description: MM-1083

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	170	7	ug/g	ND	85.0	80-120			
F2 PHCs (C10-C16)	80	4	ug/g	ND	77.4	60-140			
F3 PHCs (C16-C34)	277	8	ug/g	87	88.6	60-140			
F4 PHCs (C34-C50)	135	6	ug/g	39	67.1	60-140			
Volatiles									
Benzene	3.29	0.02	ug/g	ND	82.2	60-130			
Ethylbenzene	3.72	0.05	ug/g	ND	93.0	60-130			
Toluene	3.57	0.05	ug/g	ND	89.3	60-130			
m,p-Xylenes	7.24	0.05	ug/g	ND	90.5	60-130			
o-Xylene	3.85	0.05	ug/g	ND	96.1	60-130			
Surrogate: Toluene-d8	*2.85*		*ug/g*		*89.0*	*50-140*			

Certificate of Analysis

Report Date: 10-Jul-2013
Order Date:4-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Project Description: MM-1083

Qualifier Notes:

QC Qualifiers :

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Certificate of Analysis

CM3 Environmental Inc.

2120 Robertson Road, Suite 208
Ottawa, ON K2H 5Z1
Attn: Marc MacDonald

Phone: (613) 820-4343
Fax: (613) 820-7695

Client PO:
Project: MM-1083
Custody: 8976

Report Date: 23-Jul-2013
Order Date: 5-Jul-2013
Revised Report **Order #: 1327226**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1327226-01	MW5-SA4
1327226-02	MW6-13-SA4

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:5-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Project Description: MM-1083

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	5-Jul-13	7-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	5-Jul-13	7-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	5-Jul-13	9-Jul-13
Solids, %	Gravimetric, calculation	6-Jul-13	6-Jul-13

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:5-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO:

Project Description: MM-1083

	Client ID:	MW5-SA4	MW6-13-SA4	-	-
	Sample Date:	05-Jul-13	05-Jul-13	-	-
	Sample ID:	1327226-01	1327226-02	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	66.2	64.4	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene-d8	Surrogate	101%	115%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	20	48	-	-
F2 PHCs (C10-C16)	4 ug/g dry	269	309	-	-
F3 PHCs (C16-C34)	8 ug/g dry	574	801	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	112	-	-

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:5-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Project Description: MM-1083

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.56*		*ug/g*		*111*	*50-140*			

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:5-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Project Description: MM-1083

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	43	8	ug/g dry	87			68.0	30	QR-01
F4 PHCs (C34-C50)	12	6	ug/g dry	39			107.0	30	QR-01
Physical Characteristics									
% Solids	90.9	0.1	% by Wt.	91.7			0.9	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*2.41*		*ug/g dry*	*ND*	*106*	*50-140*			

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:5-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Project Description: MM-1083

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	170	7	ug/g	ND	85.0	80-120			
F2 PHCs (C10-C16)	80	4	ug/g	ND	77.4	60-140			
F3 PHCs (C16-C34)	277	8	ug/g	87	88.6	60-140			
F4 PHCs (C34-C50)	135	6	ug/g	39	67.1	60-140			
Volatiles									
Benzene	3.29	0.02	ug/g	ND	82.2	60-130			
Ethylbenzene	3.72	0.05	ug/g	ND	93.0	60-130			
Toluene	3.57	0.05	ug/g	ND	89.3	60-130			
m,p-Xylenes	7.24	0.05	ug/g	ND	90.5	60-130			
o-Xylene	3.85	0.05	ug/g	ND	96.1	60-130			
Surrogate: Toluene-d8	*2.85*		*ug/g*		*89.0*	*50-140*			

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:5-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Project Description: MM-1083

Qualifier Notes:

QC Qualifiers :

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

Sample Data Revisions

None

Work Order Revisions / Comments:

Revision 1 - This report includes an updated client Sample ID.

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Certificate of Analysis

CM3 Environmental Inc.
2120 Robertson Road, Suite 208
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Attn: Marc MacDonald

Phone: (613) 820-4343
Fax: (613) 820-7695

Client PO: Earl of March
Project: MM-1083
Custody: 96440

Report Date: 15-Jul-2013
Order Date: 9-Jul-2013
Order #: 1328147

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1328147-01	MW6 SA5
1328147-02	MW7 SA2
1328147-03	MW8 SA4
1328147-04	MW9 SA5

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 15-Jul-2013
Order Date:9-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	10-Jul-13	13-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	10-Jul-13	14-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	10-Jul-13	13-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	10-Jul-13	11-Jul-13
Solids, %	Gravimetric, calculation	11-Jul-13	11-Jul-13

PARACEL LABORATORIES LTD.

Order #: 1328147

Certificate of Analysis

Report Date: 15-Jul-2013
Order Date:9-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW6 SA5	MW7 SA2	MW8 SA4	MW9 SA5
	Sample Date:	09-Jul-13	09-Jul-13	09-Jul-13	09-Jul-13
	Sample ID:	1328147-01	1328147-02	1328147-03	1328147-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	66.1	68.7	68.5	63.2
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	107%	106%	108%	111%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	28	70	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	309	422	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	857	1140	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Anthracene	0.02 ug/g dry	0.02	<0.02	<0.02	<0.02
Benzo [a] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Benzo [a] pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Biphenyl	0.02 ug/g dry	0.08	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Fluorene	0.02 ug/g dry	0.19	0.34	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
1-Methylnaphthalene	0.02 ug/g dry	0.06	<0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	0.06	<0.04	<0.04	<0.04
Naphthalene	0.01 ug/g dry	<0.01	<0.01	<0.01	<0.01
Phenanthrene	0.02 ug/g dry	0.58	<0.02	<0.02	<0.02

Certificate of Analysis

Report Date: 15-Jul-2013
Order Date:9-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW6 SA5	MW7 SA2	MW8 SA4	MW9 SA5
	Sample Date:	09-Jul-13	09-Jul-13	09-Jul-13	09-Jul-13
	Sample ID:	1328147-01	1328147-02	1328147-03	1328147-04
	MDL/Units	Soil	Soil	Soil	Soil
Pyrene	0.02 ug/g dry	0.05	0.16	<0.02	<0.02
2-Fluorobiphenyl	Surrogate	58.9%	79.4%	53.2%	67.1%
Terphenyl-d14	Surrogate	84.3%	90.2%	89.6%	92.5%

Certificate of Analysis

Report Date: 15-Jul-2013
Order Date:9-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	*0.764*		*ug/g*		*57.3*	*50-140*			
Surrogate: Terphenyl-d14	*0.916*		*ug/g*		*68.7*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*7.43*		*ug/g*		*92.8*	*50-140*			

Certificate of Analysis

Report Date: 15-Jul-2013
Order Date:9-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	51	8	ug/g dry	ND			0.0	30	QR-01
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	65.9	0.1	% by Wt.	66.1			0.4	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	ND				40	
Acenaphthylene	ND	0.02	ug/g dry	ND			0.0	40	
Anthracene	ND	0.02	ug/g dry	ND			0.0	40	
Benzo [a] anthracene	0.043	0.02	ug/g dry	0.041			5.6	40	
Benzo [a] pyrene	0.043	0.02	ug/g dry	0.039			10.4	40	
Benzo [b] fluoranthene	0.065	0.02	ug/g dry	0.059			9.7	40	
Benzo [g,h,i] perylene	0.040	0.02	ug/g dry	0.034			17.6	40	
Benzo [k] fluoranthene	0.026	0.02	ug/g dry	0.027			2.5	40	
Biphenyl	ND	0.02	ug/g dry	ND			0.0	40	
Chrysene	0.052	0.02	ug/g dry	0.046			12.5	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND				40	
Fluoranthene	0.074	0.02	ug/g dry	0.076			2.7	40	
Fluorene	ND	0.02	ug/g dry	ND			0.0	40	
Indeno [1,2,3-cd] pyrene	0.034	0.02	ug/g dry	0.029			16.7	40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND			0.0	40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND			0.0	40	
Naphthalene	0.013	0.01	ug/g dry	ND			0.0	40	
Phenanthrene	0.039	0.02	ug/g dry	0.043			8.4	40	
Pyrene	0.071	0.02	ug/g dry	0.070			1.6	40	
Surrogate: 2-Fluorobiphenyl	*1.46*		*ug/g dry*	*ND*	*81.9*	*50-140*			
Surrogate: Terphenyl-d14	*1.19*		*ug/g dry*	*ND*	*66.9*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*7.69*		*ug/g dry*	*ND*	*109*	*50-140*			

Certificate of Analysis

Report Date: 15-Jul-2013
Order Date:9-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	196	7	ug/g	ND	98.1	80-120			
F2 PHCs (C10-C16)	109	4	ug/g	ND	98.7	60-140			
F3 PHCs (C16-C34)	271	8	ug/g	ND	118	60-140			
F4 PHCs (C34-C50)	212	6	ug/g	ND	139	60-140			
Semi-Volatiles									
Acenaphthene	0.138	0.02	ug/g	ND	62.0	50-140			
Acenaphthylene	0.157	0.02	ug/g	ND	70.6	50-140			
Anthracene	0.190	0.02	ug/g	ND	85.0	50-140			
Benzo [a] anthracene	0.187	0.02	ug/g	0.041	65.6	50-140			
Benzo [a] pyrene	0.188	0.02	ug/g	0.039	66.6	50-140			
Benzo [b] fluoranthene	0.218	0.02	ug/g	0.059	71.1	50-140			
Benzo [g,h,i] perylene	0.189	0.02	ug/g	0.034	69.6	50-140			
Benzo [k] fluoranthene	0.202	0.02	ug/g	0.027	78.7	50-140			
Biphenyl	0.137	0.02	ug/g	ND	61.5	50-140			
Chrysene	0.188	0.02	ug/g	0.046	63.6	50-140			
Dibenzo [a,h] anthracene	0.168	0.02	ug/g	ND	75.5	50-140			
Fluoranthene	0.217	0.02	ug/g	0.076	63.2	50-140			
Fluorene	0.155	0.02	ug/g	ND	69.3	50-140			
Indeno [1,2,3-cd] pyrene	0.194	0.02	ug/g	0.029	74.0	50-140			
1-Methylnaphthalene	0.124	0.02	ug/g	ND	55.8	50-140			
2-Methylnaphthalene	0.138	0.02	ug/g	ND	61.7	50-140			
Naphthalene	0.116	0.01	ug/g	ND	52.2	50-140			
Phenanthrene	0.192	0.02	ug/g	0.043	66.8	50-140			
Pyrene	0.221	0.02	ug/g	0.070	67.9	50-140			
Surrogate: 2-Fluorobiphenyl	*1.21*		*ug/g*		*67.5*	*50-140*			
Volatiles									
Benzene	3.71	0.02	ug/g	ND	92.8	60-130			
Ethylbenzene	3.56	0.05	ug/g	ND	88.9	60-130			
Toluene	3.60	0.05	ug/g	ND	89.9	60-130			
m,p-Xylenes	7.61	0.05	ug/g	ND	95.1	60-130			
o-Xylene	3.89	0.05	ug/g	ND	97.2	60-130			

Certificate of Analysis

Report Date: 15-Jul-2013
Order Date:9-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March Project Description: MM-1083

Qualifier Notes:

QC Qualifiers :

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Certificate of Analysis

CM3 Environmental Inc.

2120 Robertson Road, Suite 208
Ottawa, ON K2H 5Z1
Attn: Marc MacDonald

Phone: (613) 820-4343
Fax: (613) 820-7695

Client PO: Earl of March
Project: MM-1083
Custody: 97840

Report Date: 16-Jul-2013
Order Date: 10-Jul-2013
Order #: 1328175

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1328175-01	MW10 SA1
1328175-02	MW11 SA3

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 16-Jul-2013
Order Date:10-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	10-Jul-13	14-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	10-Jul-13	14-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	11-Jul-13	12-Jul-13
Solids, %	Gravimetric, calculation	11-Jul-13	11-Jul-13

Certificate of Analysis

Report Date: 16-Jul-2013
Order Date:10-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW10 SA1	MW11 SA3	-	-
	Sample Date:	10-Jul-13	10-Jul-13	-	-
	Sample ID:	1328175-01	1328175-02	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	88.2	73.3	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene-d8	Surrogate	106%	108%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	-	-

Certificate of Analysis

Report Date: 16-Jul-2013
Order Date:10-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*7.43*		*ug/g*		*92.8*	*50-140*			

Certificate of Analysis

Report Date: 16-Jul-2013
Order Date:10-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	65.9	0.1	% by Wt.	66.1			0.4	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*7.69*		*ug/g dry*	*ND*	*109*	*50-140*			

Certificate of Analysis

Report Date: 16-Jul-2013
Order Date:10-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	196	7	ug/g	ND	98.1	80-120			
F2 PHCs (C10-C16)	69	4	ug/g	ND	64.2	60-140			
F3 PHCs (C16-C34)	185	8	ug/g	ND	83.2	60-140			
F4 PHCs (C34-C50)	159	6	ug/g	ND	107	60-140			
Volatiles									
Benzene	3.71	0.02	ug/g	ND	92.8	60-130			
Ethylbenzene	3.56	0.05	ug/g	ND	88.9	60-130			
Toluene	3.60	0.05	ug/g	ND	89.9	60-130			
m,p-Xylenes	7.61	0.05	ug/g	ND	95.1	60-130			
o-Xylene	3.89	0.05	ug/g	ND	97.2	60-130			
Surrogate: Toluene-d8	*7.78*		*ug/g*		*97.2*	*50-140*			

Certificate of Analysis

Report Date: 16-Jul-2013
Order Date:10-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March Project Description: MM-1083

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Certificate of Analysis

CM3 Environmental Inc.

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Attn: Marc MacDonald

Phone: (613) 820-4343
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Client PO: Earl of March
Project: MM-1083
Custody: 11590

Report Date: 22-Jul-2013
Order Date: 16-Jul-2013
Order #: 1329174

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1329174-01	MW12 SA5
1329174-02	MW13 SA3

Approved By:

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 22-Jul-2013
Order Date:16-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	17-Jul-13	20-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	17-Jul-13	18-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	17-Jul-13	20-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	18-Jul-13	19-Jul-13
Solids, %	Gravimetric, calculation	18-Jul-13	18-Jul-13

PARACEL LABORATORIES LTD.

Order #: 1329174

Certificate of Analysis

Report Date: 22-Jul-2013
Order Date:16-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW12 SA5	MW13 SA3	-	-
	Sample Date:	16-Jul-13	16-Jul-13	-	-
	Sample ID:	1329174-01	1329174-02	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	64.2	75.1	-	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene-d8	Surrogate	97.6%	97.5%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	617	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	1640	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	96	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	0.09	-	-
Acenaphthylene	0.02 ug/g dry	-	<0.02	-	-
Anthracene	0.02 ug/g dry	-	<0.02	-	-
Benzo [a] anthracene	0.02 ug/g dry	-	<0.02	-	-
Benzo [a] pyrene	0.02 ug/g dry	-	<0.02	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	-	<0.02	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	-	<0.02	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	-	<0.02	-	-
Biphenyl	0.02 ug/g dry	-	<0.02	-	-
Chrysene	0.02 ug/g dry	-	<0.02	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	<0.02	-	-
Fluoranthene	0.02 ug/g dry	-	<0.02	-	-
Fluorene	0.02 ug/g dry	-	<0.02	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	<0.02	-	-
1-Methylnaphthalene	0.02 ug/g dry	-	<0.02	-	-
2-Methylnaphthalene	0.02 ug/g dry	-	<0.02	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	-	<0.04	-	-
Naphthalene	0.01 ug/g dry	-	<0.01	-	-
Phenanthrene	0.02 ug/g dry	-	<0.02	-	-

Certificate of Analysis

Report Date: 22-Jul-2013
Order Date:16-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW12 SA5	MW13 SA3	-	-
	Sample Date:	16-Jul-13	16-Jul-13	-	-
	Sample ID:	1329174-01	1329174-02	-	-
	MDL/Units	Soil	Soil	-	-
Pyrene	0.02 ug/g dry	-	0.14	-	-
2-Fluorobiphenyl	Surrogate	-	67.0%	-	-
Terphenyl-d14	Surrogate	-	80.0%	-	-

Certificate of Analysis

Report Date: 22-Jul-2013
Order Date:16-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	*1.28*		*ug/g*		*95.9*	*50-140*			
Surrogate: Terphenyl-d14	*1.36*		*ug/g*		*102*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*8.04*		*ug/g*		*100*	*50-140*			

Certificate of Analysis

Report Date: 22-Jul-2013
Order Date:16-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	87.9	0.1	% by Wt.	87.3			0.6	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	0.090			0.0	40	
Acenaphthylene	ND	0.02	ug/g dry	ND				40	
Anthracene	ND	0.02	ug/g dry	ND				40	
Benzo [a] anthracene	ND	0.02	ug/g dry	ND				40	
Benzo [a] pyrene	ND	0.02	ug/g dry	ND				40	
Benzo [b] fluoranthene	ND	0.02	ug/g dry	ND				40	
Benzo [g,h,i] perylene	ND	0.02	ug/g dry	ND				40	
Benzo [k] fluoranthene	ND	0.02	ug/g dry	ND				40	
Biphenyl	ND	0.02	ug/g dry	ND				40	
Chrysene	ND	0.02	ug/g dry	ND				40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND				40	
Fluoranthene	ND	0.02	ug/g dry	ND				40	
Fluorene	ND	0.02	ug/g dry	ND				40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g dry	ND				40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
Naphthalene	ND	0.01	ug/g dry	ND				40	
Phenanthrene	ND	0.02	ug/g dry	ND				40	
Pyrene	ND	0.02	ug/g dry	0.138			0.0	40	
Surrogate: 2-Fluorobiphenyl	*1.36*		*ug/g dry*	*ND*	*76.3*	*50-140*			
Surrogate: Terphenyl-d14	*1.73*		*ug/g dry*	*ND*	*97.6*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*4.67*		*ug/g dry*	*ND*	*95.7*	*50-140*			

Certificate of Analysis

Report Date: 22-Jul-2013
Order Date:16-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	210	7	ug/g	ND	105	80-120			
F2 PHCs (C10-C16)	117	4	ug/g	ND	94.3	60-140			
F3 PHCs (C16-C34)	286	8	ug/g	ND	112	60-140			
F4 PHCs (C34-C50)	183	6	ug/g	ND	108	60-140			
Semi-Volatiles									
Acenaphthene	0.240	0.02	ug/g	0.090	67.8	50-140			
Acenaphthylene	0.195	0.02	ug/g	ND	87.8	50-140			
Anthracene	0.183	0.02	ug/g	ND	82.4	50-140			
Benzo [a] anthracene	0.233	0.02	ug/g	ND	105	50-140			
Benzo [a] pyrene	0.158	0.02	ug/g	ND	71.1	50-140			
Benzo [b] fluoranthene	0.233	0.02	ug/g	ND	105	50-140			
Benzo [g,h,i] perylene	0.157	0.02	ug/g	ND	70.8	50-140			
Benzo [k] fluoranthene	0.206	0.02	ug/g	ND	92.9	50-140			
Biphenyl	0.200	0.02	ug/g	ND	90.2	50-140			
Chrysene	0.200	0.02	ug/g	ND	90.1	50-140			
Dibenzo [a,h] anthracene	0.172	0.02	ug/g	ND	77.6	50-140			
Fluoranthene	0.225	0.02	ug/g	ND	101	50-140			
Fluorene	0.226	0.02	ug/g	ND	102	50-140			
Indeno [1,2,3-cd] pyrene	0.174	0.02	ug/g	ND	78.3	50-140			
1-Methylnaphthalene	0.182	0.02	ug/g	ND	81.8	50-140			
2-Methylnaphthalene	0.171	0.02	ug/g	ND	76.9	50-140			
Naphthalene	0.152	0.01	ug/g	ND	68.5	50-140			
Phenanthrene	0.168	0.02	ug/g	ND	75.5	50-140			
Pyrene	0.308	0.02	ug/g	0.138	76.6	50-140			
Surrogate: 2-Fluorobiphenyl	*1.07*		*ug/g*		*60.1*	*50-140*			
Volatiles									
Benzene	4.25	0.02	ug/g	ND	106	60-130			
Ethylbenzene	3.86	0.05	ug/g	ND	96.5	60-130			
Toluene	3.31	0.05	ug/g	ND	82.7	60-130			
m,p-Xylenes	7.75	0.05	ug/g	ND	96.9	60-130			
o-Xylene	4.15	0.05	ug/g	ND	104	60-130			

Certificate of Analysis

Report Date: 22-Jul-2013
Order Date:16-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March Project Description: MM-1083

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Certificate of Analysis

CM3 Environmental Inc.

2120 Robertson Road, Suite 208
Ottawa, ON K2H 5Z1
Attn: Marc MacDonald

Phone: (613) 820-4343
Fax: (613) 820-7695

Client PO: Earl of March
Project: MM-1083
Custody: 11626

Report Date: 23-Jul-2013
Order Date: 17-Jul-2013
Order #: 1329232

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1329232-01	MW14 SA4
1329232-02	MW15 SA4
1329232-03	MW16 SA4

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:17-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	18-Jul-13	23-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	18-Jul-13	23-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	19-Jul-13	22-Jul-13
Solids, %	Gravimetric, calculation	19-Jul-13	19-Jul-13

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:17-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW14 SA4	MW15 SA4	MW16 SA4	-
	Sample Date:	17-Jul-13	17-Jul-13	17-Jul-13	-
	Sample ID:	1329232-01	1329232-02	1329232-03	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	66.5	71.4	67.7	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene-d8	Surrogate	106%	115%	116%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	-

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:17-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*3.21*		*ug/g*		*100*	*50-140*			

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:17-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	25	8	ug/g dry	30			17.5	30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	87.5	0.1	% by Wt.	87.3			0.2	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*3.63*		*ug/g dry*	*ND*	*95.2*	*50-140*			

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:17-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	176	7	ug/g	ND	88.0	80-120			
F2 PHCs (C10-C16)	90	4	ug/g	ND	87.0	60-140			
F3 PHCs (C16-C34)	213	8	ug/g	30	85.7	60-140			
F4 PHCs (C34-C50)	120	6	ug/g	ND	84.4	60-140			
Volatiles									
Benzene	3.76	0.02	ug/g	ND	94.0	60-130			
Ethylbenzene	4.24	0.05	ug/g	ND	106	60-130			
Toluene	4.16	0.05	ug/g	ND	104	60-130			
m,p-Xylenes	7.94	0.05	ug/g	ND	99.3	60-130			
o-Xylene	4.43	0.05	ug/g	ND	111	60-130			
Surrogate: Toluene-d8	*2.63*		*ug/g*		*82.1*	*50-140*			

Certificate of Analysis

Report Date: 23-Jul-2013
Order Date:17-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March Project Description: MM-1083

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Certificate of Analysis

CM3 Environmental Inc.

2120 Robertson Road, Suite 208
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Attn: Marc MacDonald

Phone: (613) 820-4343
Fax: (613) 820-7695

Client PO: Earl of March
Project: MM-1083
Custody: 11825

Report Date: 1-Aug-2013
Order Date: 26-Jul-2013
Order #: 1330333

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1330333-01	MW17 SA4
1330333-02	MW18 SA1
1330333-03	MW19 SA4
1330333-04	MW20 SA3
1330333-05	MW21 SA3
1330333-06	MW22 SA2
1330333-07	MW23 SA4

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 01-Aug-2013
Order Date:26-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	29-Jul-13	31-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	29-Jul-13	31-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	29-Jul-13	31-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	30-Jul-13	31-Jul-13
Solids, %	Gravimetric, calculation	29-Jul-13	29-Jul-13

Certificate of Analysis

Report Date: 01-Aug-2013
Order Date:26-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW17 SA4	MW18 SA1	MW19 SA4	MW20 SA3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	25-Jul-13
	Sample ID:	1330333-01	1330333-02	1330333-03	1330333-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	73.8	76.3	66.8	67.6
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	<0.05	3.20	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	5.25	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	13.7	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	4.42	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	18.1	<0.05	<0.05
Toluene-d8	Surrogate	98.9%	114%	99.9%	101%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	136	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6

Certificate of Analysis

Report Date: 01-Aug-2013
Order Date:26-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW21 SA3	MW22 SA2	MW23 SA4	-
	Sample Date:	25-Jul-13	25-Jul-13	25-Jul-13	-
	Sample ID:	1330333-05	1330333-06	1330333-07	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	79.5	71.6	65.0	-
Volatiles					
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene-d8	Surrogate	113%	103%	115%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	536	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	1330	<8	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	0.08	-	-	-
Acenaphthylene	0.02 ug/g dry	<0.02	-	-	-
Anthracene	0.02 ug/g dry	0.08	-	-	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	-	-	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	-	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Biphenyl	0.02 ug/g dry	<0.02	-	-	-
Chrysene	0.02 ug/g dry	<0.02	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	-	-	-
Fluoranthene	0.02 ug/g dry	<0.02	-	-	-
Fluorene	0.02 ug/g dry	0.47	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	-	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	-	-
Naphthalene	0.01 ug/g dry	<0.01	-	-	-

Certificate of Analysis

Report Date: 01-Aug-2013
Order Date:26-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW21 SA3	MW22 SA2	MW23 SA4	-
	Sample Date:	25-Jul-13	25-Jul-13	25-Jul-13	-
	Sample ID:	1330333-05	1330333-06	1330333-07	-
	MDL/Units	Soil	Soil	Soil	-
Phenanthrene	0.02 ug/g dry	0.26	-	-	-
Pyrene	0.02 ug/g dry	0.13	-	-	-
2-Fluorobiphenyl	Surrogate	92.0%	-	-	-
Terphenyl-d14	Surrogate	68.3%	-	-	-

Certificate of Analysis

Report Date: 01-Aug-2013
Order Date:26-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	*0.739*		*ug/g*		*55.4*	*50-140*			
Surrogate: Terphenyl-d14	*0.886*		*ug/g*		*66.4*	*50-140*			
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	*9.07*		*ug/g*		*113*	*50-140*			

Certificate of Analysis

Report Date: 01-Aug-2013
Order Date:26-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	85.0	0.1	% by Wt.	85.4			0.4	25	
Semi-Volatiles									
Acenaphthene	0.036	0.02	ug/g dry	ND			0.0	40	
Acenaphthylene	0.115	0.02	ug/g dry	0.074			43.2	40	QR-04
Anthracene	0.200	0.02	ug/g dry	0.104			63.3	40	QR-04
Benzo [a] anthracene	0.504	0.02	ug/g dry	0.207			83.4	40	QR-04
Benzo [a] pyrene	0.552	0.02	ug/g dry	0.204			92.2	40	QR-04
Benzo [b] fluoranthene	0.583	0.02	ug/g dry	0.240			83.5	40	QR-04
Benzo [g,h,i] perylene	0.336	0.02	ug/g dry	0.126			90.9	40	QR-04
Benzo [k] fluoranthene	0.217	0.02	ug/g dry	0.087			85.7	40	QR-04
Biphenyl	ND	0.02	ug/g dry	ND			0.0	40	
Chrysene	0.540	0.02	ug/g dry	0.204			90.3	40	QR-04
Dibenzo [a,h] anthracene	0.076	0.02	ug/g dry	0.028			92.3	40	QR-04
Fluoranthene	0.998	0.02	ug/g dry	0.346			96.9	40	QR-04
Fluorene	0.046	0.02	ug/g dry	0.027			54.4	40	QR-04
Indeno [1,2,3-cd] pyrene	0.271	0.02	ug/g dry	0.096			95.4	40	QR-04
1-Methylnaphthalene	ND	0.02	ug/g dry	ND			0.0	40	
2-Methylnaphthalene	0.024	0.02	ug/g dry	ND			0.0	40	
Naphthalene	0.094	0.01	ug/g dry	0.015			145.0	40	QR-04
Phenanthrene	0.535	0.02	ug/g dry	0.224			81.9	40	QR-04
Pyrene	0.806	0.02	ug/g dry	0.311			88.8	40	QR-04
Surrogate: 2-Fluorobiphenyl	*1.15*		*ug/g dry*	*ND*	*73.4*	*50-140*			
Surrogate: Terphenyl-d14	*1.15*		*ug/g dry*	*ND*	*73.8*	*50-140*			
Volatiles									
Benzene	0.420	0.02	ug/g dry	ND			0.0	50	
Ethylbenzene	0.888	0.05	ug/g dry	ND			0.0	50	
Toluene	1.41	0.05	ug/g dry	ND			0.0	50	
m,p-Xylenes	3.12	0.05	ug/g dry	ND			0.0	50	
o-Xylene	1.39	0.05	ug/g dry	ND			0.0	50	
Surrogate: Toluene-d8	*12.2*		*ug/g dry*	*ND*	*113*	*50-140*			

Certificate of Analysis

Report Date: 01-Aug-2013
Order Date:26-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	93	7	ug/g	ND	92.7	80-120			
F2 PHCs (C10-C16)	76	4	ug/g	ND	75.1	60-140			
F3 PHCs (C16-C34)	201	8	ug/g	ND	96.4	60-140			
F4 PHCs (C34-C50)	129	6	ug/g	ND	92.7	60-140			
Semi-Volatiles									
Acenaphthene	0.164	0.02	ug/g	ND	84.1	50-140			
Acenaphthylene	0.183	0.02	ug/g	0.074	55.9	50-140			
Anthracene	0.275	0.02	ug/g	0.104	87.5	50-140			
Benzo [a] anthracene	0.462	0.02	ug/g	0.207	131	50-140			
Benzo [a] pyrene	0.355	0.02	ug/g	0.204	77.8	50-140			
Benzo [b] fluoranthene	0.537	0.02	ug/g	0.240	153	50-140			QM-06
Benzo [g,h,i] perylene	0.258	0.02	ug/g	0.126	67.5	50-140			
Benzo [k] fluoranthene	0.351	0.02	ug/g	0.087	135	50-140			
Biphenyl	0.108	0.02	ug/g	ND	55.1	50-140			
Chrysene	0.492	0.02	ug/g	0.204	148	50-140			QM-06
Dibenzo [a,h] anthracene	0.169	0.02	ug/g	0.028	72.2	50-140			
Fluoranthene	0.475	0.02	ug/g	0.346	65.8	50-140			
Fluorene	0.196	0.02	ug/g	0.027	86.9	50-140			
Indeno [1,2,3-cd] pyrene	0.255	0.02	ug/g	0.096	81.5	50-140			
1-Methylnaphthalene	0.098	0.02	ug/g	ND	50.0	50-140			
2-Methylnaphthalene	0.142	0.02	ug/g	ND	72.9	50-140			
Naphthalene	0.123	0.01	ug/g	0.015	55.3	50-140			
Phenanthrene	0.390	0.02	ug/g	0.224	85.3	50-140			
Pyrene	0.485	0.02	ug/g	0.311	89.3	50-140			
Surrogate: 2-Fluorobiphenyl	*0.936*		*ug/g*		*59.9*	*50-140*			
Volatiles									
Benzene	0.739	0.02	ug/g	ND	79.1	60-130			
Ethylbenzene	1.96	0.05	ug/g	ND	88.4	60-130			
Toluene	10.5	0.05	ug/g	ND	96.9	60-130			
m,p-Xylenes	6.51	0.05	ug/g	ND	96.7	60-130			
o-Xylene	2.50	0.05	ug/g	ND	92.7	60-130			

Certificate of Analysis

Report Date: 01-Aug-2013
Order Date:26-Jul-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March Project Description: MM-1083

Qualifier Notes:

QC Qualifiers :

QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

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Certificate of Analysis

CM3 Environmental Inc.
2120 Robertson Road, Suite 208
Ottawa, ON K2H 5Z1
Attn: Marc MacDonald

Phone: (613) 820-4343
Fax: (613) 820-7695

Client PO: Earl of March
Project: MM-1083
Custody: 10651/10601

Report Date: 13-Aug-2013
Order Date: 7-Aug-2013
Order #: 1332131

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1332131-01	MW10
1332131-02	MW4
1332131-03	MW21
1332131-04	MW20
1332131-05	MW15
1332131-06	MW1
1332131-07	MW19
1332131-08	MW11
1332131-09	MW16
1332131-10	MW7
1332131-11	MW14
1332131-12	MW9
1332131-13	MW23
1332131-14	MW18
1332131-15	MW8

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	9-Aug-13	10-Aug-13
PAHs by GC-MS	EPA 625 - GC-MS, extraction	10-Aug-13	11-Aug-13
PHC F1	CWS Tier 1 - P&T GC-FID	9-Aug-13	10-Aug-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	12-Aug-13	12-Aug-13

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW10	MW4	MW21	MW20
	Sample Date:	07-Aug-13	07-Aug-13	07-Aug-13	07-Aug-13
	Sample ID:	1332131-01	1332131-02	1332131-03	1332131-04
	MDL/Units	Water	Water	Water	Water
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene-d8	Surrogate	90.0%	87.1%	85.7%	86.8%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	555	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
F1 + F2 PHCs	125 ug/L	<125	<125	<125	<125
F3 + F4 PHCs	200 ug/L	555	<200	<200	<200
Semi-Volatiles					
Acenaphthene	0.05 ug/L	-	-	0.16	-
Acenaphthylene	0.05 ug/L	-	-	<0.05	-
Anthracene	0.01 ug/L	-	-	<0.01	-
Benzo [a] anthracene	0.01 ug/L	-	-	<0.01	-
Benzo [a] pyrene	0.01 ug/L	-	-	<0.01	-
Benzo [b] fluoranthene	0.05 ug/L	-	-	<0.05	-
Benzo [g,h,i] perylene	0.05 ug/L	-	-	<0.05	-
Benzo [k] fluoranthene	0.05 ug/L	-	-	<0.05	-
Biphenyl	0.05 ug/L	-	-	<0.05	-
Chrysene	0.05 ug/L	-	-	<0.05	-
Dibenzo [a,h] anthracene	0.05 ug/L	-	-	<0.05	-
Fluoranthene	0.01 ug/L	-	-	<0.01	-
Fluorene	0.05 ug/L	-	-	0.09	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	-	<0.05	-
1-Methylnaphthalene	0.05 ug/L	-	-	<0.05	-
2-Methylnaphthalene	0.05 ug/L	-	-	<0.05	-
Methylnaphthalene (1&2)	0.10 ug/L	-	-	<0.10	-
Naphthalene	0.05 ug/L	-	-	<0.05	-
Phenanthrene	0.05 ug/L	-	-	<0.05	-

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW10	MW4	MW21	MW20
	Sample Date:	07-Aug-13	07-Aug-13	07-Aug-13	07-Aug-13
	Sample ID:	1332131-01	1332131-02	1332131-03	1332131-04
	MDL/Units	Water	Water	Water	Water
Pyrene	0.01 ug/L	-	-	<0.01	-
2-Fluorobiphenyl	Surrogate	-	-	113%	-
Terphenyl-d14	Surrogate	-	-	65.7%	-

PARACEL LABORATORIES LTD.

Order #: 1332131

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW15	MW1	MW19	MW11
	Sample Date:	07-Aug-13	07-Aug-13	07-Aug-13	07-Aug-13
	Sample ID:	1332131-05	1332131-06	1332131-07	1332131-08
	MDL/Units	Water	Water	Water	Water
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene-d8	Surrogate	83.8%	82.9%	82.4%	82.1%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	201	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	980	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
F1 + F2 PHCs	125 ug/L	<125	201	<125	<125
F3 + F4 PHCs	200 ug/L	<200	980	<200	<200
Semi-Volatiles					
Acenaphthene	0.05 ug/L	-	-	<0.05	<0.05
Acenaphthylene	0.05 ug/L	-	-	<0.05	<0.05
Anthracene	0.01 ug/L	-	-	<0.01	<0.01
Benzo [a] anthracene	0.01 ug/L	-	-	<0.01	<0.01
Benzo [a] pyrene	0.01 ug/L	-	-	<0.01	<0.01
Benzo [b] fluoranthene	0.05 ug/L	-	-	<0.05	<0.05
Benzo [g,h,i] perylene	0.05 ug/L	-	-	<0.05	<0.05
Benzo [k] fluoranthene	0.05 ug/L	-	-	<0.05	<0.05
Biphenyl	0.05 ug/L	-	-	<0.05	<0.05
Chrysene	0.05 ug/L	-	-	<0.05	<0.05
Dibenzo [a,h] anthracene	0.05 ug/L	-	-	<0.05	<0.05
Fluoranthene	0.01 ug/L	-	-	<0.01	<0.01
Fluorene	0.05 ug/L	-	-	<0.05	0.23
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	-	<0.05	<0.05
1-Methylnaphthalene	0.05 ug/L	-	-	<0.05	<0.05
2-Methylnaphthalene	0.05 ug/L	-	-	<0.05	<0.05
Methylnaphthalene (1&2)	0.10 ug/L	-	-	<0.10	<0.10
Naphthalene	0.05 ug/L	-	-	0.15	<0.05

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW15	MW1	MW19	MW11
	Sample Date:	07-Aug-13	07-Aug-13	07-Aug-13	07-Aug-13
	Sample ID:	1332131-05	1332131-06	1332131-07	1332131-08
	MDL/Units	Water	Water	Water	Water
Phenanthrene	0.05 ug/L	-	-	0.09	<0.05
Pyrene	0.01 ug/L	-	-	<0.01	<0.01
2-Fluorobiphenyl	Surrogate	-	-	119%	120%
Terphenyl-d14	Surrogate	-	-	68.3%	88.3%

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW16	MW7	MW14	MW9
	Sample Date:	07-Aug-13	07-Aug-13	07-Aug-13	07-Aug-13
	Sample ID:	1332131-09	1332131-10	1332131-11	1332131-12
	MDL/Units	Water	Water	Water	Water
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene-d8	Surrogate	82.9%	81.5%	84.2%	82.0%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	414	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	1140	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
F1 + F2 PHCs	125 ug/L	<125	414	<125	<125
F3 + F4 PHCs	200 ug/L	<200	1140	<200	<200
Semi-Volatiles					
Acenaphthene	0.05 ug/L	-	<0.05	-	-
Acenaphthylene	0.05 ug/L	-	<0.05	-	-
Anthracene	0.01 ug/L	-	<0.01	-	-
Benzo [a] anthracene	0.01 ug/L	-	<0.01	-	-
Benzo [a] pyrene	0.01 ug/L	-	<0.01	-	-
Benzo [b] fluoranthene	0.05 ug/L	-	<0.05	-	-
Benzo [g,h,i] perylene	0.05 ug/L	-	<0.05	-	-
Benzo [k] fluoranthene	0.05 ug/L	-	<0.05	-	-
Biphenyl	0.05 ug/L	-	<0.05	-	-
Chrysene	0.05 ug/L	-	<0.05	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	-	<0.05	-	-
Fluoranthene	0.01 ug/L	-	<0.01	-	-
Fluorene	0.05 ug/L	-	0.15	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	<0.05	-	-
1-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-
2-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-
Methylnaphthalene (1&2)	0.10 ug/L	-	<0.10	-	-
Naphthalene	0.05 ug/L	-	<0.05	-	-

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW16	MW7	MW14	MW9
	Sample Date:	07-Aug-13	07-Aug-13	07-Aug-13	07-Aug-13
	Sample ID:	1332131-09	1332131-10	1332131-11	1332131-12
	MDL/Units	Water	Water	Water	Water
Phenanthrene	0.05 ug/L	-	<0.05	-	-
Pyrene	0.01 ug/L	-	0.17	-	-
2-Fluorobiphenyl	Surrogate	-	122%	-	-
Terphenyl-d14	Surrogate	-	70.3%	-	-

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW23	MW18	MW8	-
	Sample Date:	07-Aug-13	07-Aug-13	07-Aug-13	-
	Sample ID:	1332131-13	1332131-14	1332131-15	-
	MDL/Units	Water	Water	Water	-
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene-d8	Surrogate	81.3%	83.5%	82.8%	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	-
F1 + F2 PHCs	125 ug/L	<125	<125	<125	-
F3 + F4 PHCs	200 ug/L	<200	<200	<200	-
Semi-Volatiles					
Acenaphthene	0.05 ug/L	-	<0.05	-	-
Acenaphthylene	0.05 ug/L	-	<0.05	-	-
Anthracene	0.01 ug/L	-	<0.01	-	-
Benzo [a] anthracene	0.01 ug/L	-	<0.01	-	-
Benzo [a] pyrene	0.01 ug/L	-	<0.01	-	-
Benzo [b] fluoranthene	0.05 ug/L	-	<0.05	-	-
Benzo [g,h,i] perylene	0.05 ug/L	-	<0.05	-	-
Benzo [k] fluoranthene	0.05 ug/L	-	<0.05	-	-
Biphenyl	0.05 ug/L	-	<0.05	-	-
Chrysene	0.05 ug/L	-	<0.05	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	-	<0.05	-	-
Fluoranthene	0.01 ug/L	-	<0.01	-	-
Fluorene	0.05 ug/L	-	<0.05	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	-	<0.05	-	-
1-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-
2-Methylnaphthalene	0.05 ug/L	-	<0.05	-	-
Methylnaphthalene (1&2)	0.10 ug/L	-	<0.10	-	-
Naphthalene	0.05 ug/L	-	<0.05	-	-

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March

Project Description: MM-1083

	Client ID:	MW23	MW18	MW8	-
	Sample Date:	07-Aug-13	07-Aug-13	07-Aug-13	-
	Sample ID:	1332131-13	1332131-14	1332131-15	-
	MDL/Units	Water	Water	Water	-
Phenanthrene	0.05 ug/L	-	<0.05	-	-
Pyrene	0.01 ug/L	-	<0.01	-	-
2-Fluorobiphenyl	Surrogate	-	113%	-	-
Terphenyl-d14	Surrogate	-	76.7%	-	-

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Biphenyl	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	*18.8*		*ug/L*		*93.8*	*50-140*			
Surrogate: Terphenyl-d14	*23.4*		*ug/L*		*117*	*50-140*			
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: Toluene-d8	*36.2*		*ug/L*		*113*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND				30	
Volatiles									
Benzene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: Toluene-d8	*29.5*		*ug/L*	*ND*	*92.2*	*50-140*			

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March
Project Description: MM-1083

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	2030	25	ug/L	ND	101	68-117			
F2 PHCs (C10-C16)	2200	100	ug/L	ND	122	60-140			
F3 PHCs (C16-C34)	4730	100	ug/L	ND	127	60-140			
F4 PHCs (C34-C50)	2770	100	ug/L	ND	112	60-140			
Semi-Volatiles									
Acenaphthene	4.46	0.05	ug/L	ND	89.1	50-140			
Acenaphthylene	4.62	0.05	ug/L	ND	92.4	50-140			
Anthracene	4.70	0.01	ug/L	ND	94.1	50-140			
Benzo [a] anthracene	4.77	0.01	ug/L	ND	95.3	50-140			
Benzo [a] pyrene	4.68	0.01	ug/L	ND	93.7	50-140			
Benzo [b] fluoranthene	5.19	0.05	ug/L	ND	104	50-140			
Benzo [g,h,i] perylene	4.59	0.05	ug/L	ND	91.8	50-140			
Benzo [k] fluoranthene	5.48	0.05	ug/L	ND	110	50-140			
Biphenyl	6.17	0.05	ug/L	ND	123	50-140			
Chrysene	4.65	0.05	ug/L	ND	93.0	50-140			
Dibenzo [a,h] anthracene	4.66	0.05	ug/L	ND	93.1	50-140			
Fluoranthene	4.61	0.01	ug/L	ND	92.3	50-140			
Fluorene	5.01	0.05	ug/L	ND	100	50-140			
Indeno [1,2,3-cd] pyrene	4.79	0.05	ug/L	ND	95.8	50-140			
1-Methylnaphthalene	3.84	0.05	ug/L	ND	76.9	50-140			
2-Methylnaphthalene	4.11	0.05	ug/L	ND	82.3	50-140			
Naphthalene	4.51	0.05	ug/L	ND	90.2	50-140			
Phenanthrene	4.78	0.05	ug/L	ND	95.5	50-140			
Pyrene	4.65	0.01	ug/L	ND	93.1	50-140			
Surrogate: 2-Fluorobiphenyl	*25.9*		*ug/L*		*130*	*50-140*			
Volatiles									
Benzene	43.2	0.5	ug/L	ND	108	60-130			
Ethylbenzene	35.6	0.5	ug/L	ND	89.0	60-130			
Toluene	37.1	0.5	ug/L	ND	92.8	60-130			
m,p-Xylenes	76.7	0.5	ug/L	ND	95.9	60-130			
o-Xylene	36.7	0.5	ug/L	ND	91.8	60-130			

Certificate of Analysis

Report Date: 13-Aug-2013
Order Date:7-Aug-2013

Client: **CM3 Environmental Inc.**
Client PO: Earl of March Project Description: MM-1083

Qualifier Notes:

Login Qualifiers :

Sample - Received with >5% sediment, instructed to decant and analyze without sediment
Applies to samples: MW23, MW8

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.