BASELINE ENVIRONMENTAL SITE ASSESSMENT
LAROCHE PARK
52 BAYVIEW ROAD
OTTAWA, ONTARIO

Submitted to:

City of Ottawa
Realty Initiatives and Development Branch
Real Estate Partnerships and Development Office
110 Laurier Avenue West
Ottawa, Ontario

Submitted by:

AMEC Environment & Infrastructure
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Distribution
- City of Ottawa – 3 hard copies and 1 electronic copy
- AMEC Environment & Infrastructure – 2 copies

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City of Ottawa
Realty Initiatives and Development Branch
Real Estate Partnerships and Development Office
110 Laurier Avenue West
Ottawa, Ontario
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Attention: Katrina Elliott
Specialist, Environmental Remediation

Dear Ms. Elliot:

RE: Final Report
Baseline Environmental Site Assessment
Laroche Park, 52 Bayview Road, Ottawa

Please find enclosed three hard copies and one electronic copy our final report entitled *"Baseline Environmental Site Assessment, Laroche Park, 52 Bayview Road, Ottawa, Ontario."*

We thank you for entrusting us with this assignment and look forward to future opportunities with your firm. In the meantime, should you have any questions or require any additional information, please do not hesitate to contact the undersigned.

Yours truly,

AMEC Environment & Infrastructure
a division of AMEC Americas Limited

Kevin Hicks, M.Sc., P.Geo.
Senior Associate Hydrogeologist

Enclosure (1)

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EXECUTIVE SUMMARY

AMEC Environment & Infrastructure, a division of AMEC Americas Limited ("AMEC"), was retained by the City of Ottawa ("the City") to conduct a Baseline Environmental Site Assessment (ESA) of Laroche Park located at 52 Bayview Road in Ottawa, Ontario, Ontario (the "Site"). The Site is a multi-use urban municipal park improved with a field house, two baseball diamonds, a basketball court, a seasonal ice hockey rink and change facility, a gazebo, a playground and a splash pad.

The Baseline ESA was undertaken to characterize the soil and groundwater conditions at the Site in preparation for proposed upgrades to the park including a new field house, a community garden, an all-season ice hockey/ball hockey rink and upgrades to the existing playground and basketball court. The Baseline ESA was conducted according to *Ontario Regulation 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protection* Act (EPA) (O.Reg. 153/04). The scope of work completed during the investigation was carried out in accordance with AMEC's proposal dated June 24, 2014 and written and verbal instruction from the City.

Based on the results of the soil and groundwater sampling and laboratory analytical programs, AMEC offers the following conclusions and recommendations regarding the environmental Site conditions:

The subsurface conditions across the Site are quite variable as a result of uneven bedrock topography, historic landfilling activities and excavation and bedrock blasting activities associated with the installation of the twin box sewer and other sewers that currently traverse the Site. The resulting stratigraphy generally consists of an initial layer of surficial fill (grass/topsoil, gravel) successively underlain by a layer of sandy fill with mixed waste consisting primarily of ashes, cinders, clay brick and ceramics with lesser quantities of animal bone and organic matter observed in some locations. The waste fill is underlain by sandy clay or clayey sand extending to the top of bedrock encountered at depths ranging from 0.6 to 6.4 metres below ground surface (mbgs).

The results of the groundwater monitoring indicate that the primary near surface water table resides within the overburden fill unit. The water table elevations recorded at the overburden monitoring wells varied between 53.06 metres above sea level (masl) and 55.11 masl. The overburden groundwater elevations indicate that the twin box culvert storm sewer traversing the Site has some effect on the local groundwater flow acting as a hydraulic sink and draining groundwater flow and resulting in bi-direction groundwater flow. Groundwater flows toward the twin box culvert from the east and west and is then directed southward. An exception to this pattern is the along the along the east Site perimeter in the vicinity of the pumping well installed at the neighbouring National Capital Commission (NCC) property.

The shallow bedrock groundwater elevations varied between 53.15 masl and 56.79 masl. Based on the limited shallow bedrock groundwater elevations the shallow bedrock groundwater beneath the Site flows in a southerly direction becoming slightly westerly approaching the south Site

perimeter. This flow pattern is somewhat consistent with the bedrock topography with overall higher bedrock elevations lying to the north.

The deep bedrock groundwater elevations were recorded as 49.67 masl, 55.80 masl and 56.79 masl at DBMW14-2, DBMW14-4 and DBMW14-5, respectively. Based on the limited deep bedrock groundwater elevations the deep bedrock groundwater beneath the Site flows in a southerly direction.

In accordance with *Ontario Regulation 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protection Act (EPA)* (O.Reg. 153/04), the appropriate generic Site Condition Standards (SCS) are the Table 3 standards for non-potable ground water, residential/parkland/ institutional property use and coarse textured soils, as provided in the supporting document "*Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act*," dated April 15, 2011 (Table 3 SCS).

Results of the soil chemical analyses indicated exceedances of the Table 3 SCS for a variety of PAH and metals parameters across the entire Site as well as localized exceedances for PHC F3 and TCE. Exceedances by PAH and metals in soil were prevalent through the fill and waste placements including surficial soil across approximately one-half of the Site.

Results of the groundwater chemical analyses indicated exceedances for a variety of VOC parameters along the east perimeter of the Site corresponding with the known chlorinated solvent plume originating from the adjacent property. Delineation of the plume carried out as part of this investigation indicates that it extends further north than previously understood and extends into the deeper bedrock aquifer. Exceedances of the Table 3 SCS for a variety of PAH parameters were also reported at a single location adjacent to the existing field house. It is inferred that the PAH exceedances result from sediment noted in the groundwater sample and it is recommended that the well be re-sampled during the spring 2015 monitoring event during a period of elevated water table utilizing a low flow sampling method.

The widespread presence of PAH and heavy metals exceedances across the Site is attributed to the near ubiquitous presence of ashes and cinders in fill across the property in samples collected from surface and at depth. While PAH and heavy metals at depth do not present exposure risks to users of the Site, the presence of these contaminants in surface soil would typically prompt completion of a RA in order to characterise risk based on the actual exposure scenarios at the Site and develop corresponding property specific standards (PSS) as opposed to using the generic Table 3 SCS. This approach would typically be pursued to achieve less stringent standards, however based on the presence of benzo(a)pyrene exceedances in surface soil at the Site, a RA would provide no such benefit. This is due to the fact that the generic SCS of 0.3 µg/g is based on background concentrations across Ontario while the risk-based value is much lower at 0.078 µg/g thus negating any potential benefit of developing PSS as benzo(a)pyrene would remain a risk factor even if potential risks associated with all other PAH and heavy metals were eliminated.

The presence of surface soil exceedances will require the implementation of risk management measures (RMM) and soil management measures at the Site regardless of any re-development activities while subsurface impacts will require soil management measures in the event that they are disturbed during development. Potential RMM include the use of hard and soft caps to prevent exposure via the direct contact pathway (i.e., dermal contact, inhalation/ingestion).

The presence of the VOC groundwater plume does not pose risk to users of the Site or present any limitations to the proposed Site improvements. The VOC plume would become a concern if a building was to be constructed within the footprint of the plume thus creating a potential vapour intrusion risk. Management considerations for the VOC plume include the protection of workers in excavations and trenches advanced within the plume area through the development of appropriate health and safety and monitoring plans to mitigate unacceptable exposures via direct contact.

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LIST OF ACRONYMS AND ABBREVIATIONS

AMEC	AMEC Earth and Environmental
APEC	Area of Potential Environmental Concern
AST	Aboveground Storage Tank
BH	Borehole
BMW	Bedrock Monitoring Well
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CALA	Canadian Association for Laboratory Accreditation Inc.
CCME	Canadian Council of Ministers of the Environment
COC	Contaminant of Concern
COPC	Contaminant of Potential Concern
COV	Combustible Organic Vapours
CVOC	Chlorinated Volatile Organic Compound
DBMW	Deep Bedrock Monitoring Well
DCE	Dichloroethylene
DNAPL	Dense Non-Aqueous Phase Liquid
DO	Dissolved Oxygen
DTSS	Dual Tube Sampling System
EM	Electromagnetic
EPA	Environmental Protection Act
ESA	Environmental Site Assessment
LDPE	Low Density Polyethylene
LNAPL	Light Non-Aqueous Phase Liquid
LPH	Liquid Petroleum Hydrocarbon
masl	Metres Above Sea Level
mbgs	Metres Below Ground Surface
MDL	Method Detection Limit
MOECC	Ministry of the Environment and Climate Change
MTM	Modified Transverse Mercator
MW	Monitoring Well
NAPL	Non-Aqueous Phase Liquid
NCC	National Capital commission
OLMS	Old Landfill Management Strategy
ORP	Oxidation Reduction Potential
PAH	Polynuclear Aromatic Hydrocarbon
PCE	Perchloroethylene (a.k.a Tetrachloroethylene)
PHC	Petroleum Hydrocarbon
PPE	Personal Protective Equipment
PSS	Property Specific Standard
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
RA	Risk Assessment
RL	Reporting Limit

RMM	Risk Management Measure
RPD	Relative Percent Difference
RSC	Record of Site Condition
SCS	Site Condition Standard
SOP	Standard Operating Procedures
TCA	Trichloroethane
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TOV	Total Organic Vapour
VC	Vinyl chloride
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 INTRODUCTION

AMEC Environment & Infrastructure, a division of AMEC Americas Limited ("AMEC"), was retained by the City of Ottawa (the "City") to conduct a Baseline Environmental Site Assessment (ESA) of Laroche Park, a municipal urban multi-use park located at 52 Bayview Road in Ottawa, Ontario, Ontario (the "Site"). A key plan showing the location of the Site is provided on Figure 1.

The Baseline ESA was undertaken to characterize the soil and groundwater conditions at the Site in preparation for proposed upgrades to the park including a new field house, a community garden, an all-season ice hockey/ball hockey rink and upgrades to the existing playground and basketball court. The Baseline ESA was conducted according to *Ontario Regulation 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protection Act* (EPA) (O.Reg. 153/04). The scope of work completed during the investigation was carried out in accordance with AMEC's proposal dated June 24, 2014 and written and verbal instruction from the City.

1.1 Site Description

The Site is located at the southeast corner of the intersection of Burnside and Stonehurst Avenues in the Mechanicsville neighbourhood of Ottawa, Ontario. The Site is an irregular shaped property approximately 2.5 hectares in area and is improved with a field house, two baseball diamonds, a basketball court, a seasonal ice hockey rink and change facility, a gazebo, a playground and a splash pad. A generalized plan of the Site is shown on Figure 2.

The Site lies in a typical urban setting in an area of mixed residential, commercial and light industrial land use. The Site and surrounding properties are municipally serviced including water, storm and sanitary sewers, hydro, telephone and cable. There are no known water wells at the Site or any of the adjacent properties.

1.2 Background

The Site was used to dispose of waste between 1928 and 1932. In 2005 the City of Ottawa began investigating the Site as part of its Old Landfill Management Strategy (OLMS). The investigation initially consisted of a Data Gap Analysis (AMEC, 2005) conducted to identify any potential immediate risks to human health associated with the former landfill and to delineate the limits of the former landfill. The Data Gap Analysis consisted of a limited historical review and an assessment of surface soil, groundwater and soil gas conditions. The Data Gap Analysis did not identify potential immediate health risks associated with the landfill itself, although the full aerial extent of the landfill footprint could not be determined. Although immediate risks associated with the landfill itself were not identified, groundwater sampling during the Data Gap analysis identified impacts by chlorinated volatile organic compounds (CVOC) near the east property boundary which have been the subject of extensive investigation and remediation since their discovery.

Investigations undertaken through 2005 and 2006 (AMEC, 2006) included installation of 16 overburden and four shallow bedrock monitoring wells to delineate overburden and shallow

bedrock groundwater impacts by CVOC beneath the southeastern portion of the Site. The investigations traced the source of the CVOC impacts to the adjacent National Capital Commission (NCC) property located at 80 Bayview Road, to the east of the Site. A groundwater remediation system was installed on the NCC property and was commissioned into operation in March 2007. Monitoring and sampling of the Laroche Park monitoring wells has been carried out by AMEC on behalf of the City since 2008. The results of the monitoring and sampling indicate significant reductions in the contaminant concentrations at the Site; however, concentrations of several of the CVOC remain in excess of the generic Site Conditions Standards (SCS) applicable to the Site (AMEC, 2014).

In addition to the historic landfilling activities and CVOC groundwater plume, archival records reviewed by City staff indicate that the field house heating equipment was previously fueled by heating oil. The heating oil would have been stored in an aboveground or underground storage tank (AST or UST), or possibly both at one time. This is further verified by core holes observed in the concrete wall of the basement boiler room that are consistent with vent and fill pipes of such storage tanks. No investigations have been carried out to assess potential impacts associated with leaks or spills associated with the fuel storage equipment. It is not known whether or not a UST is still present at the Site.

1.3 Objective and Scope of Work

Portions of Laroche Park have been subject to extensive investigation, however the extent of landfilling activities has never been verified and the northern half of the park has not been investigated. The primary objective of this project is to assist the City of Ottawa in preparing the necessary environmental due diligence studies and to identify preliminary risk management measures and/or remedial cost estimates to support redevelopment of the Site

Based on the known Site history and the planned redevelopment the primary goals of the Baseline ESA are to:

- Delineate the aerial extent of the landfill;
- Determine surface soil quality including focused sampling in the area of the proposed community garden;
- Determine subsurface soil quality with a particular focus in areas where material may be excavated/disturbed during redevelopment; and,
- Refine aerial and vertical delineation of the CVOC plume.

Contaminants of potential concern (COPC) include petroleum hydrocarbons (PHC), VOC including chlorinated solvent and petroleum-related aromatic hydrocarbons, heavy metals and polynuclear aromatic hydrocarbons (PAH). VOC in groundwater has been realized as a contaminant of concern (COC) through previous instigations carried out at the Site.

The scope of work undertaken during the Baseline ESA to meet the desired project objective and goals included the following tasks:

- Arranging for the location of underground and overhead utilities including natural gas pipelines, storm and sanitary sewers, and telephone and electrical conduits to be marked by the local utility companies and/or their representative agents and for a private locator to clear the planned borehole locations in advance of drilling operations;
- Conducting a geophysical survey to determine the presence or absence of a heating oil UST in the vicinity of the field house;
- A subsurface soil sampling program including the drilling of 37 boreholes to facilitate the collection of fill and/or soil samples; logging and field screening for evidence of negative impact using visual, olfactory and sample headspace screening methods;
- Installing overburden groundwater monitoring wells in five of the boreholes to assess the quality of groundwater at the Site, including further delineation of the CVOC plume, and the direction of shallow, horizontal groundwater flow;
- Installing one shallow and three deep bedrock monitoring wells to further define the horizontal and vertical extent of the CVOC bedrock plume ;
- Collecting surface soil samples from 29 locations;
- Submitting select soil and groundwater samples for laboratory analyses COPC including pH and heavy metals, PAH, VOC, and PHC F1-F4;
- Comparing the analytical results reported for the soil and groundwater samples to the appropriate generic site conditions standards established in *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act*; and,
- Preparing a report documenting the findings of the Baseline ESA including an outline of the methodologies used, stratigraphic and instrumentation logs, analytical results for all samples, an interpretation of the findings and any possible requirements for further investigation, remedial activities or reporting obligations.

2.0 WORK PROGRAM AND METHODOLOGY

Details of the investigation activities are provided in the following sections.

2.1 Field Preparation

2.1.1 Subsurface Utility Locates

The locations of all buried and overhead services were obtained prior to the initiation of any of the subsurface investigations. Multiview Locates Inc. ("Multiview"), a specialist utility locating firm, was retained to contact and coordinate locates by the respective utility companies and agencies, mark the locations of any private on-Site underground utilities that were not marked by the public utility locating services, and to clear the individual borehole and monitoring well locations prior to their advancement.

2.1.2 Quality Assurance/Quality Control Program

A strict Quality Assurance/Quality Control (QA/QC) program was implemented and maintained throughout the project to ensure the Site data to be representative of the actual Site conditions. The QA/QC program provides a method of documented checks to assess the precision and accuracy of collected data. The QA/QC program includes a set of standard procedures or protocols to be followed throughout the investigations. To this end, AMEC field and QA/QC protocols have been developed to meet or exceed those defined in the Ministry of the Environment and Climate Change ("MOECC") documents entitled *Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04* (June 2011) and *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (1996) and Canadian Council of Ministers of the Environment (CCME) *Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites* (1993). The field QA/QC program included the following components:

- The use of personal protective equipment (PPE) including hard hats, safety glasses, safety work boots, and chemically resistant latex/nitrile gloves for sample handling;
- The use of standard operating procedures (SOP) developed to meet or exceed industry standard practices;
- Thorough documentation of all field activities and sample handling practices including field notes, chain of custody forms, memos to file, etc.;
- The use of dedicated or disposable sampling equipment where practical or the implementation of thorough decontamination procedures to prevent cross contamination between sample locations.
- The incorporation of blind duplicate samples into the sampling and analytical programs to assess the validity of the data received from the analytical laboratory; and,
- The use of laboratory analytical protocols and method detection limits that have been established in accordance with regulatory requirements for the province of Ontario.

2.2 Geophysical Survey

An electromagnetic (EM) geophysical survey was conducted at the Site to identify potential subsurface anomalies including but not limited to UST, septic tanks and/or septic tile beds, buried metals objects including drums, and subsurface utility conduits. The EM survey was conducted in an effort to verify the presence or absence of a UST in the vicinity of the field house. The survey was performed by Multiview concurrent with the subsurface utility locates on July 17, 2014. The EM survey consisted of an apparent conductivity survey and was conducted using a Geonics EM-61 within a 5 m perimeter surrounding the field house.

2.3 Surface Soil Sampling

A total of 29 composite surface soil samples were collected to determine the potential for impact to surface soils in areas across the Site with more detailed focus in the area of a proposed community garden. The initial surface soil samples were collected on August 12 and 14, 2014. Based on preliminary results an additional set of surface soil samples was collected on November 11, 2014 to refine the delineation of surface soil impacts. The locations of the surface soil samples are shown on Figure 3.

Each surface soil sample consisted of five to 10 equal size cores or grab samples collected from within a 2-meter sample radius. The sample aliquots were collected using a Dutch auger and homogenized in a stainless steel mixing bowl to create a single composite sample from each sample location. The composite surface soil samples were then placed directly into laboratory supplied sample containers, labelled, and stored in coolers, on ice, immediately after collection and during transport to the laboratory. Continuous Chain of Custody documentation was maintained.

All soil sampling and handling equipment was of stainless steel construction and was decontaminated between sample locations to prevent cross contamination between sample locations. Similarly, new nitrile gloves were donned at each sample location.

2.4 Subsurface Investigations and Soil Sampling

The subsurface conditions and representative samples of soil and groundwater media were obtained through the drilling of boreholes and the installation of groundwater monitoring wells. The subsurface geological conditions were established from visual observations and soil samples collected during the borehole drilling program. Soil and groundwater quality data was obtained from visual and olfactory observations, field screening methods and laboratory analytical data.

2.4.1 Borehole Drilling and Soil Sampling

A total of 37 boreholes (BH14-1 through BH14-23, BH14-25 through BH14-29, MW14-1 through MW14-5, DBMW14-2, DBMW14-4, BMW14-5 and DBMW14-5) were advanced across the Site. The planned BH14-24 was omitted from the program due to time constraint and an adequate borehole coverage across the Site. The borehole locations were chosen to intersect potential subsurface soil and groundwater plumes and to establish the site-specific geological and

hydrogeological characteristics beneath the Site. The borehole/monitoring well locations are shown on Figure 3.

All boreholes advanced at the Site were utilized to assess general soil conditions associated with waste materials historically deposited at the Site. Select borehole locations were also chosen with more specific targeting rationale as follows:

- MW14-1, MW14-2, BH14-13 and BH14-14 were advanced in the vicinity of the field house to assess potential impacts associated with the former use of heating oil;
- MW14-3 and MW14-4 were advanced to assess potential preferential migration of the known CVOC plume along the length of the large storm sewer transecting the Site;
- MW14-5 was advanced north of the known extent of the CVOC plume to refine delineation; and,
- BMW14-5, DBMW14-2, DBMW14-4 and DBMW14-5 were advanced along the east portion of the Site to refine vertical delineation of the CVOC plume.

The borehole investigations were completed on August 11-13 and 15, 2014 by Strata Drilling Group of Perth, Ontario. All boreholes were advanced to suspected bedrock refusal encountered at depths ranging from 0.6 to 5.9 m below ground surface (mbgs) using a variety of direct push drilling rigs including a Geoprobe 7822DT track mounted rig, a Geomachine GM100 track mounted rig and a Geoprobe 420M portable rig, all equipped with dual tube sampling systems (DTSS). Soil samples were collected continuously throughout the length of each borehole to facilitate the characterization of subsurface soil conditions and an assessment of soil quality. BMW14-5, DBMW14-2, DBMW14-4 and DBMW14-5 were extended into bedrock using rotary air hammer equipment fixed to the GM-100 drilling rig.

Boreholes not instrumented with groundwater monitoring wells were backfilled with 10 mm bentonite chips (Holeplug™) in accordance with Ontario Regulation 903. Details of the borehole drilling and soil sampling are provided in the stratigraphic and instrumentation logs in Appendix A. All drilling activities were completed under the supervision of AMEC field staff.

2.4.2 Sample Logging and Handling

The soil samples retrieved during the borehole investigation were examined, classified, and logged according to soil type, moisture content, colour, consistency, and presence of visual and/or olfactory indicators of negative impact. Soil samples were split into duplicate fractions upon recovery at the surface. The primary sample fractions were placed in 200 ml sample jars with Teflon-lined lids or were micro-cored and field preserved with methanol in 40 ml amber vials (samples for VOC and PHC F1 only). All samples were stored on ice for future potential laboratory analysis. The duplicate sample fractions were placed in "Ziploc" sample bags and stored at ambient temperature for subsequent field vapour screening purposes.

All soil samples were collected in accordance with strict environmental sampling protocols to minimize loss of volatile organics and to ensure reliable and representative results. Disposable nitrile gloves were used and replaced between the handling of successive samples. All soil sampling equipment (stainless steel trowels, spatulas, etc.) was thoroughly decontaminated between soil sample locations to prevent potential cross-contamination. Decontamination activities included:

- Physical removal of any adhered debris;
- Wash/scrub in "Alconox" soap solution;
- Distilled water rinse;
- Methanol rinse; and
- Air dry.

2.4.3 Sample Screening

All soil samples were screened in the field for gross evidence of negative environmental impact including staining and odours. Soil sample headspace screening was also performed to facilitate sample selections for laboratory analysis and to provide an assessment of the vertical contaminant distributions at each borehole location. The duplicate soil sample fractions were screened for combustible organic vapour (COV) and total organic vapour (TOV) concentrations using the sample headspace method. COV and TOV concentrations were measured using a RKI Eagle 2 combined combustible vapour analyzer and photoionization detector calibrated to known hexane and isobutylene standards and operated in methane elimination mode.

2.4.4 Soil Sample Analyses

Soil samples deemed to be representative of the Site conditions were collected and placed in laboratory-supplied glass jars or vials equipped with Teflon seals (samples reserved for analysis for volatile compounds). The samples were selected on the basis of visual/olfactory evidence of contamination, field screening results (details follow), from the vicinity of the apparent water table or features such as inferred confining layers or, in the absence of any "targeting rationale", on the basis of at least one sample per borehole. All samples were stored in coolers, on ice, immediately after collection and during transport to the laboratory. Continuous Chain of Custody documentation was maintained. Where analysis for volatile organic compounds (VOC, PHC F1) was a consideration, the sample was subject to field preservation using methanol charged vials supplied by the analytical laboratory to minimize potential losses due to volatilization.

In total, 86 discrete (i.e., exclusive of field duplicates) soil samples were submitted to the laboratory for analysis. In order to assess the overall site conditions and immediate potential health risks to humans via direct contact with respect to COPC all surface soil samples were submitted for analysis of PHC F2-F4, PAH and metals. Subsurface soil samples from each borehole were also submitted for analysis of PHC F2-F4, PAH and metals with samples from select locations also analysed for BTEX and PHC F1 or VOC and PHC F1. Locations chosen for the additional BTEX and PHC F1 analyses included those surrounding the field house where the

former use of heating oil resulted in an APEC while those chosen for the additional VOC and PHC F1 analyses include those along the east portion of the Site to refine delineation of the known CVOC plume.

Twelve blind duplicate samples were collected for analysis of one or more COPC including VOC, BTEX, PHC F1-F4, PHC F2-F4, PAH and/or metals as follows:

- Sample DUP-1 is a blind duplicate of sample MW14-2 SS3;
- Sample DUP-2 is a blind duplicate of sample MW14-2 SS2;
- Sample DUP-3 is a blind duplicate of sample BH14-14 SS4;
- Samples DUP-4 and DUP-6 are a blind duplicates of sample MW14-5 SS4;
- Sample DUP-5 is a blind duplicate of sample BH14-9 SS2;
- Sample DUP-7 is a blind duplicate of sample BH14-13 SU-13;
- Sample DUP-8 is a blind duplicate of sample SU-5;
- Sample DUP-9 is a blind duplicate of sample BH14-3 SU-3;
- Sample DUP-10 is a blind duplicate of sample BH14-27 SS2;
- Sample DUP-11 is a blind duplicate of sample BH14-28 SS2;
- Sample DUP-12 is a blind duplicate of sample BH14-25 SS6;

In addition to the above noted chemical analyses, a composite sample of shallow soil in the area of the proposed all season rink was submitted for analysis in accordance with the Toxicity Characteristic Leaching Procedure (TCLP) established under Ontario Regulation 347 – General Waste Management, as amended ("O.Reg 347"), to determine whether soil excavated during construction would be considered hazardous waste. Results of the TCLP analysis are provided in Appendix B and indicate that soil in the area of the proposed all season rink is not considered hazardous waste.

2.5 Monitoring Well Installations

Nine boreholes (MW14-1 through MW14-5, BMW14-5, DBMW14-5, DBMW14-2 and DBMW14-4) were instrumented with groundwater monitoring wells upon completion to permit the collection of groundwater samples and hydrogeological conditions beneath the Site. The monitoring wells were constructed using 38 mm diameter, schedule 40, flush-joint threaded PVC monitoring well supplies. The monitoring wells were completed with a 1.5 or 3.0 m length of #10 mil slotted intake screen. The tops of the intake screens were then extended to the ground surface using solid riser pipe. A silica sand filter pack was placed between the intake screen and the wall of the borehole. The filter pack was extended approximately 0.3 m above the top of the well screen to allow for settlement of the sand packs and to accommodate expansion of the overlying well seals. A bentonite seal was placed above the sand pack and extended to approximately 0.3 metres below grade. The monitoring wells were finished at the surface with flushmount steel casings set in a concrete surface seal. The locations of the monitoring wells are shown on Figure 3. Details of the monitoring well constructions are summarized in Table 1 and included in the stratigraphic and instrumentation logs in Appendix A.

All groundwater monitoring wells installed at the Site were instrumented with dedicated Waterra inertial lift pumps and sufficient lengths of low density polyethylene (LDPE) tubing to facilitate well development and purging requirements. One week following installation, each monitoring well was developed by extracting approximately five to ten well volumes to remove any residual sediment and/or drill cuttings introduced during the borehole drilling and well installation process, stabilize and grade the filter pack, retrieve lost drilling fluids, improve connectivity between the well and the formation, and restore groundwater that may have been disturbed or altered during the drilling process. Once developed the wells were instrumented with smaller diameter LDPE tubing to facilitate low flow sampling using a peristaltic pump.

2.6 Surveying and Levelling

The locations of all surface samples, boreholes and monitoring wells, with the exception of BH14-5, were surveyed for location and elevation by the City of Ottawa Survey and Mapping Unit. BH14-5 was advanced near the centre of the south baseball diamond which was groomed before the survey could be conducted thus obscuring the precise location of the borehole. Locations were referenced relative to the Modified Transverse Mercator (MTM) grid coordinate system as were all previously existing monitoring wells at the Site. The ground surface and top of pipe elevations at all monitoring well locations were referenced relative to geodetic datum. All sample locations were located on georeferenced mapping and aerial imagery provided by the City of Ottawa.

2.7 Groundwater Monitoring and Sampling

Groundwater monitoring, including measuring the depth to the static water level and assessing the presence/absence of measurable accumulations of light and/or dense non-aqueous phase liquid (LNAPL/DNAPL) was conducted on August 26, 2014 and included only the newly installed monitoring wells. A second monitoring event including all monitoring wells present at the Site was conducted on October 27, 2014 as part of the routine semi-annual monitoring program. Measurements of depth to ground water were taken using a Heron Instruments electronic interface probe and reduced to static elevations based on the monitoring well survey data (Table 2). Free phase LNAPL or DNAPL layering was not detected in any of the monitoring wells installed at the Site.

Groundwater sampling was also performed on August 26, 2014 and October 27 and 29, 2014. Low-flow sampling techniques were utilized in order to minimize potential sample biasing due to sediment entrainment. Using this sampling method, wells were purged and sampled at a maximum flow rate of 100 ml per minute while measuring the water level in order to ensure a maximum drawdown of not more than 0.3 metres. Field parameters including temperature, pH, conductivity and oxidation-reduction potential (ORP) were measured throughout the purging and sampling process using a YSI 556 multi-parameter water quality probe with the samples being collected upon stabilization of these parameters. Monitoring wells incapable of yielding sufficient water to sustain the 0.3 m maximum drawdown were purged dry and sampled on recovery. Groundwater field parameters data and general observations are provided in Table 3.

Groundwater samples were collected directly into laboratory supplied sample containers pre-inoculated with any necessary preservatives. Dedicated (one pair per sample), disposable nitrile gloves were used throughout the proceedings. Vials that contained samples to be analyzed for volatile compounds were inverted after filling and inspected to ensure that no head space was present in any vial. Samples were placed in a cooler and stored on ice until delivered to the analytical laboratory.

The groundwater samples collected during the August 2014 sampling event from overburden monitoring wells (MW14-1 through MW14-5) were analyzed for VOC, PHC F1-F4, PAH and metals while samples from bedrock monitoring wells (MW14-5, DBMW14-2, DBMW14-4 and DBMW14-5) were analysed for VOC. During the October 2014 sampling event all samples were submitted for VOC analysis only.

Four Blind Duplicate samples were collected for QA/QC purposes as follows:

- Sample Dup-1 (August 27, 2014) is a blind duplicate of sample MW14-4;
- Sample Dup-1 (October 27, 2014) is a blind duplicate of sample MW14-2;
- Sample Dup-2 is a blind duplicate of sample MW14-3; and,
- Sample Dup-3 is a blind duplicate of sample MW-8.

2.8 Laboratory Analyses

Representative soil and groundwater samples collected during the investigation were submitted for laboratory analysis of COPC and COC. All laboratory chemical analyses were conducted by Paracel Laboratories Limited of Ottawa, Ontario ("Paracel"). Paracel is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) in accordance with ISO/IEC 17025:1999 – "General Requirements for the Competence of Testing and Calibration Laboratories" for the tested parameters set out in the Soil, Ground Water and Sediment Standards.

3.0 RESULTS OF THE FIELD INVESTIGATIONS

3.1 Geophysical Survey

The geophysical survey was conducted in an effort to verify the presence or absence of a UST in the vicinity of the field house both as a safety measure in advance of the drilling program and to determine whether a UST removal program was required. No subsurface anomalies were identified during the geophysical survey. Given the absence of anomalies and the targeted nature of the survey no report of the survey was produced.

3.2 Site Geology

The subsurface conditions encountered at the Site are described in the stratigraphic and instrumentation logs provided in Appendix A. The subsurface conditions at the Site are quite variable across the Site as a result of uneven bedrock topography, historic landfilling activities and excavation and bedrock blasting activities associated with the installation of the twin box sewer and other sewers that currently traverse the Site. The resulting stratigraphy generally consists of an initial layer of surficial fill (grass/topsoil, gravel) successively underlain by a layer of sandy fill with mixed waste consisting primarily of ashes, cinders, clay brick and ceramics with lesser quantities of animal bone and organic matter observed in some locations. The waste fill is underlain by sandy clay or clayey sand extending to the top of bedrock encountered at depths ranging from 0.6 to 6.4 mbgs. Contour plans depicting overburden thickness and bedrock surface elevation are provided on Figures 4 and 5, respectively.

A number of boreholes were advanced immediately adjacent to the storm sewers traversing the Site during the current and previous investigations. The subsurface conditions encountered at these locations consisted primarily of sand or granular fill with varying amounts of silt and clay to the termination of each borehole.

Based on coring completed during previous investigations at the Site, the bedrock beneath the Site consists of light grey limestone with dark grey shaly seams and interbeds. Bedrock was encountered at depths ranging from 0.6 (BH14-1) to 6.4 metres (previously existing BMW-4) below surface grade with corresponding elevations ranging from 50.35 masl (BMW-4) to 59.43 masl (BH14-1). The resulting bedrock topography across the Site is fairly irregular owing not only to the Gloucester Fault system which transects the area, but also due to modifications from the extensive utilities and services that cross the area (Figure 3).

3.3 Site Hydrogeology

The results of the groundwater monitoring are summarised in Table 2 and indicate that the primary near surface water table resides within the overburden fill unit.

The water table elevations recorded at the overburden monitoring wells varied between 53.06 masl (MW-7) and 55.11 masl (MW14-2). Inferred groundwater elevation contours depicting the overburden groundwater flow pattern across the Site based on groundwater elevations recorded on October 27, 2014 are presented on Figure 6.1. The overburden groundwater elevations

indicate that the twin box culvert storm sewer traversing the Site has some effect on the local groundwater flow acting as a hydraulic sink, draining groundwater flow and resulting in bi-direction groundwater flow. Groundwater flows toward the twin box culvert from the east and west and is then directed southward. An exception to this pattern is along the along the east Site perimeter in the vicinity of the pumping well installed at the neighbouring NCC property. In this area it is evident that the pumping well is having an effect on the overburden groundwater flow, as shown by a mild inward radial flow pattern encompassing the area of MW-3, MW-6, MW-7, MW-8, MW-10, MW-12 and MW-16.

The Gloucester Fault system also has an effect on the overburden groundwater flow as the depth of the overburden east of the fault is considerably shallower and is normally located at elevations above the water table west of the fault. The fault may therefore be restricting overburden groundwater flow to the east due to the less permeable bedrock fault boundary.

The shallow bedrock groundwater elevations varied between 53.15 masl (BMW-2) and 56.79 masl (BMW14-5). Inferred potentiometric surface elevation contours depicting the shallow bedrock groundwater flow pattern across the Site based on groundwater elevations are illustrated on Figure 6.2. Based on the limited shallow bedrock groundwater elevations the shallow bedrock groundwater at the Site flows in a southerly direction turning slightly westward as it approaches the south Site perimeter. This flow pattern is somewhat consistent with the bedrock topography with overall higher bedrock elevations lying to the north.

The deep bedrock groundwater elevations were recorded as 49.67 masl, 55.80 masl and 56.79 masl at DBMW14-2, DBMW14-4 and DBMW14-5, respectively. Inferred potentiometric surface elevation contours depicting the deep bedrock groundwater flow pattern across the Site based on groundwater elevations are illustrated on Figure 6.3. Based on the limited deep bedrock groundwater elevations the shallow bedrock groundwater at the Site flows in a southerly direction. The flow direction and elevations are consistent with artesian condition observed in the area of DMW14-5. During the drilling program the first attempt at advancing DBMW14-5 resulted in flowing artesian conditions. The volume of flow was such that controlling would be difficult so the borehole was abandoned using bentonite. A second borehole was advanced to a lesser depth to install the final DBMW14-5. Artesian conditions were not noted during drilling but based on the recorded water level in DBMW14-5 (i.e., at surface) it is apparent that these conditions are present.

Vertical gradients between the overburden and bedrock groundwater systems are predominantly upward signifying groundwater discharge conditions. The upward vertical gradients may be due to the twin box culvert storm sewer acting as a sink thus resulting in a lower hydraulic head in the overburden relative to the bedrock.

3.4 Field Measurements and Observations

3.4.1 Staining and Odours

No odours or staining suggestive of petroleum hydrocarbon impacts were detected in any of the

soil and/or sediment samples collected at the Site.

3.4.2 COV and TOV Concentrations

COV concentration headspace measurements recorded in the soil samples collected at the Site were primarily < 10 ppm but ranged as high as 45 ppm in some samples. Similarly, TOV concentration headspace measurements recorded in the soil samples collected at the Site were primarily < 10 ppm but ranged as high as 26 ppm in some samples. These concentrations are not indicative of significant impact by petroleum hydrocarbons. The COV and TOV results are semi-quantitative at best and are generally only used for relative sample comparison purposes when selecting samples for laboratory analysis. The COV and TOV concentrations headspace measurements are summarized in the stratigraphic and instrumentation logs in Appendix A.

3.4.3 Liquid Petroleum Hydrocarbons

No visible liquid petroleum hydrocarbon (LPH) was observed in either the soil or groundwater samples obtained from the Site. No measurable accumulations of floating LPH were detected in any of the monitoring wells installed at the Site. No evidence of hydrocarbon sheen or iridescence was noted during the monitoring well development and/or groundwater purging and sampling activities.

4.0 REGULATORY FRAMEWORK

The legislative and regulatory requirements for contaminated sites in Ontario are established by *Ontario Regulation 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protection Act,* as amended, (O.Reg. 153/04). O.Reg. 153/04 provides two approaches for remediating contaminated sites including: 1) restoration to generic Site Condition Standards (SCS) comprised of background standards and effects-based standards; and 2) preparation of a risk assessment. The generic and background SCS are set out in the document entitled "*Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act*" dated April 15, 2011 (the "EPA Standards"). The generic effects-based SCS have been developed using a risk-based approach and are provided in Tables 2 through 9 of the EPA Standards. The application of the appropriate generic effects-based SCS is dependent upon several site-specific conditions including: 1) the existing/proposed property use; 2) the existing/potential groundwater use; 3) depth of clean-up; 4) soil texture; 5) depth to bedrock; 6) soil pH; and 7) proximity to a water body.

The application of the generic effects-based SCS requires that the Site be classified to determine which remediation standards are appropriate. The classification of the Site was based on the following Site characteristics:

- There are no known areas of natural significance or conditions in the vicinity of the Site, which would cause the Site to be classified as potentially sensitive according to the Ministry of Natural Resources' Natural Heritage Information Centre web site;
- Based on the results of the borehole drilling, the depth of the soil on the Site is greater than 2.0 mbgs across the majority of the Site;
- Soil samples collected at the Site and submitted for pH determination yield pH values within the required range of 5 – 9;
- No permanent water bodies were located on or within 30 metres of the Site;
- The soils encountered at the Site primarily consist of coarse grained waste material and coarse sand fill with varying amounts of silt and/or clay; and
- The Site and all other properties located within 250 metres of the Site are municipally serviced.

Based on the above Site characteristics, the Site would not be classified as being Environmentally Sensitive per *O.Reg. 153/04*. The appropriate property use classification would be residential/parkland/institutional as per *O.Reg. 153/04*. Therefore, the appropriate Site Condition Standards for the Site are the Table 3 standards for non-potable groundwater, residential/parkland/institutional property use and coarse textured soils ("Table 3 SCS").

5.0 LABORATORY ANALYSES

The results of the soil and groundwater sample analyses carried out as part of this investigation as well as groundwater samples collected during the fall 2014 semi-annual sampling event are summarized in Tables 3.1 through 10. A discussion of the results of the laboratory analyses in the context of the applicable generic SCS is provided in the following sections. Copies of the laboratory Certificates of Analysis are provided in Appendix B.

5.1 Soil Sample Analyses

The results of the soil sample analyses, and their respective Table 3 SCS, are summarized in Tables 4.1 through 7.2.

5.1.1 Petroleum Hydrocarbons

5.1.1.1 Surface Soil

A total of 31 surface soil samples, including four QA/QC duplicate samples, were submitted for analysis of PHC F2–F4. The results of the PHC F2-F4 surface soil sample analyses and their respective Table 3 SCS are summarized in Table 4.1. PHC F2-F4 was below method detection limits (MDL), or where detected, at concentrations below Table 3 SCS in all surface soil samples analysed.

5.1.1.2 Subsurface Soil

A total of 41 subsurface soil samples, including six QA/QC duplicate samples, collected during the borehole sampling program were submitted for analysis of PHC F2–F4. Select samples also included BTEX and PHC F1 analyses. The results of the BTEX and PHC F1-F4 soil sample analyses and their respective Table 3 SCS are summarized in Table 4.2. The results of the soil sample PHC analyses are summarized as follows:

- All BTEX parameters were reported at concentrations below the analytical MDL and the Table 3 SCS in all samples analyzed;
- PHC F1 (C6 – C10) was reported at concentrations below the analytical MDL and the Table 3 SCS in all samples analyzed;
- PHC F2 (>C10 to C16) was detected in sample BH14-3 SS2 at a concentration of 12 µg/g which is well below the Table 3 SCS of 98 µg/g. All other samples reported PHC F2 concentrations below the MDL of 4 µg/g;
- PHC F3 (>C16 to C34) was detected in eight soil samples submitted for laboratory analysis with reported concentrations ranging from 69 µg/g (BH14-16 SS2) to 416 µg/g (BH14-21 SS3) while all other samples reported concentrations below the MDL of 8 µg/g. The reported concentration at BH14-21 SS3 is the sole exceedance of the Table 3 SCS of 300 µg/g; and

- PHC F4 (>C34) was detected in seven samples submitted for laboratory analysis with reported concentrations ranging from 26 µg/g (BH14-7 SS1) to 297 µg/g (BH14-21 SS3) while all other samples reported concentrations below the MDL of 6 µg/g. None of the analyzed soil samples exceeded the Table 3 SCS for PHC-F4 (2,800 µg/g).

5.1.2 Volatile Organic Compounds

A total of four soil samples, including one QA/QC duplicate sample, collected during the borehole sampling program were submitted for laboratory analysis of VOC. The results of the VOC soil analyses and their respective Table 3 SCS are summarized in Table 5.

All VOC parameters were below MDL and the Table 3 SCS in sample DBMW14-4 SS6 while trichloroethene (TCE) was the sole parameter detected in the remaining samples. TCE concentrations in samples MW14-5 SS4 and DBMW14-2 SS3 were reported at 0.535 µg/g (average of duplicate samples) and 0.87 µg/g, respectively, thereby exceeding the Table 3 SCS of 0.061 µg/g.

5.1.3 Polynuclear Aromatic Hydrocarbons

5.1.3.1 Surface Soil

A total of 33 surface soil samples, including four QA/QC duplicate samples, were submitted for laboratory analysis of PAH compounds. The results of the PAH soil sample analyses and their respective Table 3 SCS are summarized in Table 6.1. PAH are widespread across the Site with detectable concentrations of PAH in all but one sample analysed and all nineteen PAH compounds analysed were detected in three locations. Exceedances of the Table 3 SCS for at least one PAH parameter were reported at six sampling locations. Exceeding parameters include acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,c,d)pyrene and phenanthrene.

5.1.3.2 Subsurface Soil

A total of 39 soil samples, including four QA/QC duplicate samples, collected during the borehole sampling program were submitted for laboratory analysis of PAH compounds. The results of the PAH soil sample analyses and their respective Table 3 SCS are summarized in Table 6.2. PAH are widespread across the Site with detectable concentrations of PAH in all but one sample analysed and all nineteen PAH compounds analysed were detected in six locations. Exceedances of the Table 3 SCS for at least one PAH parameter were reported at 15 sampling locations. Exceeding parameters include acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,c,d)pyrene and phenanthrene.

5.1.4 Metals

All soils naturally contain trace levels of heavy metals. The presence of heavy metals in soils is, therefore, not necessarily indicative of contamination. The concentration of heavy metals in uncontaminated soil is primarily related to the geology of the parent material from which the soil was formed. However, elevated concentrations of specific metals may accumulate in soil and fill materials due to anthropogenic activities and or as a result of the nature and origin of fill materials.

5.1.4.1 Surface Soil

A total of 32 surface soil samples, including four QA/QC duplicate samples, were submitted for analysis of heavy metals. The results of the heavy metals soil sample analyses and their respective Table 3 SCS are summarized in Table 7.1.

Nine or more heavy metals were present at detectable concentration in all samples analysed. Exceedances of the Table 3 SCS for two or more of barium, lead, mercury and zinc were reported at two of the sampling locations. Sample MW14-5 SU5 reported concentrations of lead (279 µg/g), mercury (0.4 µg/g) and zinc (447 µg/g) in excess of their respective Table 3 SCS of 210 µg/g, 0.27 µg/g and 340 µg/g. Sample BH14-7 SU7 reported concentrations of barium (1,940 µg/g) and lead (123 µg/g) in excess of their respective Table 3 SCS of 390 µg/g, 120 µg/g.

All other surface soil samples collected from the Site reported either parameter concentrations below MDL or contained detectable heavy metal concentrations below Table 3 SCS.

5.1.4.2 Subsurface Soil

A total of 39 soil samples, including four QA/QC duplicate samples, collected during the borehole sampling programs were submitted for analysis of heavy metals. The results of the heavy metals soil sample analyses and their respective Table 3 SCS are summarized in Table 7.2.

Eleven or more heavy metals were present at detectable concentration in all samples analysed. One or more of ten heavy metals including antimony, arsenic, barium, cadmium, copper, lead, mercury, molybdenum, selenium and zinc were found to be in excess of Table 3 SCS at 27 sampling locations. The results of the metals sample analyses are summarized as follows:

- Antimony exceeded the Table 3 SCS of 7.5 µg/g at nine locations at concentrations ranging from 9.4 µg/g (MW14-2 SS2) to 18.5 µg/g (MW14-1 SS2);
- Arsenic exceeded the Table 3 SCS of 16 µg/g at 13 locations at concentrations ranging from 18.2 µg/g (BH14-19 SS2) to 52.8 µg/g (BH14-12 SS1);
- Barium exceeded the Table 3 SCS of 390 µg/g at eight locations at concentrations ranging from 445 µg/g (BH14-11 SS2) to 3,990 µg/g (BH14-7 SS1);
- Cadmium exceeded the Table 3 SCS of 1.2 µg/g at sample BH14-27 SS2 and its duplicate at an average concentration of 3.05 µg/g;

- Copper exceeded the Table 3 SCS of 140 µg/g at four locations at concentrations ranging from 152 µg/g (BH14-19 SS2) to 1,060 µg/g (BH14-8 SS2);
- Lead exceeded the Table 3 SCS of 120 µg/g at 23 locations at concentrations ranging from 122 µg/g (BH14-4 SS3) to 2,930 µg/g (BH14-5 SS2);
- Mercury exceeded the Table 3 SCS of 0.27 µg/g at 20 locations at concentrations ranging from 0.3 µg/g (BH14-1 SS1) to 3.7 µg/g (BH14-19 SS2);
- Molybdenum exceeded the Table 3 SCS of 6.9 µg/g in samples BH14-12 SS1 and BH14-13 SS2 at respective concentrations of 11.9 µg/g to 7 µg/g;
- Selenium exceeded the Table 3 SCS of 2.4 µg/g in sample BH14-13 SS2 at a concentration of 18.5 µg/g; and,
- Zinc exceeded the Table 3 SCS of 340 µg/g at 12 locations at concentrations ranging from 415 µg/g (BH14-12 SS1) to 1,720 µg/g (BH14-29 SS1).

All other samples collected from the Site reported either non-detect parameter concentrations or contained detectable heavy metal concentrations below EPA Table 3 SCS.

5.2 Groundwater Sample Analyses

The results of the groundwater sample analyses, and their respective Table 3 SCS, are summarized in Tables 8 through 11.

5.2.1 Petroleum Hydrocarbons

Six groundwater samples, including one sample from each overburden monitoring well installed during this study (MW14-1 through MW14-5) and one QA/QC duplicate sample, were submitted for laboratory analysis of PHC F1-F4. The results of the PHC analyses and their respective Table 3 SCS are summarized in Table 8. All PHC parameters were below MDL and their respective Table 3 SCS in each sample analyzed.

5.2.2 Volatile Organic Compounds

A total of 39 groundwater samples, including two samples from each monitoring well installed during this study, one sample from each previously existing monitoring well and four QA/QC duplicate samples, were submitted for laboratory analysis of VOC. The results of the VOC analyses and their respective Table 3 SCS are summarized in Table 9 and are discussed below.

- Acetone was detected at BMW14-4 at a concentration of 12.8 µg/L, which is well below the Table 3 SCS of 130,000 µg/L;
- 1,1-Dichloroethane (1,1-DCA) was detected at MW14-5 (33.1 µg/L), DBMW14-5 (1 µg/L in) and BMW-2 (0.6 µg/L) during the October 2014 sampling event with the reported concentrations all falling below the Table 3 SCS of 320 µg/L;

- 1,1-Dichloroethene (1,1-DCE) was detected at MW14-5 (2.1 µg/L), MW-3 (4.4 µg/L), MW-12 (28.8 µg/L) and MW-16 (0.6 µg/L) during the October 2014 sampling event with the reported concentrations at MW14-5, MW-3 and MW-12 exceeding the Table 3 SCS of 1.6 µg/L;
- Cis-1,2-dichloroethene (c-1,2-DCE) was detected during the August 2014 sampling event at MW14-5, BMW14-5, DBMW14-5, DBMW14-2 and DBMW14-4 at concentrations ranging from 0.7 µg/L (BMW14-5) to 58.9 µg/L (MW14-5). During the October 2014 sampling event c-1,2-DCE was detected at thirteen locations with concentrations ranging from 1.7 µg/L (BMW-4) to 3,700 µg/L (MW-12). With the exception of BMW14-5 the detectable c-1,2-DCE concentrations each exceed the Table 3 SCS of 1.6;
- Trans-1,2-dichloroethene (t-1,2-DCE) was detected in samples MW14-5 and DBMW14-5 at respective concentrations of 22.9 µg/L and 3.4 µg/L during the August 2014 sampling event. During the October 2014 sampling event t-1,2-DCE was detected at ten locations with concentrations ranging from 0.7 µg/L (MW-4) to 216 µg/L (MW-12). The reported concentrations at MW14-5, DBMW14-5, MW-3, MW-7, MW-12 and BMW-2 exceed the Table 3 SCS of 1.6 µg/L;
- Tetrachloroethene (PCE) was detected at MW-12 with a reported concentration of 2.5 µg/L thereby exceeding the Table 3 SCS of 1.6;
- Toluene was detected at trace concentrations in samples from the three deep bedrock monitoring wells and MW-12. The maximum detected concentration of 1.2 µg/L is well below the Table 3 SCS of 18,000 µg/L;
- TCE was detected in samples DBMW14-2 and DBMW14-5 at a concentration of 1.2 µg/L and in sample MW14-5 at a concentration of 164 µg/L during the August 2014 sampling event. During the October 2014 sampling event TCE was detected at ten locations with concentrations ranging from 1.1 (MW-10) to 25,700 (MW-12). The reported concentrations at MW14-5, MW-3, MW-6, MW-7, MW-8, MW-12MW-16 and BMW-3 exceed the Table 3 SCS of 1.6 µg/L;
- Vinyl chloride (VC) was detected in sample MW14-5 during the August 2014 sampling event at a concentration of 4.7 µg/L. During the October 2014 sampling event VC was detected at nine locations with concentrations ranging from 1.1 µg/L (MW-7) to 4,400 µg/L (MW-12). All detections of VC exceed the Table 3 SCS of 0.5 µg/L; and,
- Xylenes were detected in sample BMW14-5 during the August 2014 sampling event at a concentration of 1.5 µg/L which is well below the Table 3 SCS of 4,200 µg/L. No other xylenes detections were reported during either sampling event.

All VOC parameters were below MDL and their respective Table 3 SCS in samples from overburden monitoring wells MW14-1 through MW14-4 during both sampling events and in samples BMW14-5, DBMW14-2, DBMW14-4, MW-1, MW-5, MW-9, MW-11, MW-13, MW-14 and BMW-1 during the October 2014 sampling event.

5.2.3 Polynuclear Aromatic Hydrocarbons

Six groundwater samples, including one sample from each overburden monitoring well installed during this study (MW14-1 through MW14-5) and one QA/QC duplicate sample, were submitted for laboratory analysis of PAH. The results of the PAH analyses and their respective Table 3 SCS are summarized in Table 10. PAH were not detected in the groundwater samples from MW14-3 and MW14-5 while five or more parameters were detected in the remaining samples. The sample from MW14-1 is the only sample reporting exceedances of the Table 3 SCS. The exceeding parameters consist of benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene and indeno(1,2,3,c,d)pyrene.

5.2.4 Metals

Six groundwater samples, including one sample from each overburden monitoring well installed during this study (MW14-1 through MW14-5) and one QA/QC duplicate sample, were submitted for laboratory analysis of heavy metals. The results of the heavy metals analyses and their respective Table 3 SCS are summarized in Table 11. Ten or more heavy metals including arsenic, barium, boron, cobalt, copper, lead, molybdenum, nickel, selenium, sodium, uranium, vanadium and zinc were detected in each of the groundwater samples. None of the detected parameters were present at concentrations exceeding the Table 3 SCS.

Geologic materials naturally contain trace levels of heavy metals. The presence of heavy metals in groundwater is, therefore, not necessarily indicative of contamination. The concentration of heavy metals in groundwater is in part related to the geology of the hydrostratigraphic unit(s) which hosts the groundwater. However, elevated concentrations of specific metals may occur due to anthropogenic activities.

5.3 Quality Assurance Program

5.3.1 Accreditation

The analytical laboratory employed to perform the laboratory analyses is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) in accordance with ISO/IEC 17025:1999 – "General Requirements for the Competence of Testing and Calibration Laboratories" for the tested parameters set out in the Soil, Ground Water and Sediment Standards.

5.3.2 Criteria

The "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the *Environmental Protection Act*" (the "Analytical Protocol"), July 2011, establishes performance criteria for use when assessing the reliability of data reported by analytical laboratories. These include maximum hold times for the storage of samples/sample extracts between collection and analysis, specified/approved analytical methods, required field and/or laboratory quality assurance samples such as blanks and field and laboratory duplicates, specified recovery ranges for spiked samples and surrogates (compounds added to samples in

known concentrations for calibration purposes), Reporting Limits (RL) and specified precision required when analyzing laboratory duplicate and spike/controlled reference material samples.

5.3.3 Data Validation

All samples/sample extracts were analyzed within their applicable hold times using approved analytical methods. The RL were met for all tested parameters. No tested parameter was present in a detectable concentration in any laboratory Method Blank. Surrogate recoveries were within acceptable ranges for all samples. Agreement between the corresponding datasets for the reference material samples where applicable and recoveries reported for spiked samples/blanks, where applicable, is acceptable with the exception of fluoranthene and pyrene in the laboratory spike sample run with soil samples collected on August 13 and 14, 2014 (Lab Certificate 1433286). The recoveries of these parameters were outside the acceptable range of 50-140% which was attributed to the non-homogenous nature of the sample matrix. Agreement between the corresponding datasets for the laboratory duplicate samples is considered acceptable with the exception of several PAH parameters in the laboratory replicate sample run with soil samples collected on August 12 through 14, 2014 (Lab Certificates 1433170 and 1433286) which exceed the limit of 40%. Spike recovery and laboratory duplicate issues were both attributed to the non-homogenous nature of the sample matrix and results were accepted based on other QA/QC results.

5.3.4 Field QA/QC Samples

The corresponding datasets for the "primary" and blind duplicate soil samples were in acceptable agreement with the exceptions of instances of poor correlation with:

- PAH in soil/fill samples BH14-13 SU13 and SU-5;
- Metals in soil/fill samples BH14-9 SS2, BH14-27 SS2 and SU-5; and
- PAH and metals in groundwater sample MW14-4.

Duplicate sample pairs (primary or real and blind) consist of discrete samples collected in close proximity of one another as opposed to mechanically homogenized and subsequently fractionated samples. As such, duplicate sample pairings are subject to spatial variability. The instances of poor correlation noted above can therefore be attributed to sample heterogeneity. With the exception of PAH in soil sample SU-5, both the original sample and the blind duplicate did or did not meet the Table 3 SCS. In the case of soil sample SU-5, benzo(a)pyrene exceeded the Table 3 SCS in the blind duplicate sample but not in the primary sample. When the mean of results is used, as permitted under *O.Reg. 153/04*, there is no Table 3 SCS exceedance at SU-5; however surface/shallow soil exceedances for PAH are present in nearby locations and across the Site. Thus, the discrepancies did not affect decision making.

6.0 DATA INTERPRETATION AND ASSESSMENT

The results of the sampling and laboratory analytical programs indicate that the soil and groundwater media at the Site have been variably impacted by a variety of contaminants including PHC, PAH, heavy metals and VOC. The results of this investigation have been evaluated in the context of O.Reg. 153/04 and related supporting documents referenced there under. A discussion of the various impacts identified at the Site is provided below. For convenience, the discussion has been broken out on the basis of impacted media and geographic Site area.

6.1 Soil Quality

The soil quality at the Site has been evaluated with respect to the EPA full-depth soil, coarse textured quality standards established for residential/parkland/institutional land use in a non-potable groundwater setting (Table 3 SCS). The results of the soil sampling and laboratory analytical testing programs indicate that the soils have been impacted by petroleum hydrocarbon compounds, PAH, heavy metals and VOC. Exceedances of the Table 3 SCS are present in surface soil surface collected from the upper 10 cm of overburden and subsurface soil including shallow soil samples collected from the first dual tube sampling run from surface to up to 1.5 mbgs and deeper soils.

Surface soil exceedances consist of a variety of PAH parameters and heavy metals including lead, mercury and zinc. Supplemental surface soil sampling conducted in November 2014 verified that no surface soil exceedances are present on the portion of the Site north of the basketball court which includes the playground area. The surface soil exceedances are present along the west perimeter of the Site from the field house to the southwest corner of the Site and along the central portion of the west perimeter of the Site. Delineation of the surface soil exceedances is provided on Figure 7 and encompasses and area of approximately 13,000 square metres. The presence of PAH and heavy metals exceedances in surface soil presents potential direct contact exposure risk to users of the Site and will also require appropriate handling and disposal practices should Site redevelopment result in any grading or excavation activities.

Shallow soil exceedances were reported along the east, south and west perimeters of the Site as well as the north-central area of the Site from the basketball court to the north baseball diamond. Shallow soil exceedances also consisted of a variety of PAH parameters and heavy metals with lead being the predominant parameter. Based on preliminary data, shallow soil impacts did not consistently translate to surface soil impacts. In order to refine delineation of surface soil impacts additional surface soil samples were collected at locations where shallow soil impacts were reported but surface soil samples were not collected. In each case the supplemental surface soil samples met the Table 3 SCS for all parameters analysed. The presence of PAH and heavy metals exceedances in shallow soil thus do not pose a direct contact exposure risk to users of the Site; however they will require appropriate handling and disposal practises should Site redevelopments result in any grading or excavation activities.

Deeper soil impacts were also identified and include exceedances of a variety of PAH and heavy metals parameters across the majority of the Site, a single PHC F3 exceedance near the

basketball court, and two TCE exceedances at locations along the east Site perimeter in the vicinity of the known CVOC plume. The deeper soil impacts are not considered to pose immediate risks to users of the Site however any deeper excavations conducted at the Site will require appropriate handling and disposal practises. Excavation in the area for TCE impacts will require further consideration for protection of workers due to the potential for exposure via inhalation.

Delineation of the subsurface soil exceedances, including both shallow and deep soil samples, is provided on Figure 8 and encompasses the entire Site with an area of approximately 25,000 square metres.

The widespread presence of PAH and heavy metals exceedances across the Site is attributed to the near ubiquitous presence of ashes and cinders in fill across the property in samples collected from surface and at depth. While PAH and heavy metals at depth do not present exposure risks to users of the Site, the presence of these contaminants in surface soil would typically prompt completion of a risk assessment (RA) in order to characterise risk based on the actual exposure scenarios at the Site and develop corresponding property specific standards (PSS) as opposed to using the generic Table 3 SCS. This approach would typically be pursued to achieve less stringent standards, however based on the presence of benzo(a)pyrene exceedances in surface soil at the Site, a RA would provide no such benefit. This is due to the fact that the generic SCS of 0.3 µg/g is based on background concentrations across Ontario while the risk-based value is much lower at 0.078 µg/g thus negating any potential benefit of developing PSS as benzo(a)pyrene would remain a risk factor even if potential risks associated with all other PAH and heavy metals were eliminated.

6.2 Groundwater Quality

The groundwater quality beneath the Site has been evaluated with respect to the EPA non-potable groundwater quality standards for sites underlain by coarse textured soil (EPA Table 3 SCS). The groundwater impacts identified at the Site include PAH and VOC.

The objectives of the groundwater sampling activities were to:

- Assess potential impacts in the vicinity of the field house associated with the historic storage use of heating oil;
- Assess general overburden groundwater quality; and;
- Refine delineation of the known CVOC plume along the east portion of the Site.

Groundwater quality in the vicinity of the field house was assessed using MW14-1 and MW14-2. Exceedances at these wells were limited to PAH at MW14-1. While low flow sampling techniques were attempted at this location, groundwater yield was insufficient to maintain the maximum draw down. As such the well was purged dry and sampled on recovery. It was noted that the sampled water contained sediment and it is suspected that the PAH exceedances are a direct result of that sediment entrainment. It would likely be beneficial to re-sample MW14-1 in the spring when

higher groundwater elevations may facilitate the successful use of low flow techniques to reduce the bias introduced by sediment entrainment.

The only overburden monitoring well installed as part of the Baseline ESA which reported VOC impact is MW14-5, located near the east Site perimeter, north of the previously known extent of the VOC plume. The absence of detectable VOC in MW14-3 and MW14-4 infers that the VOC plume is not preferentially migrating northward along the twin box culvert. Consistent with previous monitoring events since 2005, several VOC parameters were detected at previously existing overburden monitoring wells as sampled in October 2014.

In addition to overburden monitor MW14-5, monitors BMW14-5, DBMW14-5, DBMW14-2 and DBMW14-4 were installed to refine delineation of the known VOC plume. BMW14-5 and DBMW14-5 were installed adjacent MW14-5 to assess shallow bedrock and deep bedrock, respectively and delineate the northern limit of the known VOC plume. DBMW14-2 and DBMW14-4 were installed adjacent BMW-2 and BMW-4, respectively, for vertical delineation of the known VOC plume which was already known to present in shallow bedrock. VOC exceedances were reported at each monitor with the exception of BMW14-5 where detectable concentrations below the Table 3 SCS were reported. These groundwater analytical results confirm that the VOC plume beneath the southeast portion of the Site extends both deeper and further north than previously understood. Consistent with previous monitoring events since 2005, several VOC parameters were detected at previously existing shallow bedrock monitoring wells BMW-2 through BMW-4 as sampled in October 2014.

The inferred extent of the VOC plume is depicted on Figure 9 and encompasses an area of approximately 6,250 square metres. It is noted that the northern limit of the plume has not been well defined based on VOC exceedances reported MW14-5 and DBMW14-5.

The presence of the groundwater VOC plume is not considered to pose immediate risks to users of the Site however any excavations conducted across the east portion of the Site at depths where groundwater is encountered will require appropriate handling and disposal practises if any dewatering activities are conducted. Furthermore, excavation in the area of the plume will require further consideration for the protection of workers due to the potential for exposure via inhalation.

6.3 Development Considerations

The proposed Site redevelopment includes installation of an all-season rink located east of the current field house and basketball court, a community garden north of the field house, a new field house at the same location as the current one, unspecified improvements to the existing playground area and an off-leash dog run area near the current north baseball diamond. Development of each of these areas must take into consideration the identified soil impacts across the Site.

As previously indicated, the presence of PAH and metals exceedances in surface soil represents a potential direct contact (i.e., dermal contact, ingestion/inhalation) exposure risk to users of the

Site. The area of surface soil impact is delineated on Figure 7 and, regardless of any development plans, requires some form of risk management to mitigate potential exposure risks. Subsurface soil impacts are also present across the entire Site and will require management where they are disturbed during any redevelopment activities, but are not considered to pose a direct expose risk to users of the Site in their current form.

The presence of surface soil exceedances will require the implementation of risk management measures (RMM) and soil management measures at the Site regardless of any re-development activities while subsurface impacts will require soil management measures in the event that they are disturbed during development.

Potential risk management measures (RMM) include: capping with a soft cap consisting of a minimum of 300 mm of clean surface material with a non-woven geotextile layer demarcating the interface between clean and contaminated material; capping with a hard cap consisting of asphalt, concrete, a building slab, or a building foundation and floor slab, consisting of at least 150 millimetres of granular subbase (e.g., Granular A) overlain by at least 50 millimetres of hot mix asphalt or concrete; or excavating the impacted soil and disposing at an appropriately licensed landfill. Soil management measures, including the potential management of excess materials, should also be implemented in the area of surface soil impacts and for any development activities requiring excavation and handling of subsurface soils.

Given the condition of the subsurface soil and the ubiquitous presence of PAH and metals at elevated concentrations exceeding Table 3 SCS across the entire Site, it would be prudent to implement the RMM across the entire Site. Such measures would serve to provide greater certainty in the mitigation of risk where some uncertainty may reside due to contaminant heterogeneity between sampling locations as well as to provide warning to workers when excavating in areas where contaminated soil is present beneath clean soil where RMM had not been otherwise implemented.

The presence of the VOC groundwater plume does not pose risk to users of the Site or present any limitations to the proposed Site improvements. The VOC plume would become a concern if a building was to be constructed within the footprint of the plume thus creating a potential vapour intrusion risk. Management considerations for the VOC plume include the protection of workers in excavations and trenches advanced within the plume area through the development of appropriate health and safety and monitoring plans to mitigate unacceptable exposures via direct contact.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the soil and groundwater sampling and laboratory analytical programs, AMEC offers the following conclusions and recommendations regarding the environmental Site conditions:

- The subsurface conditions across the Site are quite variable as a result of uneven bedrock topography, historic landfilling activities and excavation and bedrock blasting activities associated with the installation of the twin box sewer and other sewers that currently traverse the Site. The resulting stratigraphy generally consists of an initial layer of surficial fill (grass/topsoil, gravel) successively underlain by a layer of sandy fill with mixed waste consisting primarily of ashes, cinders, clay brick and ceramics with lesser quantities of animal bone and organic matter observed in some locations. The waste fill is underlain by sandy clay or clayey sand extending to the top of bedrock encountered at depths ranging from 0.6 to 6.4 mbgs;
- The results of the groundwater monitoring indicate that the primary near surface water table resides within the overburden fill unit. The water table elevations recorded at the overburden monitoring wells varied between 53.06 masl and 55.11 masl. The overburden groundwater elevations indicate that the twin box culvert storm sewer traversing the Site has some effect on the local groundwater flow acting as a hydraulic sink and draining groundwater flow and resulting in bi-direction groundwater flow. Groundwater flows toward the twin box culvert from the east and west and is then directed southward. An exception to this pattern is the along the along the east Site perimeter in the vicinity of the pumping well installed at the neighbouring NCC property;
- The shallow bedrock groundwater elevations varied between 53.15 masl and 56.79 masl. Based on the limited shallow bedrock groundwater elevations the shallow bedrock groundwater beneath the Site flows in a southerly direction becoming slightly westerly approaching the south Site perimeter. This flow pattern is somewhat consistent with the bedrock topography with overall higher bedrock elevations lying to the north.
- The deep bedrock groundwater elevations were recorded as 49.67 masl, 55.80 masl and 56.79 masl at DBMW14-2, DBMW14-4 and DBMW14-5, respectively. Based on the limited deep bedrock groundwater elevations the deep bedrock groundwater beneath the Site flows in a southerly direction.
- Vertical gradients between the overburden and bedrock groundwater systems are predominantly upward signifying groundwater discharge conditions with the exception of the southwest portion of the monitoring network where upwards vertical gradients were observed during the spring monitoring event. The upward vertical gradients may be due to the twin box culvert storm sewer thus resulting in a lower hydraulic head in the overburden relative to the bedrock.
- No visible LPH was observed in any of the soil samples collected at the Site. No significant odours or staining were detected in any of the soil samples collected from the boreholes advanced at the Site;

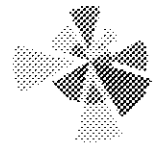
- COV concentration headspace measurements recorded in the soil samples collected at the Site were primarily < 10 ppm but ranged as high as 45 ppm in some samples. Similarly, TOV concentration headspace measurements recorded in the soil samples collected at the Site were primarily < 10 ppm but ranged as high as 26 ppm in some samples. These concentrations are not indicative of significant impact by petroleum hydrocarbons. The COV and TOV results are semi-quantitative at best and are generally only used for relative sample comparison purposes when selecting samples for laboratory analysis;
- No measurable accumulations of floating LPH were detected in any of the monitoring wells installed at the Site. No evidence of hydrocarbon sheen or iridescence was noted during the monitoring well development and/or groundwater purging and sampling activities;
- In accordance with *Ontario Regulation 153/04 - Records of Site Condition, Part XV.1 of the Environmental Protection Act (EPA)* (O.Reg. 153/04), the appropriate generic Site Condition Standards are the Table 3 standards for non-potable ground water, residential/parkland/institutional property use and coarse textured soils, as provided in the supporting document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act," dated April 15, 2011 (Table 3 SCS);
- Results of the soil chemical analyses indicated exceedances of the Table 3 SCS for a variety of PAH and metals parameters across the entire Site as well as localized exceedances for PHC F3 and TCE. Exceedances by PAH and metals in soil were prevalent through the fill and waste placements including surficial soil across approximately one-half of the Site.
- Results of the groundwater chemical analyses indicated exceedances for a variety of VOC parameters along the east perimeter of the Site corresponding with the known chlorinated solvent plume originating from the adjacent property. Delineation of the plume carried out as part of this investigation indicates that it extends further north than previously understood and extends into the deeper bedrock aquifer. Given the presence of VOC exceedances in the northernmost overburden and deep bedrock monitoring wells the full northern extent of the plume is not well defined. Exceedances of the Table 3 SCS for a variety of PAH parameters were also reported at a single location adjacent to the existing field house. It is inferred that the PAH exceedances result from sediment noted in the groundwater sample and it is recommended that the well be re-sampled during the spring 2015 monitoring event during a period of elevated water table utilizing a low flow sampling method.

The widespread presence of PAH and heavy metals exceedances across the Site is attributed to the near ubiquitous presence of ashes and cinders in fill across the property in samples collected from surface and at depth. While PAH and heavy metals at depth do not present exposure risks to users of the Site, the presence of these contaminants in surface soil would typically prompt completion of a RA in order to characterise risk based on the actual exposure scenarios at the Site and develop corresponding property specific standards (PSS) as opposed to using the generic Table 3 SCS. This approach would typically be pursued to achieve less stringent

standards, however based on the presence of benzo(a)pyrene exceedances in surface soil at the Site, a RA would provide no such benefit. This is due to the fact that the generic SCS of 0.3 µg/g is based on background concentrations across Ontario while the risk-based value is much lower at 0.078 µg/g thus negating any potential benefit of developing PSS as benzo(a)pyrene would remain a risk factor even if potential risks associated with all other PAH and heavy metals were eliminated.

The presence of surface soil exceedances will require the implementation of risk management measures (RMM) and soil management measures at the Site regardless of any re-development activities while subsurface impacts will require soil management measures in the event that they are disturbed during development. Potential RMM include the use of hard and soft caps to prevent exposure via the direct contact pathway (i.e., dermal contact, inhalation/ingestion).

The presence of the VOC groundwater plume does not pose risk to users of the Site or present any limitations to the proposed Site improvements. The VOC plume would become a concern if a building was to be constructed within the footprint of the plume thus creating a potential vapour intrusion risk. Management considerations for the VOC plume include the protection of workers in excavations and trenches advanced within the plume area through the development of appropriate health and safety and monitoring plans to mitigate unacceptable exposures via direct contact.



8.0 LIMITATIONS

This report was prepared for the exclusive use of *the City of Ottawa* and is intended to provide a Baseline Environmental Site Assessment (ESA) on the property located at *52 Bayview Road in Ottawa, Ontario* at the time of the Site visit. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third party. Should additional parties require reliance on this report, written authorization from AMEC will be required. With respect to third parties, AMEC has no liability or responsibility for losses of any kind whatsoever, including direct or consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The investigation undertaken by AMEC with respect to this report and any conclusions or recommendations made in this report reflect AMEC's judgment 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. AMEC has used its professional judgment in analysing this information and formulating these conclusions.

AMEC makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

This Report is also subject to the further Standard Limitations contained in Appendix C.

9.0 CLOSURE

We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please do not hesitate to contact the undersigned.

Yours truly,

AMEC Environment & Infrastructure,
A Division of AMEC Americas Limited

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10.0 REFERENCES

AMEC Earth & Environmental, a division of AMEC Americas Limited (2005), "UR-38 – Laroche Park, Data Gap Analysis, Old Landfill Management Strategy, City of Ottawa", June 2005.

AMEC Earth & Environmental, a division of AMEC Americas Limited (2006), "Hydrogeological Investigation of Chlorinated Solvent Impacts, Laroche Park, 52 Bayview Road, Ottawa, Ontario", February 2006.

AMEC Environment & Infrastructure, a division of AMEC Americas Limited (2014), "2013 Groundwater Monitoring Program, Laroche Park, 52 Bayview Road, Ottawa, Ontario", June 2014.

Canadian Council of Ministers of the Environment (1996); "Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites", December 1993.

Ministry of the Environment (1996); "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", December 1996.

Ministry of the Environment (2011a); "Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act", April 15, 2011.

Ministry of the Environment (2011b); "Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04", June 2011.

Ministry of the Environment; (2011c): "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", July 1, 2011.

Table 1. Borehole and Monitoring Well Network Details

Monitor ID	MTM Coordinates		Monitor Construction Details									
	Easting	Northing	Ground Surface Elevation (m.a.s.l.)	Bedrock Surface Elevation (m.a.s.l.)	Top of Monitor Elevation (m.a.s.l.)	Depth to Hole Bottom (m)	Bottom of Hole Elevation (m.a.s.l.)	Depth to Top of Screen (m)	Depth to Bottom of Screen (m)	Monitoring Well Screen Interval (m.a.s.l.)	Well Screen Length (m)	Geologic Media Intersected by Screen
LAROCHE PARK												
Overburden Monitoring Wells												
MW-1	365255.36	5030049.59	56.44	-	56.36	4.57	51.87	2.61	4.11	53.77 - 52.25	1.52	Silt
MW-2	365276.08	5030079.90	56.64	-	56.57	2.87	53.77	0.86	2.36	55.73 - 54.21	1.52	Fill (sand)
MW-3	365264.94	5030101.16	56.60	-	56.50	4.57	52.03	2.50	4.00	54.02 - 52.50	1.52	Silt
MW-4	365280.37	5030066.10	56.64	-	56.60	4.57	52.07	2.95	4.45	53.67 - 52.15	1.52	Fill (sand)
MW-5	365277.04	5030087.74	56.95	-	56.80	4.57	52.38	2.89	4.39	53.93 - 52.41	1.52	Silt & Sand
MW-6	365273.65	5030095.85	56.97	-	56.83	4.57	52.40	2.96	4.46	53.89 - 52.37	1.52	Fill (sand)
MW-7	365261.42	5030123.08	56.95	-	56.82	4.57	52.38	2.94	4.44	53.90 - 52.38	1.52	Silt & Sand
MW-8	365236.80	5030102.68	56.87	52.30	56.75	4.57	52.30	2.82	4.32	53.95 - 52.43	1.52	Silt, Clay & Sand
MW-9	365276.75	5030064.87	56.62	51.49	56.57	5.13	51.49	3.14	4.64	53.45 - 51.93	1.52	Fill (silty sand)
MW-10	365251.05	5030093.47	56.71	51.68	56.63	5.03	51.68	3.41	4.91	53.24 - 51.72	1.52	Fill (silty sand)
MW-11	365222.04	5030085.36	56.96	53.23	56.82	3.73	53.23	1.93	3.43	54.91 - 53.39	1.52	Fill (clay/waste)
MW-12	365262.54	5030113.77	56.78	-	56.72	6.10	50.68	4.19	5.69	52.55 - 51.03	1.52	Fill (sand)
MW-13	365220.03	5030140.82	56.86	51.37	56.81	5.49	51.37	3.77	5.27	53.06 - 51.54	1.52	Fill (sand + clay)
MW-14	365270.34	5030057.01	56.64	51.62	56.54	5.03	51.62	1.948	5.04	54.55 - 51.50	3.05	Fill (sand + clay)
MW-15	365249.29	5030112.65	56.63	51.75	56.68	4.88	51.75	1.83	4.88	54.85 - 51.80	3.05	Fill (sand + clay)
MW-16	365243.77	5030140.56	56.53	50.44	56.62	6.10	50.44	3.05	6.10	53.57 - 50.52	3.05	Fill (sand + clay)
MW14-1	365169.35	5030098.18	56.67	52.10	56.58	4.57	52.10	1.52	4.57	55.06 - 52.01	3.05	Fill (incl. waste), Silt, Clay
MW14-2	365158.70	5030088.13	56.78	53.85	56.66	3.20	53.58	0.91	3.05	56.66 - 53.61	3.05	Fill (incl. waste), Silt, Clay
MW14-3	365182.07	5030162.01	56.92	51.43	56.87	5.49	51.43	1.98	5.03	54.89 - 51.84	3.05	Fill (sand/waste), Sand + Gravel
MW14-4	365139.48	5030210.58	56.76	51.43	56.66	5.33	51.43	2.29	5.33	54.38 - 51.33	3.05	Fill (incl. waste), Clay Till
MW14-5	365236.03	5030170.06	56.92	53.57	56.85	3.35	53.57	0.91	3.35	56.55 - 53.50	3.05	Fill (incl. waste), Silt
Shallow Bedrock Monitoring Wells												
BMW-1	365255.19	5030050.80	56.50	53.45	56.46	7.01	49.49	5.43	6.93	51.05 - 49.53	1.52	Limestone
BMW-2	365273.98	5030080.07	56.59	51.87	56.56	7.24	49.35	4.86	6.36	51.72 - 50.20	1.52	Limestone
BMW-3	365234.20	5030100.51	56.88	52.23	56.76	7.54	49.34	5.83	7.33	50.95 - 49.43	1.52	Limestone
BMW-4	365245.11	5030142.78	56.75	50.35	56.64	9.47	47.28	7.56	9.06	49.10 - 47.58	1.52	Limestone
BMW14-5	365236.62	5030168.43	56.88	53.53	56.79	9.14	47.74	7.62	9.14	49.17 - 47.65	1.52	Limestone
Deep Bedrock Monitoring Wells												
DBMW14-2	365236.62	5030078.75	56.64	52.07	56.57	12.80	43.84	11.28	12.8	45.29 - 43.77	1.52	Limestone
DBMW14-4	365243.40	5030142.33	56.70	52.74	56.63	12.19	44.51	10.67	12.19	45.96 - 44.44	1.52	Limestone
DBMW14-5	365235.10	5030168.63	56.90	53.55	56.79	12.80	44.10	11.28	12.8	45.51 - 43.99	1.52	Limestone

Table 1. Borehole and Monitoring Well Network Details

Monitor ID	MTM Coordinates		Monitor Construction Details									
	Easting	Northing	Ground Surface Elevation (m.a.s.l.)	Bedrock Surface Elevation (m.a.s.l.)	Top of Monitor Elevation (m.a.s.l.)	Depth to Hole Bottom (m)	Bottom of Hole Elevation (m.a.s.l.)	Depth to Top of Screen (m)	Depth to Bottom of Screen (m)	Monitoring Well Screen Interval (m.a.s.l.)	Well Screen Length (m)	Geologic Media Intersected by Screen
LAROCHE PARK Boreholes												
BH14-1	365192.29	5030002.63	60.04	59.43	-	0.61	59.43	-	-	- -	-	-
BH14-2	365224.86	5030025.40	56.23	52.88	-	3.35	52.88	-	-	- -	-	-
BH14-3	365259.35	5030044.99	56.40	52.74	-	3.66	52.74	-	-	- -	-	-
BH14-4	365235.73	5030066.49	56.87	53.52	-	3.35	53.52	-	-	- -	-	-
BH14-5	365213.95	5030051.53	-	-	-	4.57	-	-	-	- -	-	-
BH14-6	365185.77	5030029.76	59.08	58.17	-	0.91	58.17	-	-	- -	-	-
BH14-7	365175.31	5030054.41	58.27	56.75	-	1.52	56.75	-	-	- -	-	-
BH14-8	365195.43	5030062.41	56.79	54.35	-	2.44	54.35	-	-	- -	-	-
BH14-9	365229.96	5030085.04	56.91	53.76	-	3.15	53.76	-	-	- -	-	-
BH14-10	365264.86	5030100.05	56.61	52.65	-	3.96	52.65	-	-	- -	-	-
BH14-11	365201.74	5030107.51	56.84	52.79	-	4.05	52.79	-	-	- -	-	-
BH14-12	365169.67	5030080.46	56.66	53.92	-	2.74	53.92	-	-	- -	-	-
BH14-13	365159.15	5030114.38	56.74	53.39	-	3.35	53.39	-	-	- -	-	-
BH14-14	365148.64	5030107.00	57.01	53.96	-	3.05	53.96	-	-	- -	-	-
BH14-15	365154.82	5030120.90	56.71	54.12	-	2.59	54.12	-	-	- -	-	-
BH14-16	365149.03	5030131.41	56.62	53.42	-	3.20	53.42	-	-	- -	-	-
BH14-17	365175.85	5030128.44	56.75	53.93	-	2.82	53.93	-	-	- -	-	-
BH14-18	365189.88	5030134.31	56.87	54.20	-	2.67	54.20	-	-	- -	-	-
BH14-19	365179.52	5030148.68	56.87	54.58	-	2.29	54.58	-	-	- -	-	-
BH14-20	365168.97	5030155.31	56.80	55.35	-	1.45	55.35	-	-	- -	-	-
BH14-21	365144.75	5030155.02	56.55	52.31	-	4.24	52.31	-	-	- -	-	-
BH14-22	365161.87	5030177.39	56.91	56.15	-	0.76	56.15	-	-	- -	-	-
BH14-23	365131.84	5030166.61	56.61	54.32	-	2.29	54.32	-	-	- -	-	-
BH14-25	365145.05	5030195.82	56.77	50.83	-	5.94	50.83	-	-	- -	-	-
BH14-26	365114.26	5030200.69	57.11	53.30	-	3.81	53.30	-	-	- -	-	-
BH14-27	365123.76	5030220.87	56.85	54.26	-	2.59	54.26	-	-	- -	-	-
BH14-28	365149.62	5030215.14	56.85	54.87	-	1.98	54.87	-	-	- -	-	-
BH14-29	365207.86	5030195.67	56.79	54.35	-	2.44	54.35	-	-	- -	-	-

Notes:
- = Data Not Available
Survey data provided by the City of Ottawa Surveys and Mapping Unit. All elevations referenced relative to geodetic.

Table 2. Groundwater Measurement and Elevation Data

Monitor ID	MTM Coordinates		Ground Surface Elevation (masl)	Top of Monitor Elevation (masl)	August 26, 2014			October 27, 2014		
	Easting	Northing			Depth to Water (mbtoc)	Depth to Water (mbgs)	Static Elevation (masl)	Depth to Water (mbtoc)	Depth to Water (mbgs)	Static Elevation (masl)
LAROCHE PARK										
Overburden Monitoring Wells										
MW-1	365255.36	5030049.59	56.443	56.355	-	-	-	3.21	3.29	53.15
MW-2	365276.08	5030079.90	56.644	56.570	-	-	-		DRY	
MW-3	365264.94	5030101.16	56.604	56.500	-	-	-	3.44	3.54	53.07
MW-4	365280.37	5030066.10	56.638	56.598	-	-	-	3.47	3.51	53.13
MW-5	365277.04	5030087.74	56.945	56.795	-	-	-	3.51	3.66	53.29
MW-6	365273.65	5030095.85	56.965	56.825	-	-	-	3.66	3.80	53.16
MW-7	365261.42	5030123.08	56.953	56.823	-	-	-	3.76	3.89	53.06
MW-8	365236.80	5030102.68	56.872	56.752	-	-	-	3.60	3.72	53.15
MW-9	365276.75	5030064.87	56.621	56.573	-	-	-	3.49	3.54	53.08
MW-10	365251.05	5030093.47	56.710	56.628	-	-	-	3.47	3.55	53.16
MW-11	365222.04	5030085.36	56.957	56.819	-	-	-	2.65	2.79	54.17
MW-12	365262.54	5030113.77	56.783	56.720	-	-	-	3.62	3.69	53.10
MW-13	365220.03	5030140.82	56.857	56.813	-	-	-	3.56	3.60	53.26
MW-14	365270.34	5030057.01	56.644	56.567	-	-	-	3.41	3.49	53.16
MW-15	365249.29	5030112.65	56.680	56.631		Destroyed			Destroyed	
MW-16	365243.77	5030140.56	56.624	56.531	-	-	-	3.44	3.53	53.09
MW14-1	365169.35	5030098.18	56.670	56.580	1.80	1.89	54.79	2.15	2.24	54.44
MW14-2	365158.70	5030088.13	56.780	56.660	1.53	1.65	55.13	1.55	1.67	55.11
MW14-3	365182.07	5030162.01	56.920	56.870	3.70	3.75	53.17	3.66	3.71	53.21
MW14-4	365139.48	5030210.58	56.760	56.660	3.21	3.31	53.45	3.23	3.33	53.43
MW14-5	365236.03	5030170.06	56.920	56.850	2.21	2.28	54.64	2.44	2.51	54.41
Shallow Bedrock Monitoring Wells										
BMW-1	365255.19	5030050.80	56.501	56.455	-	-	-	3.15	3.19	53.31
BMW-2	365273.98	5030080.07	56.590	56.556	-	-	-	3.41	3.44	53.15
BMW-3	365234.20	5030100.51	56.881	56.756	-	-	-	3.57	3.69	53.19
BMW-4	365245.11	5030142.78	56.749	56.643	-	-	-	0.41	0.51	56.24
BMW14-5	365236.62	5030168.43	56.880	56.790	5.71	5.80	51.08	0.00	0.09	56.79
Deep Bedrock Monitoring Wells										
DBMW14-2	365236.62	5030078.75	56.640	56.570	10.44	10.51	46.13	6.90	6.97	49.67
DBMW14-4	365243.40	5030142.33	56.700	56.630	7.78	7.85	48.85	0.83	0.90	55.80
DBMW14-5	365235.10	5030168.63	56.900	56.790	8.55	8.66	48.24	0.00	0.11	56.79

Notes:
NA = Monitoring Well Not Accessible.
- Not Monitored.
mbtoc = Metres Below Top of Casing.
mbgs = Metres Below Ground Surface.
masl = Metres Above Sea Level.

Table 3. Groundwater Field Parameter Data and Observations

Monitoring Well I.D.	Sampling Date (mm/dd/yy)	Water Level Data			Field Parameters					Laboratory Analyses	General Observations
		Initial Depth to Water (m)	Final Depth to Water (m)	Total Drawdown (m)	pH (pH units)	Conductivity (mS/cm)	Dissolved Oxygen (DO) (mg/L)	Temperature (°C)	Oxidation Reduction Potential (ORP) (mV)		
Overburden Monitoring Wells											
MW-1	10/27/14	3.206	3.201	0.005	7.40	0.87	1.27	10.28	-92.00	VOC, Dup-1	Clear, no sheen or odour.
MW-2								Dry			
MW-3	10/27/14	3.435	3.430	0.005	7.28	5.95	0.75	14.47	-98.60	VOC	Clear, no sheen or odour.
MW-4	10/27/14	3.471	3.411	0.060	7.16	1.713	0.79	13.82	-41.2	VOC	Clear, no sheen or odour.
MW-5	10/27/14	3.510	3.289	0.221	6.90	3.167	1.78	12.98	31.1	VOC	Clear, no sheen or odour.
MW-6	10/27/14	3.661	3.637	0.024	6.96	4.247	0.72	12.85	-29.9	VOC	Clear, no sheen or odour.
MW-7	10/27/14	3.760	3.709	0.051	7.28	4.56	1.40	12.83	10.20	VOC	Clear, no sheen or odour.
MW-8	10/29/14	3.591	3.577	0.014	7.18	1.018	0.36	12.54	79.8	VOC, Dup-3	Clear, no sheen or odour.
MW-9	10/27/14	3.490	3.468	0.022	6.85	0.736	1.89	13.47	51.6	VOC	Clear, no sheen or odour.
MW-10	10/29/14	3.462	3.450	0.012	6.54	1.231	0.40	13.03	49.3	VOC	Clear, no sheen or odour.
MW-11	10/29/14	2.642	2.632	0.010	6.60	0.737	0.40	11.58	-35.1	VOC	Clear, no sheen or odour.
MW-12	10/27/14	3.622	3.612	0.010	7.22	15.243	0.53	13.79	-41.6	VOC	Clear, no sheen or odour.
MW-13	10/29/14	3.552	-	-	7.23	1.091	1.07	13.76	74.2	VOC	Clear, no sheen or odour.
MW-14	10/27/14	3.409	3.398	0.011	6.77	1.603	0.89	12.29	63.0	VOC	Clear, no sheen or odour.
MW-16	10/27/14	3.440	3.425	0.015	7.25	2.535	0.73	12.34	21.9	VOC	Clear, no sheen or odour.
MW14-1	8/27/14	1.795	Dry	Dry	-	-	-	-	-	VOC, PHC, PAH, Metals	Brown with sediment, no sheen or odour.
MW14-1	10/29/14	2.142	2.043	0.099	7.04	0.631	0.76	12.21	-97.5	VOC	Cloudy, no sheen or odour.
MW14-2	8/27/14	1.529	Dry	Dry	-	-	-	-	-	VOC, PHC, PAH, Metals	Clear, no sheen or odour.
MW14-2	10/29/14	1.559	1.288	0.271	6.77	0.520	0.88	13.06	-108.1	VOC	Cloudy, no sheen or odour.
MW14-3	8/27/14	3.701	3.697	0.004	7.19	0.998	1.36	15.22	9.3	VOC, PHC, PAH, Metals	Brown with sediment, no sheen or odour.
MW14-3	10/29/14	3.652	3.647	0.005	7.03	0.971	1.29	13.81	81.0	VOC, Dup-2	Clear, no sheen or odour.
MW14-4	8/27/14	3.210	3.341	0.131	7.22	1.319	1.72	15.11	-50.8	VOC, PHC, PAH, Metals, Dup-1	Brown with sediment, no sheen or odour.
MW14-4	10/29/14	3.234	3.138	0.096	7.06	1.081	0.96	13.47	-41.2	VOC	Cloudy, no sheen or odour.
MW14-5	8/26/14	2.211	Dry	Dry	-	-	-	-	-	VOC, PHC, PAH, Metals	Clear, no sheen or odour.
MW14-5	8/27/14	2.436	2.220	0.216	7.17	4.186	1.88	13.68	66.1	VOC	Clear, no sheen or odour.
Shallow Bedrock Monitoring Wells											
BMW-1	10/27/14	3.148	Dry	Dry	-	-	-	-	-	VOC	Clear, no sheen or odour.
BMW-2	10/27/14	3.406	Dry	Dry	-	-	-	-	-	VOC	Clear, no sheen or odour.
BMW-3	10/29/14	3.562	Dry	Dry	-	-	-	-	-	VOC	Clear, no sheen or odour.
BMW-4	10/27/14	0.405	Dry	Dry	-	-	-	-	-	VOC	Clear, no sheen or odour.
BMW14-5	8/26/14	5.711	Dry	Dry	-	-	-	-	-	VOC	Cloudy, no sheen or odour.
BMW14-5	10/27/14	0.000	Dry	Dry	-	-	-	-	-	VOC	Artesian conditions. Clear, no sheen or odour.
Deep Bedrock Monitoring Wells											
DBMW14-2	8/26/14	10.442	Dry	Dry	-	-	-	-	-	VOC	Brown/grey, no sheen or odour, some sediment.
DBMW14-2	10/27/14	6.903	Dry	Dry	-	-	-	-	-	VOC	Brown/grey, no sheen or odour, some sediment.
DBMW14-4	8/26/14	7.776	Dry	Dry	-	-	-	-	-	VOC	Brown/grey, no sheen or odour, some sediment.
DBMW14-4	10/27/14	0.834	Dry	Dry	-	-	-	-	-	VOC	Cloudy grey, no sheen or odour.
DBMW14-5	8/26/14	5.711	Dry	Dry	-	-	-	-	-	VOC	Cloudy, no sheen or odour.
DBMW14-5	10/27/14	0.000	-	-	-	-	-	-	-	VOC	Artesian conditions. Cloudy grey, no sheen or odour.

Notes:
Water Level Data as Recorded During Low-Flow Sampling.
Field Parameters Measured using a YSI 556 Multi-Parameter Water Quality Monitoring Instrument.
Groundwater Sampling Performed Using a Waterra Peristaltic Pump.
Total Organic Vapours measures using a RAE Systems MiniRAE 3000 Photoionization Detector.
Dup - QA/QC Blind Duplicate Sample.
VOC = Volatile Organic Compound.

Notes on Soil Analytical Summary Tables (Tables 4.1 through 7.2)

1) All Units in Micrograms Per Gram (µg/g) Except Where Noted Otherwise.
2) RL = MOE 2011 Analytical Protocol Reporting Limit.
3) DUP = Quality Assurance/Quality Control Duplicate Sample.
4) RPD = Relative Percent Difference (Between Primary and Duplicate Samples).
5) - = Parameter Not Analysed or No Value Derived.
6) < = Less Than Laboratory Analytical Method Detection Limit.
7) **352** Parameter Concentration Exceeds 2011 EPA Standard (Table 3) for Residential/Parkland/Institutional Property Use with Coarse Textured Soils.
8) Laboratory Analytical Method Detection Limit Exceeds 2011 EPA Standard (Table 3) for Residential/Parkland/Institutional Property Use with Coarse Textured Soils.
9) 2011 EPA Standards = Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, Ontario Ministry of the Environment, April 15, 2011.

Table 4.1
Summary of Petroleum Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		MW14-2	MW14-4	MW14-5	DBMW14-2	DBMW14-4	BH14-1	BH14-2	BH14-3
Sample No.				SU-2	SU-4	SU-5	SU2	SU-4	SU-1	SU-2	SU-3
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1433286-12	1433286-23	1433170-34	1446092-02	1433286-04	1433286-08	1446092-03	1433286-06
Sample Date				08/14/2014	08/14/2014	08/12/2014	11/11/2014	08/14/2014	08/14/2014	11/11/2014	08/14/2014
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	< 8	< 8	246	13	< 8	< 8	29	< 8
PHC F4 (>C34)	50	2800	3300	< 6	< 6	184	< 6	< 6	< 6	< 6	< 6

Table 4.1
Summary of Petroleum Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-3	BH14-3	BH14-3	BH14-5	BH14-7	BH14-9	BH14-10	BH14-11
Sample No.				DUP-9			SU-5	SU-7	SU-9	SU-10	SU-11
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	Average	RPD	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1433286-28			1433286-09	1433286-10	1433286-07	1433286-05	1433286-11
Sample Date				08/14/2014			08/14/2014	08/14/2014	08/14/2014	08/14/2014	08/14/2014
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	-	< 4	< 4	< 4	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	< 8	< 8	-	< 8	< 8	< 8	< 8	< 8
PHC F4 (>C34)	50	2800	3300	< 6	< 6	-	< 6	< 6	< 6	< 6	< 6

Table 4.1
Summary of Petroleum Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-13	BH14-13	BH14-13	BH14-13	BH14-19	BH14-20	BH14-22	BH14-23
Sample No.				SU-13	DUP-7			SU-19	SU20	SU22	SU23
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	0-0.1	Average	RPD	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1433286-13	1433286-26			1433286-19	1446092-04	1446092-05	1446092-06
Sample Date				08/14/2014	08/14/2014			08/14/2014	11/11/2014	11/11/2014	11/11/2014
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	< 4	-	< 4	< 4	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	< 8	< 8	< 8	-	< 8	< 8	9	13
PHC F4 (>C34)	50	2800	3300	< 6	< 6	< 6	-	< 6	< 6	< 6	< 6

Table 4.1
Summary of Petroleum Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-23	BH14-23	BH14-23	BH14-25	BH14-26	BH14-27	BH14-28	BH14-29
Sample No.				DUP-1			SU-25	SU-26	SU-27	SU-28	SU-29
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	Average	RPD	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1446092-07			1433286-22	1433286-25	1433286-24	1433286-21	1433286-20
Sample Date				11/11/2014			08/14/2014	08/14/2014	08/14/2014	08/14/2014	08/14/2014
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	-	< 4	< 4	< 4	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	15	14	-	< 8	< 8	< 8	< 8	< 8
PHC F4 (>C34)	50	2800	3300	< 6	< 6	-	< 6	< 6	< 6	< 6	< 6

Table 4.1
Summary of Petroleum Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		SU-1	SU-2	SU-3	SU-4	SU-5	SU-5	SU-5	SU-5
Sample No.				SU-1	SU-2	SU-3	SU-4	SU-5	DUP-8		
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	Average	RPD
Laboratory ID				1433286-14	1433286-15	1433286-16	1433286-17	1433286-18	1433286-27		
Sample Date				08/14/2014	08/14/2014	08/14/2014	08/14/2014	08/14/2014	08/14/2014		
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	< 4	< 4	< 4	< 4	< 4	-
PHC F3 (>C16 - C34)	50	300	1700	< 8	< 8	< 8	< 8	< 8	< 8	< 8	-
PHC F4 (>C34)	50	2800	3300	< 6	< 6	< 6	< 6	< 6	< 6	< 6	-

Table 4.1
Summary of Petroleum Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		SU-6							
Sample No.				SU-6							
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1							
Laboratory ID				1446092-01							
Sample Date				11/11/2014							
PHC F2 (>C10 - C16)	10	98	230	< 4							
PHC F3 (>C16 - C34)	50	300	1700	29							
PHC F4 (>C34)	50	2800	3300	< 6							

Table 4.2
Summary of Petroleum Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		MW14-1	MW14-2	MW14-2	MW14-2	MW14-2	MW14-3	MW14-4	MW14-5
Sample No.				SS4	SS3	DUP-1			SS3	SS4	SS4
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	2.3-3.0	1.5-2.3	1.5-2.3	Average	RPD	1.5-1.9	3.0-4.6	2.3-3.0
Laboratory ID				1433170-29	1433106-02	1433106-15			1433170-31	1433313-02	1433170-33
Sample Date				12-Aug-14	11-Aug-14	11-Aug-14			12-Aug-14	15-Aug-14	12-Aug-14
Benzene	0.02	0.21	0.32	< 0.02	< 0.02	< 0.02	< 0.02	-	-	-	-
Toluene	0.2	2.3	68	< 0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Ethylbenzene	0.05	2	9.5	< 0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Xylenes, m,p-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Xylenes, o-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Total Xylenes	0.05	3.1	26	< 0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
PHC F1 (C6 - C10)	10	55	55	< 7	< 7	< 7	< 7	-	-	-	< 7
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	-	-	-	< 4	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	< 8	< 8	-	-	-	< 8	< 8	< 8
PHC F4 (>C34)	50	2800	3300	< 6	< 6	-	-	-	< 6	< 6	< 6

Table 4.2
Summary of Petroleum Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location Sample No. Sample Depth (m) Laboratory ID Sample Date		Non-Potable Groundwater (Table 3)		MW14-5 DUP-4 2.3-3.0 1433170-37 12-Aug-14	MW14-5 Average	MW14-5 RPD	MW14-5 DUP-6 2.3-3.0 1433170-39 12-Aug-14	MW14-5 Average	MW14-5 RPD	DBMW14-2 SS3 3.0-4.6 1433170-36 12-Aug-14	DBMW14-4 SS6 3.3-3.9 1433286-02 13-Aug-14
		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community								
Benzene	0.02	0.21	0.32	-	-	-	-	-	-	-	< 0.05
Toluene	0.2	2.3	68	-	-	-	-	-	-	-	< 0.02
Ethylbenzene	0.05	2	9.5	-	-	-	-	-	-	-	< 0.05
Xylenes, m,p-	-	-	-	-	-	-	-	-	-	-	< 0.05
Xylenes, o-	-	-	-	-	-	-	-	-	-	-	< 0.05
Total Xylenes	0.05	3.1	26	-	-	-	-	-	-	-	< 0.05
PHC F1 (C6 - C10)	10	55	55	< 7	< 7	-	-	-	-	< 7	< 7
PHC F2 (>C10 - C16)	10	98	230	-	-	-	< 4	< 4	-	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	-	-	-	< 8	< 8	-	< 8	< 8
PHC F4 (>C34)	50	2800	3300	-	-	-	< 6	< 6	-	< 6	< 6

Table 4.2
Summary of Petroleum Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-1	BH14-2	BH14-3	BH14-4	BH14-5	BH14-6	BH14-7	BH14-8
Sample No.				SS1	SS3	SS2	SS4	SS4	SS1	SS1	SS3
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.6	2.0-2.7	1.5-2.3	2.4-3.3	2.3-3.0	0-0.91	0-0.8	1.5-2.4
Laboratory ID				1433170-01	1433170-03	1433170-05	1433170-07	1433106-04	1433286-03	1433106-05	1433106-07
Sample Date				12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	11-Aug-14	14-Aug-14	11-Aug-14	11-Aug-14
Benzene	0.02	0.21	0.32	-	-	-	-	-	-	-	-
Toluene	0.2	2.3	68	-	-	-	-	-	-	-	-
Ethylbenzene	0.05	2	9.5	-	-	-	-	-	-	-	-
Xylenes, m,p-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, o-	-	-	-	-	-	-	-	-	-	-	-
Total Xylenes	0.05	3.1	26	-	-	-	-	-	-	-	-
PHC F1 (C6 - C10)	10	55	55	-	-	-	-	-	-	-	-
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	12	< 4	< 4	< 4	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	< 8	< 8	216	< 8	< 8	< 8	77	110
PHC F4 (>C34)	50	2800	3300	< 6	< 6	99	< 6	< 6	< 6	26	33

Table 4.2
Summary of Petroleum Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-9	BH14-10	BH14-11	BH14-12	BH14-13	BH14-14	BH14-14	BH14-14
Sample No.				SS3	SS3	SS3	SS3	SS4	SS4	DUP-3	
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	2.4-3.1	3.0-3.9	1.5-2.3	2.1-2.7	2.3-3.0	2.3-3.0	2.3-3.0	Average
Laboratory ID				1433170-09	1433170-10	1433170-12	1433170-14	1433106-09	1433106-11	1433106-17	
Sample Date				12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14	
Benzene	0.02	0.21	0.32	-	-	-	-	-	-	-	-
Toluene	0.2	2.3	68	-	-	-	-	-	-	-	-
Ethylbenzene	0.05	2	9.5	-	-	-	-	-	-	-	-
Xylenes, m,p-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, o-	-	-	-	-	-	-	-	-	-	-	-
Total Xylenes	0.05	3.1	26	-	-	-	-	-	-	-	-
PHC F1 (C6 - C10)	10	55	55	-	-	-	-	-	-	-	-
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	< 8	< 8	< 8	< 8	201	< 8	< 8	< 8
PHC F4 (>C34)	50	2800	3300	< 6	< 6	< 6	< 6	73	< 6	< 6	< 6

Table 4.2
Summary of Petroleum Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-14	BH14-15	BH14-16	BH14-17	BH14-18	BH14-19	BH14-20	BH14-21
Sample No.					SS3	SS2	SS4	SS4	SS3	SS1B	SS3
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	RPD	1.5-2.3	0.8-1.5	2.3-3.0	2.3-2.8	1.5-2.3	0.8-1.5	1.5-2.3
Laboratory ID					1433106-13	1433106-14	1433170-16	1433170-18	1433170-20	1433170-22	1433170-24
Sample Date					11-Aug-14	11-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
Benzene	0.02	0.21	0.32	-	-	-	-	-	-	-	-
Toluene	0.2	2.3	68	-	-	-	-	-	-	-	-
Ethylbenzene	0.05	2	9.5	-	-	-	-	-	-	-	-
Xylenes, m,p-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, o-	-	-	-	-	-	-	-	-	-	-	-
Total Xylenes	0.05	3.1	26	-	-	-	-	-	-	-	-
PHC F1 (C6 - C10)	10	55	55	-	-	-	-	-	-	-	-
PHC F2 (>C10 - C16)	10	98	230	-	< 4	< 4	< 4	< 4	< 4	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	-	201	69	< 8	< 8	< 8	< 8	416
PHC F4 (>C34)	50	2800	3300	-	49	< 6	< 6	< 6	< 6	< 6	297

Table 4.2
Summary of Petroleum Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-22	BH14-23	BH14-25	BH14-25	BH14-25	BH14-25	BH14-26	BH14-27
Sample No.				SS1	SS3	SS6	DUP-12			SS6	SS4
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.8	1.5-2.3	4.6-5.9	4.6-5.9	Average	RPD	3.3-3.8	2.3-2.4
Laboratory ID				1433170-25	1433170-27	1433313-04	1433313-14			1433313-06	1433313-08
Sample Date				12-Aug-14	12-Aug-14	15-Aug-14	15-Aug-14			15-Aug-14	15-Aug-14
Benzene	0.02	0.21	0.32	-	-	-	-	-	-	-	-
Toluene	0.2	2.3	68	-	-	-	-	-	-	-	-
Ethylbenzene	0.05	2	9.5	-	-	-	-	-	-	-	-
Xylenes, m,p-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, o-	-	-	-	-	-	-	-	-	-	-	-
Total Xylenes	0.05	3.1	26	-	-	-	-	-	-	-	-
PHC F1 (C6 - C10)	10	55	55	-	-	-	-	-	-	-	-
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	< 4	< 4	< 4	-	< 4	< 4
PHC F3 (>C16 - C34)	50	300	1700	< 8	< 8	< 8	< 8	< 8	-	< 8	< 8
PHC F4 (>C34)	50	2800	3300	< 6	< 6	< 6	< 6	< 6	-	< 6	< 6

Table 4.2
Summary of Petroleum Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location Sample No. Sample Depth (m) Laboratory ID Sample Date		Non-Potable Groundwater (Table 3)		BH14-28 SS2 0.8-1.5 1433313-09 15-Aug-14	BH14-28 DUP-11 0.8-1.5 1433313-13 15-Aug-14	BH14-28 Average	BH14-28 RPD	BH14-29 SS2 1.5-2.4 1433313-11 15-Aug-14			
		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community								
Benzene	0.02	0.21	0.32	-	-	-	-	-			
Toluene	0.2	2.3	68	-	-	-	-	-			
Ethylbenzene	0.05	2	9.5	-	-	-	-	-			
Xylenes, m,p-	-	-	-	-	-	-	-	-			
Xylenes, o-	-	-	-	-	-	-	-	-			
Total Xylenes	0.05	3.1	26	-	-	-	-	-			
PHC F1 (C6 - C10)	10	55	55	-	-	-	-	-			
PHC F2 (>C10 - C16)	10	98	230	< 4	< 4	< 4	-	< 4			
PHC F3 (>C16 - C34)	50	300	1700	< 8	< 8	< 8	-	< 8			
PHC F4 (>C34)	50	2800	3300	< 6	< 6	< 6	-	< 6			

Table 5
Summary of Volatile Organic Compound Analyses - Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location Sample No. Sample Depth (m) Laboratory ID Sample Date		Non-Potable Groundwater (Table 3) Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	MW14-5 SS4 2.3-3.0 1433170-33 12-Aug-14	MW14-5 DUP-4 2.3-3.0 1433170-37 12-Aug-14	MW14-5 Average	MW14-5 RPD	DBMW14-2 SS3 3.0-4.6 1433170-36 12-Aug-14	DBMW14-4 SS6 3.3-3.9 1433286-02 13-Aug-14		
Acetone	0.5	16	16	< 0.50	< 0.50	< 0.50	-	< 0.50	< 0.50		
Benzene	0.02	0.21	0.32	< 0.02	< 0.02	< 0.02	-	< 0.02	< 0.02		
Bromodichloromethane	0.05	13	18	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Bromoform	0.05	0.27	0.61	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Bromomethane	0.05	0.05	0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Carbon Tetrachloride	0.05	0.05	0.21	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Chloroform	0.05	0.05	0.47	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dibromochloromethane	0.05	9.4	13	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dibromoethane, 1,2- (Ethylene Dibromide)	0.05	0.05	0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichlorobenzene, 1,2- (o-DCB)	0.05	3.4	6.8	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichlorobenzene, 1,3- (m-DCB)	0.05	4.8	9.6	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichlorobenzene, 1,4- (p-DCB)	0.05	0.083	0.2	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichlorodifluoromethane	0.05	16	16	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.20		
Dichloroethane, 1,1- (1,1-DCA)	0.05	3.5	17	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichloroethane, 1,2- (1,2-DCA)	0.05	0.05	0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichloroethylene, 1,1- (1,1-DCE)	0.05	0.05	0.064	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichloroethylene, cis-1,2- (c-1,2-DCE)	0.05	3.4	55	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichloroethylene, trans-1,2- (t-1,2-DCE)	0.05	0.084	1.3	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichloromethane (Methylene Chloride)	0.05	0.1	1.6	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.50		
Dichloropropane, 1,2-	0.05	0.05	0.16	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichloropropene, 1,3-	0.05	0.05	0.18	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichloropropene, cis-1,3-	0.05	-	-	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Dichloropropene, trans-1,3-	0.05	-	-	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Ethylbenzene	0.05	2	9.5	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Hexane	0.05	2.8	46	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Methyl Ethyl Ketone (MEK)	0.50	16	70	< 0.50	< 0.50	< 0.50	-	< 0.50	< 0.05		
Methyl Isobutyl Ketone (MIBK)	0.50	1.7	31	< 0.50	< 0.50	< 0.50	-	< 0.50	< 0.05		
Methyl Tert Butyl Ether (MTBE)	0.05	0.75	11	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Monochlorobenzene (Chlorobenzene)	0.05	2.4	2.4	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Styrene	0.05	0.7	34	< 0.05	< 0.05	< 0.05	-	< 0.05	< 2.00		
Tetrachloroethane, 1,1,1,2-	0.05	0.058	0.087	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.50		
Tetrachloroethane, 1,1,2,2-	0.05	0.05	0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Tetrachloroethylene (PCE)	0.05	0.28	4.5	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Toluene	0.2	2.3	68	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Trichloroethane, 1,1,1- (1,1,1-TCA)	0.05	0.38	6.1	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Trichloroethane, 1,1,2- (1,1,2-TCA)	0.05	0.05	0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Trichloroethylene (TCE)	0.05	0.061	0.91	**0.83**	**0.24**	**0.535**	-	**0.87**	< 0.05		
Trichlorofluoromethane	0.05	4	4	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Vinyl Chloride (VC)	0.02	0.02	0.032	< 0.02	< 0.02	< 0.02	-	< 0.02	< 0.05		
Xylenes, m,p-	-	-	-	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Xylenes, o-	-	-	-	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		
Xylenes (total)	0.05	3.1	26	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05		

Table 6.1
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		MW14-2	MW14-4	MW14-5	DBMW14-2	DBMW14-4	BH14-1	BH14-2	BH14-3
Sample No.				SU2	SU4	SU5	SU2	SU4	SU1	SU-2	SU3
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1		0-0.1
Laboratory ID				1433286-12	1433286-23	1433170-34	1446092-02	1433286-04	1433286-08	1446092-03	1433286-06
Sample Date				14-Aug-14	14-Aug-14	12-Aug-14	11-Nov-14	14-Aug-14	14-Aug-14	11/11/2014	14-Aug-14
Acenaphthene	0.05	7.9	96	0.68	< 0.02	0.13	< 0.02	< 0.02	0.13	< 0.02	< 0.02
Acenaphthylene	0.05	0.15	0.15	**0.33**	0.03	**0.47**	0.03	0.15	**0.16**	0.03	< 0.02
Anthracene	0.05	0.67	0.67	**1.3**	0.03	0.58	0.04	0.14	0.44	0.05	0.02
Benzo(a)anthracene	0.05	0.5	0.96	**4.6**	0.11	**1.26**	0.1	0.28	**0.98**	0.12	0.05
Benzo(a)pyrene	0.05	0.3	0.3	**4.44**	0.1	**1.23**	0.1	**0.34**	**1.05**	0.13	0.06
Benzo(b)fluoranthene	0.05	0.78	0.96	**4.93**	0.16	**1.1**	0.18	0.5	**1.56**	0.23	0.06
Benzo(g,h,i)perylene	0.1	6.6	9.6	2.12	0.05	< 0.02	0.05	< 0.02	0.7	0.1	< 0.02
Benzo(k)fluoranthene	0.05	0.78	0.96	**2.56**	0.03	0.42	0.07	0.13	0.72	0.09	0.03
Chrysene	0.05	7	9.6	4.94	0.1	1.17	0.11	0.29	1.05	0.15	0.06
Dibenzo(a,h)anthracene	0.1	0.1	0.1	**0.78**	< 0.02	**0.15**	< 0.02	0.05	**0.16**	< 0.02	< 0.02
Fluoranthene	0.05	0.69	9.6	**11.2**	0.13	**4.39**	0.22	0.39	**2.64**	0.24	0.09
Fluorene	0.05	62	62	0.57	< 0.02	0.1	< 0.02	< 0.02	0.15	< 0.02	< 0.02
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	**2.72**	0.06	**0.48**	0.05	0.2	**0.57**	0.09	0.05
Methylnaphthalene, 1-*	0.05	0.99	76	0.08	< 0.02	0.04	< 0.02	< 0.02	0.05	< 0.02	< 0.02
Methylnaphthalene, 2-*	0.05	0.99	76	0.1	< 0.02	0.05	< 0.02	< 0.02	0.09	< 0.02	< 0.02
Methylnaphthalene (1-+2-)	0.1	0.99	76	0.18	< 0.04	0.09	< 0.04	< 0.04	0.14	< 0.04	< 0.04
Naphthalene	0.05	0.6	9.6	0.19	< 0.01	0.06	< 0.01	0.01	0.11	< 0.01	< 0.01
Phenanthrene	0.05	6.2	12	5.92	0.05	1.39	0.14	0.19	1.62	0.11	0.05
Pyrene	0.05	78	96	11	0.12	4.06	0.17	0.32	1.78	0.2	0.08

Table 6.1
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-3	BH14-3	BH14-3	BH14-5	BH14-7	BH14-9	BH14-10	BH14-11
Sample No.				DUP-9			SU5	SU7	SU9	SU10	SU11
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	Average	RPD	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1433286-28			1433286-09	1433286-10	1433286-07	1433286-05	1433286-11
Sample Date				14-Aug-14			14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
Acenaphthene	0.05	7.9	96	< 0.02	< 0.02	-	< 0.02	0.03	< 0.02	< 0.02	< 0.02
Acenaphthylene	0.05	0.15	0.15	< 0.02	< 0.02	-	< 0.02	**0.43**	< 0.02	< 0.02	0.03
Anthracene	0.05	0.67	0.67	0.03	0.025	-	< 0.02	0.25	0.03	< 0.02	0.03
Benzo(a)anthracene	0.05	0.5	0.96	0.08	0.065	-	< 0.02	**0.73**	0.07	0.04	0.07
Benzo(a)pyrene	0.05	0.3	0.3	0.09	0.075	-	< 0.02	**0.84**	0.08	0.04	0.09
Benzo(b)fluoranthene	0.05	0.78	0.96	0.15	0.105	-	< 0.02	**1.39**	0.12	0.06	0.09
Benzo(g,h,i)perylene	0.1	6.6	9.6	< 0.02	< 0.02	-	< 0.02	0.7	< 0.02	< 0.02	0.04
Benzo(k)fluoranthene	0.05	0.78	0.96	0.06	0.045	-	< 0.02	0.38	0.07	< 0.02	0.05
Chrysene	0.05	7	9.6	0.09	0.075	-	< 0.02	0.85	0.08	0.04	0.08
Dibenzo(a,h)anthracene	0.1	0.1	0.1	< 0.02	< 0.02	-	< 0.02	**0.2**	< 0.02	< 0.02	< 0.02
Fluoranthene	0.05	0.69	9.6	0.27	0.18	-	< 0.02	**1.78**	0.11	0.06	0.09
Fluorene	0.05	62	62	< 0.02	< 0.02	-	< 0.02	0.04	< 0.02	< 0.02	< 0.02
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	0.05	0.05	-	< 0.02	**0.72**	0.04	0.03	0.04
Methylnaphthalene, 1-*	0.05	0.99	76	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Methylnaphthalene, 2-*	0.05	0.99	76	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Methylnaphthalene (1-+2-)	0.1	0.99	76	< 0.04	< 0.04	-	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Naphthalene	0.05	0.6	9.6	< 0.01	< 0.01	-	< 0.01	0.03	< 0.01	< 0.01	< 0.01
Phenanthrene	0.05	6.2	12	0.09	0.025	-	< 0.02	0.39	0.05	0.04	0.03
Pyrene	0.05	78	96	0.2	0.025	-	< 0.02	1.55	0.1	0.05	0.09

Table 6.1
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-13	BH14-13	BH14-13	BH14-13	BH14-19	BH14-20	BH14-22	BH14-23
Sample No.				SU13	DUP-7			SU19	SU20	SU22	SU23
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	0-0.1	Average	RPD	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1433286-13	1433286-26			1433286-19	1446092-04	1446092-05	1446092-06
Sample Date				14-Aug-14	14-Aug-14			14-Aug-14	11-Nov-14	11-Nov-14	11-Nov-14
Acenaphthene	0.05	7.9	96	1.63	0.27	0.95	143%	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthylene	0.05	0.15	0.15	0.06	0.05	0.055	-	< 0.02	< 0.02	< 0.02	< 0.02
Anthracene	0.05	0.67	0.67	**3.11**	0.63	**1.87**	133%	< 0.02	0.02	< 0.02	< 0.02
Benzo(a)anthracene	0.05	0.5	0.96	**4.26**	**1.65**	**2.955**	88%	0.1	0.05	0.05	0.03
Benzo(a)pyrene	0.05	0.3	0.3	**3.76**	**1.56**	**2.66**	83%	0.12	0.07	0.06	0.03
Benzo(b)fluoranthene	0.05	0.78	0.96	**4.2**	**2.23**	**3.215**	61%	0.19	0.14	0.1	0.06
Benzo(g,h,i)perylene	0.1	6.6	9.6	1.73	0.74	1.235	80%	0.09	0.05	0.05	0.03
Benzo(k)fluoranthene	0.05	0.78	0.96	**1.74**	**0.79**	**1.265**	75%	0.06	0.05	0.04	0.02
Chrysene	0.05	7	9.6	3.96	1.64	2.8	83%	0.11	0.07	0.06	0.04
Dibenzo(a,h)anthracene	0.1	0.1	0.1	**0.26**	**0.19**	**0.225**	31%	0.02	< 0.02	< 0.02	< 0.02
Fluoranthene	0.05	0.69	9.6	**10.9**	**4.03**	**7.465**	92%	0.08	0.09	0.08	0.06
Fluorene	0.05	62	62	1.65	0.28	0.965	142%	< 0.02	< 0.02	< 0.02	< 0.02
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	**1.78**	**0.78**	**1.28**	78%	0.09	0.06	0.04	0.02
Methylnaphthalene, 1-*	0.05	0.99	76	0.28	0.04	0.16	150%	< 0.02	< 0.02	< 0.02	< 0.02
Methylnaphthalene, 2-*	0.05	0.99	76	0.38	0.05	0.215	153%	< 0.02	< 0.02	< 0.02	< 0.02
Methylnaphthalene (1-+2-)	0.1	0.99	76	0.66	0.09	0.375	152%	< 0.04	< 0.04	< 0.04	< 0.04
Naphthalene	0.05	0.6	9.6	0.31	0.09	0.2	110%	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	0.05	6.2	12	**14.9**	2.8	**8.85**	137%	0.03	0.03	0.03	< 0.02
Pyrene	0.05	78	96	13.2	3.36	8.28	119%	0.07	0.08	0.07	0.05

Table 6.1
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-23	BH14-23	BH14-23	BH14-25	BH14-26	BH14-27	BH14-28	BH14-29
Sample No.				DUP-1			SU25	SU26	SU27	SU28	SU29
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	Average	RPD	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1446092-07			1433286-22	1433286-25	1433286-24	1433286-21	1433286-20
Sample Date				11-Nov-14			14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
Acenaphthene	0.05	7.9	96	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthylene	0.05	0.15	0.15	< 0.02	< 0.02	-	< 0.02	< 0.02	0.02	< 0.02	0.08
Anthracene	0.05	0.67	0.67	< 0.02	< 0.02	-	< 0.02	< 0.02	0.04	< 0.02	0.11
Benzo(a)anthracene	0.05	0.5	0.96	0.03	0.03	-	0.03	0.05	0.07	0.06	0.19
Benzo(a)pyrene	0.05	0.3	0.3	0.04	0.035	-	0.04	0.04	0.06	0.06	0.19
Benzo(b)fluoranthene	0.05	0.78	0.96	0.07	0.065	-	0.04	0.03	0.09	0.05	0.32
Benzo(g,h,i)perylene	0.1	6.6	9.6	0.03	0.03	-	< 0.02	< 0.02	0.03	0.03	0.08
Benzo(k)fluoranthene	0.05	0.78	0.96	0.03	0.025	-	< 0.02	0.02	0.05	0.03	0.12
Chrysene	0.05	7	9.6	0.04	0.04	-	0.04	0.05	0.07	0.06	0.23
Dibenzo(a,h)anthracene	0.1	0.1	0.1	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	0.03
Fluoranthene	0.05	0.69	9.6	0.06	0.06	-	0.05	0.11	0.25	0.09	0.39
Fluorene	0.05	62	62	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	0.02	0.02	-	0.06	0.02	0.03	0.05	0.12
Methylnaphthalene, 1-*	0.05	0.99	76	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Methylnaphthalene, 2-*	0.05	0.99	76	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Methylnaphthalene (1-+2-)	0.1	0.99	76	< 0.04	< 0.04	-	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Naphthalene	0.05	0.6	9.6	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	0.05	6.2	12	< 0.02	< 0.02	-	< 0.02	0.05	0.07	0.03	0.19
Pyrene	0.05	78	96	0.05	0.05	-	0.03	0.1	0.21	0.14	0.33

Table 6.1
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		SU-1	SU-2	SU-3	SU-4	SU-5	SU-5	SU-5	SU-5
Sample No.				SU-1	SU2	SU3	SU4	SU5	DUP-8		
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	Average	RPD
Laboratory ID				1433286-14	1433286-15	1433286-16	1433286-17	1433286-18	1433286-27		
Sample Date				14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14		
Acenaphthene	0.05	7.9	96	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03	0.025	-
Acenaphthylene	0.05	0.15	0.15	< 0.02	< 0.02	0.03	< 0.02	< 0.02	0.03	0.025	-
Anthracene	0.05	0.67	0.67	0.02	0.02	0.04	0.02	0.05	0.09	0.07	-
Benzo(a)anthracene	0.05	0.5	0.96	0.08	0.08	0.14	0.07	0.17	0.27	0.22	45%
Benzo(a)pyrene	0.05	0.3	0.3	0.08	0.12	0.14	0.06	0.12	**0.33**	0.225	93%
Benzo(b)fluoranthene	0.05	0.78	0.96	0.09	0.16	0.3	0.1	0.16	0.37	0.265	79%
Benzo(g,h,i)perylene	0.1	6.6	9.6	< 0.02	< 0.02	0.1	0.06	0.05	0.18	0.115	113%
Benzo(k)fluoranthene	0.05	0.78	0.96	0.05	0.05	0.1	0.03	0.08	0.13	0.105	48%
Chrysene	0.05	7	9.6	0.09	0.08	0.17	0.09	0.17	0.3	0.235	55%
Dibenzo(a,h)anthracene	0.1	0.1	0.1	< 0.02	< 0.02	0.03	< 0.02	< 0.02	0.05	0.035	-
Fluoranthene	0.05	0.69	9.6	0.13	0.12	0.26	0.2	0.28	0.58	0.43	70%
Fluorene	0.05	62	62	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04	0.04	-
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	0.06	0.08	0.13	0.07	0.09	0.18	0.135	67%
Methylnaphthalene, 1-*	0.05	0.99	76	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-
Methylnaphthalene, 2-*	0.05	0.99	76	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-
Methylnaphthalene (1-+2-)	0.1	0.99	76	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	-
Naphthalene	0.05	0.6	9.6	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.015	-
Phenanthrene	0.05	6.2	12	0.06	0.04	0.16	0.07	0.14	0.4	0.27	96%
Pyrene	0.05	78	96	0.08	0.12	0.21	0.17	0.23	0.47	0.35	69%

Table 6.1
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location Sample No. Sample Depth (m) Laboratory ID Sample Date		Non-Potable Groundwater (Table 3)		SU-6 SU-6 1446092-01 11-Nov-14							
		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community								
Acenaphthene	0.05	7.9	96	< 0.02							
Acenaphthylene	0.05	0.15	0.15	0.05							
Anthracene	0.05	0.67	0.67	0.04							
Benzo(a)anthracene	0.05	0.5	0.96	0.11							
Benzo(a)pyrene	0.05	0.3	0.3	0.12							
Benzo(b)fluoranthene	0.05	0.78	0.96	0.34							
Benzo(g,h,i)perylene	0.1	6.6	9.6	0.11							
Benzo(k)fluoranthene	0.05	0.78	0.96	0.25							
Chrysene	0.05	7	9.6	0.12							
Dibenzo(a,h)anthracene	0.1	0.1	0.1	< 0.02							
Fluoranthene	0.05	0.69	9.6	0.27							
Fluorene	0.05	62	62	< 0.02							
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	0.09							
Methylnaphthalene, 1-*	0.05	0.99	76	< 0.02							
Methylnaphthalene, 2-*	0.05	0.99	76	< 0.02							
Methylnaphthalene (1-+2-)	0.1	0.99	76	< 0.04							
Naphthalene	0.05	0.6	9.6	0.01							
Phenanthrene	0.05	6.2	12	0.11							
Pyrene	0.05	78	96	0.25							

Table 6.2
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		MW14-1	MW14-2	MW14-2	MW14-2	MW14-2	MW14-3	MW14-4	MW14-5
Sample No.				SS2	SS2	DUP-2			SS2	SS3	SS1
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0.8-1.5	0.8-1.5	0.8-1.5	Average	RPD	0.8-1.5	1.5-3.0	0-0.8
Laboratory ID				1433170-28	1433106-01	1433106-16			1433170-30	1433313-01	1433170-32
Sample Date				12-Aug-14	11-Aug-14	11-Aug-14			12-Aug-14	15-Aug-14	12-Aug-14
Acenaphthene	0.05	7.9	96	0.07	0.04	< 0.02	0.3	-	0.07	< 0.02	< 0.02
Acenaphthylene	0.05	0.15	0.15	0.08	0.03	0.03	0.03	-	0.06	0.06	0.03
Anthracene	0.05	0.67	0.67	0.21	0.1	0.07	0.085	-	0.24	0.08	0.03
Benzo(a)anthracene	0.05	0.5	0.96	**0.51**	0.25	0.22	0.235	13%	**0.52**	0.17	0.05
Benzo(a)pyrene	0.05	0.3	0.3	**0.5**	0.19	0.2	0.195	5%	**0.41**	0.15	0.06
Benzo(b)fluoranthene	0.05	0.78	0.96	0.66	0.35	0.37	0.36	6%	0.55	0.2	0.11
Benzo(g,h,i)perylene	0.1	6.6	9.6	< 0.02	0.14	0.13	0.135	7%	0.15	< 0.02	< 0.02
Benzo(k)fluoranthene	0.05	0.78	0.96	0.21	0.13	0.15	0.14	14%	0.19	0.08	0.03
Chrysene	0.05	7	9.6	0.48	0.24	0.22	0.23	9%	0.47	0.17	0.05
Dibenzo(a,h)anthracene	0.1	0.1	0.1	0.08	0.03	< 0.02	0.025	-	0.05	0.03	< 0.02
Fluoranthene	0.05	0.69	9.6	**1**	0.46	0.4	0.43	14%	**0.81**	0.28	0.06
Fluorene	0.05	62	62	0.08	0.03	< 0.02	0.03	-	0.1	0.04	< 0.02
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	0.3	0.12	0.11	0.115	9%	0.2	0.11	0.04
Methylnaphthalene, 1-*	0.05	0.99	76	0.03	< 0.02	< 0.02	< 0.02	-	0.02	< 0.02	< 0.02
Methylnaphthalene, 2-*	0.05	0.99	76	0.04	< 0.02	0.03	0.03	-	0.03	< 0.02	< 0.02
Methylnaphthalene (1-+2-)	0.1	0.99	76	0.07	< 0.04	< 0.04	< 0.04	-	0.05	< 0.04	< 0.04
Naphthalene	0.05	0.6	9.6	0.09	0.02	0.03	0.025	-	0.05	0.02	< 0.01
Phenanthrene	0.05	6.2	12	0.85	0.35	0.24	0.295	37%	0.7	0.18	0.04
Pyrene	0.05	78	96	0.97	0.38	0.29	0.335	27%	0.64	0.25	0.06

Table 6.2
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		DBMW14-2	DBMW14-4	BH14-1	BH14-2	BH14-3	BH14-4	BH14-5	BH14-6
Sample No.				SS1	SS1	SS1	SS1	SS1	SS3	SS2	SS1
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-1.5	0-0.6	0-0.6	0-1.2	0-1.5	1.2-2.4	0.8-1.5	0-0.9
Laboratory ID				1433170-35	1433286-01	1433170-01	1433170-02	1433170-04	1433170-06	1433106-03	1433286-03
Sample Date				12-Aug-14	13-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	11-Aug-14	14-Aug-14
Acenaphthene	0.05	7.9	96	< 0.02	0.21	0.17	< 0.02	0.03	0.53	0.09	< 0.02
Acenaphthylene	0.05	0.15	0.15	0.05	**4.1**	**0.59**	0.06	**0.25**	**0.65**	**0.16**	0.08
Anthracene	0.05	0.67	0.67	0.06	**2.83**	**1.08**	0.05	0.26	**2.84**	0.39	0.07
Benzo(a)anthracene	0.05	0.5	0.96	0.11	**4.81**	**2.6**	0.11	**0.67**	**6.1**	**0.84**	0.22
Benzo(a)pyrene	0.05	0.3	0.3	0.14	**6.5**	**2.39**	0.12	**0.62**	**6.67**	**0.66**	0.23
Benzo(b)fluoranthene	0.05	0.78	0.96	0.31	**7.85**	**2.91**	0.15	**0.93**	**6.59**	**1.24**	0.33
Benzo(g,h,i)perylene	0.1	6.6	9.6	< 0.02	4.2	1.11	< 0.02	< 0.02	2.52	0.52	< 0.02
Benzo(k)fluoranthene	0.05	0.78	0.96	0.1	**2.2**	**1.52**	0.05	0.35	**4.74**	0.44	0.11
Chrysene	0.05	7	9.6	0.12	4.49	2.42	0.13	0.65	6.03	0.95	0.25
Dibenzo(a,h)anthracene	0.1	0.1	0.1	< 0.02	**1.27**	**0.37**	< 0.02	0.1	**0.96**	**0.14**	0.04
Fluoranthene	0.05	0.69	9.6	0.17	**8.5**	**5.48**	0.21	**1.21**	**17.8**	**2.42**	0.34
Fluorene	0.05	62	62	< 0.02	0.43	0.19	< 0.02	0.04	1.42	0.11	< 0.02
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	0.07	**4.14**	**1.27**	0.07	0.36	**3.59**	**0.49**	0.13
Methylnaphthalene, 1-*	0.05	0.99	76	< 0.02	0.07	0.08	0.04	0.06	0.15	0.09	< 0.02
Methylnaphthalene, 2-*	0.05	0.99	76	< 0.02	0.08	0.09	0.04	0.07	0.16	0.1	< 0.02
Methylnaphthalene (1-+2-)	0.1	0.99	76	< 0.04	0.15	0.17	0.07	0.13	0.31	0.18	< 0.04
Naphthalene	0.05	0.6	9.6	< 0.01	0.26	0.12	0.03	0.05	0.25	0.18	0.02
Phenanthrene	0.05	6.2	12	0.11	3.33	2.78	0.14	0.53	**12.5**	2.48	0.16
Pyrene	0.05	78	96	0.16	8.22	4.8	0.16	1.01	14	1.91	0.31

Table 6.2
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-7	BH14-8	BH14-9	BH14-9	BH14-9	BH14-9	BH14-10	BH14-11
Sample No.				SS1	SS2	SS2	DUP-5			SS3	SS2
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.8	0.8-1.5	1.2-2.4	1.2-2.4	Average	RPD	3.0-3.9	0.8-1.5
Laboratory ID				1433106-05	1433106-06	1433170-08	1433170-38			1433170-10	1433170-11
Sample Date				11-Aug-14	11-Aug-14	12-Aug-14	12-Aug-14			12-Aug-14	12-Aug-14
Acenaphthene	0.05	7.9	96	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-	< 0.02	< 0.02
Acenaphthylene	0.05	0.15	0.15	0.14	< 0.02	< 0.02	< 0.02	< 0.02	-	< 0.02	0.13
Anthracene	0.05	0.67	0.67	0.14	< 0.02	< 0.02	0.03	0.025	-	< 0.02	0.12
Benzo(a)anthracene	0.05	0.5	0.96	0.29	0.05	< 0.02	0.07	0.045	-	0.03	0.26
Benzo(a)pyrene	0.05	0.3	0.3	0.33	0.04	< 0.02	0.09	0.055	-	< 0.02	0.24
Benzo(b)fluoranthene	0.05	0.78	0.96	0.62	0.09	< 0.02	0.12	0.07	-	0.05	0.4
Benzo(g,h,i)perylene	0.1	6.6	9.6	0.25	0.04	< 0.02	< 0.02	< 0.02	-	< 0.02	< 0.02
Benzo(k)fluoranthene	0.05	0.78	0.96	0.22	0.04	< 0.02	0.04	0.03	-	< 0.02	< 0.02
Chrysene	0.05	7	9.6	0.32	0.06	< 0.02	0.09	0.55	-	0.03	0.26
Dibenzo(a,h)anthracene	0.1	0.1	0.1	0.05	< 0.02	< 0.02	< 0.02	< 0.02	-	< 0.02	0.04
Fluoranthene	0.05	0.69	9.6	0.45	0.08	< 0.02	0.12	0.07	-	0.05	0.3
Fluorene	0.05	62	62	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-	< 0.02	< 0.02
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	0.2	0.03	< 0.02	0.06	0.04	-	< 0.02	0.14
Methylnaphthalene, 1-*	0.05	0.99	76	< 0.02	0.07	< 0.02	< 0.02	< 0.02	-	< 0.02	< 0.02
Methylnaphthalene, 2-*	0.05	0.99	76	< 0.02	0.08	< 0.02	< 0.02	< 0.02	-	< 0.02	0.02
Methylnaphthalene (1-+2-)	0.1	0.99	76	< 0.04	0.14	< 0.04	< 0.04	< 0.04	-	< 0.04	< 0.04
Naphthalene	0.05	0.6	9.6	0.02	0.05	< 0.01	< 0.01	< 0.01	-	< 0.01	0.03
Phenanthrene	0.05	6.2	12	0.19	0.08	< 0.02	0.08	0.05	-	< 0.02	0.17
Pyrene	0.05	78	96	0.41	0.07	< 0.02	0.11	0.06	-	0.05	0.32

Table 6.2
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-12	BH14-13	BH14-14	BH14-15	BH14-16	BH14-17	BH14-18	BH14-19
Sample No.				SS1	SS2	SS3	SS2	SS2	SS2	SS3	SS2
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-1.5	0.8-1.5	1.5-2.3	0.8-1.5	0.8-1.5	0.8-1.5	1.5-2.3	0.8-1.5
Laboratory ID				1433170-13	1433106-08	1433106-10	1433106-12	1433106-14	1433170-15	1433170-17	1433170-19
Sample Date				12-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
Acenaphthene	0.05	7.9	96	< 0.02	0.06	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.07
Acenaphthylene	0.05	0.15	0.15	< 0.02	0.14	0.03	0.04	**0.32**	< 0.02	0.05	**0.23**
Anthracene	0.05	0.67	0.67	< 0.02	0.28	0.06	0.03	0.3	0.03	0.05	< 0.02
Benzo(a)anthracene	0.05	0.5	0.96	< 0.02	**0.58**	0.15	0.08	**0.78**	0.06	0.17	**0.95**
Benzo(a)pyrene	0.05	0.3	0.3	< 0.02	**0.54**	0.11	0.06	**1.04**	0.04	0.15	**0.85**
Benzo(b)fluoranthene	0.05	0.78	0.96	< 0.02	**0.95**	0.21	0.15	**3.28**	0.07	0.21	**1.08**
Benzo(g,h,i)perylene	0.1	6.6	9.6	< 0.02	0.4	0.08	0.08	1.51	< 0.02	< 0.02	0.37
Benzo(k)fluoranthene	0.05	0.78	0.96	< 0.02	0.34	0.11	0.05	**1.09**	0.03	0.06	0.41
Chrysene	0.05	7	9.6	< 0.02	0.57	0.13	0.09	0.9	0.06	0.18	0.9
Dibenzo(a,h)anthracene	0.1	0.1	0.1	< 0.02	0.1	< 0.02	< 0.02	**0.43**	< 0.02	< 0.02	0.09
Fluoranthene	0.05	0.69	9.6	0.03	**0.96**	0.23	0.1	**1.13**	0.09	0.24	**1.39**
Fluorene	0.05	62	62	< 0.02	0.09	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.08
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	< 0.02	0.37	0.07	0.05	**1.39**	0.03	0.08	0.35
Methylnaphthalene, 1-*	0.05	0.99	76	0.31	0.06	< 0.02	< 0.02	0.02	< 0.02	< 0.02	0.04
Methylnaphthalene, 2-*	0.05	0.99	76	0.43	0.09	< 0.02	< 0.02	0.03	< 0.02	< 0.02	0.04
Methylnaphthalene (1-+2-)	0.1	0.99	76	0.74	0.15	< 0.04	< 0.04	0.05	< 0.04	< 0.04	0.09
Naphthalene	0.05	0.6	9.6	0.32	0.13	0.02	0.02	0.03	< 0.01	0.02	0.06
Phenanthrene	0.05	6.2	12	0.23	0.89	0.15	0.06	0.32	0.06	0.12	0.98
Pyrene	0.05	78	96	0.04	0.86	0.2	0.08	0.99	0.08	0.22	1.14

Table 6.2
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-20	BH14-21	BH14-22	BH14-23	BH14-25	BH14-26	BH14-27	BH14-27
Sample No.				SS1A	SS1	SS1	SS1	SS1	SS3	SS2	DUP-10
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.8	0-0.8	0-0.8	0-0.8	0-1.5	1.5-2.3	0.8-1.5	0.8-1.5
Laboratory ID				1433170-21	1433170-23	1433170-25	1433170-26	1433313-03	1433313-05	1433313-07	1433313-12
Sample Date				12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14
Acenaphthene	0.05	7.9	96	< 0.02	< 0.02	0.04	0.1	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthylene	0.05	0.15	0.15	0.11	0.02	**0.2**	0.07	0.03	< 0.02	< 0.02	< 0.02
Anthracene	0.05	0.67	0.67	0.11	0.02	0.28	0.2	0.05	0.08	0.03	< 0.02
Benzo(a)anthracene	0.05	0.5	0.96	0.32	0.08	**0.59**	0.45	0.13	0.09	0.08	0.03
Benzo(a)pyrene	0.05	0.3	0.3	**0.43**	0.1	**0.63**	**0.52**	0.11	0.08	0.05	0.03
Benzo(b)fluoranthene	0.05	0.78	0.96	0.44	0.09	**0.92**	**0.8**	0.16	0.1	0.08	0.09
Benzo(g,h,i)perylene	0.1	6.6	9.6	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Benzo(k)fluoranthene	0.05	0.78	0.96	0.16	0.05	0.37	0.32	0.06	0.03	0.03	0.04
Chrysene	0.05	7	9.6	0.31	0.12	0.59	0.48	0.13	0.09	0.07	0.06
Dibenzo(a,h)anthracene	0.1	0.1	0.1	0.07	< 0.02	0.1	0.07	0.02	0.02	< 0.02	< 0.02
Fluoranthene	0.05	0.69	9.6	0.58	0.17	**1.3**	**0.79**	0.19	0.2	0.18	0.07
Fluorene	0.05	62	62	< 0.02	< 0.02	0.05	0.07	< 0.02	< 0.02	< 0.02	< 0.02
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	0.23	0.06	**0.4**	0.23	0.08	0.07	0.03	0.03
Methylnaphthalene, 1-*	0.05	0.99	76	< 0.02	< 0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	< 0.02
Methylnaphthalene, 2-*	0.05	0.99	76	< 0.02	< 0.02	< 0.02	0.03	< 0.02	0.03	< 0.02	< 0.02
Methylnaphthalene (1-+2-)	0.1	0.99	76	< 0.04	< 0.04	< 0.04	0.05	< 0.04	0.05	< 0.04	< 0.04
Naphthalene	0.05	0.6	9.6	0.02	< 0.01	0.04	0.1	0.01	0.07	< 0.01	0.01
Phenanthrene	0.05	6.2	12	0.18	0.08	0.72	0.64	0.15	0.16	0.07	0.05
Pyrene	0.05	78	96	0.57	0.15	1.14	0.63	0.16	0.17	0.16	0.06

Table 6.2
Summary of Polynuclear Aromatic Hydrocarbon Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location Sample No. Sample Depth (m) Laboratory ID Sample Date		Non-Potable Groundwater (Table 3) Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	BH14-27 Average	BH14-27 RPD	BH14-28 SS2 0.8-1.5 1433313-09 15-Aug-14	BH14-28 DUP-11 0.8-1.5 1433313-13 15-Aug-14	BH14-28 Average	BH14-28 RPD	BH14-29 SS1 0-1.5 1433313-10 15-Aug-14	
Acenaphthene	0.05	7.9	96	< 0.02	-	< 0.02	< 0.02	< 0.02	-	< 0.02	
Acenaphthylene	0.05	0.15	0.15	< 0.02	-	0.08	0.1	0.09	-	**0.24**	
Anthracene	0.05	0.67	0.67	< 0.02	-	0.08	0.08	0.08	-	0.15	
Benzo(a)anthracene	0.05	0.5	0.96	0.055	-	0.24	0.27	0.255	12%	0.32	
Benzo(a)pyrene	0.05	0.3	0.3	0.04	-	0.23	0.27	0.25	16%	**0.32**	
Benzo(b)fluoranthene	0.05	0.78	0.96	0.085	-	0.3	0.3	0.3		0.51	
Benzo(g,h,i)perylene	0.1	6.6	9.6	0.02	-	0.09	< 0.02	< 0.02	-	0.12	
Benzo(k)fluoranthene	0.05	0.78	0.96	0.035	-	0.1	0.15	0.125	40%	0.27	
Chrysene	0.05	7	9.6	0.065	-	0.23	0.21	0.22	9%	0.37	
Dibenzo(a,h)anthracene	0.1	0.1	0.1	< 0.02	-	0.04	0.04	0.04	-	0.09	
Fluoranthene	0.05	0.69	9.6	0.125	-	0.4	0.38	0.39	5%	0.39	
Fluorene	0.05	62	62	< 0.02	-	< 0.02	< 0.02	< 0.02	-	< 0.02	
Indeno(1,2,3,c,d)pyrene	0.1	0.38	0.76	0.03	-	0.17	0.16	0.165	6%	0.32	
Methylnaphthalene, 1-*	0.05	0.99	76	< 0.02	-	< 0.02	< 0.02	< 0.02	-	< 0.02	
Methylnaphthalene, 2-*	0.05	0.99	76	< 0.02	-	< 0.02	< 0.02	< 0.02	-	< 0.02	
Methylnaphthalene (1-+2-)	0.1	0.99	76	< 0.04	-	< 0.04	< 0.04	< 0.04	-	< 0.04	
Naphthalene	0.05	0.6	9.6	0.01	-	0.01	0.01	0.01	-	0.03	
Phenanthrene	0.05	6.2	12	0.06	-	0.15	0.12	0.135	22%	0.14	
Pyrene	0.05	78	96	0.11	-	0.48	0.49	0.485	2%	0.37	

Table 7.1
Summary of Metals and Inorganics Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		MW14-2	MW14-4	MW14-5	DBMW14-2	DBMW14-4	BH14-1	BH14-2	BH14-3
Sample No.				SU2	SU4	SU5	SU2	SU4	SU1	SU-2	SU3
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1433286-12	1433286-23	1433170-34	1446092-02	1433286-04	1433286-08	1446092-03	1433286-06
Sample Date				14-Aug-14	14-Aug-14	12-Aug-14	11-Nov-14	14-Aug-14	14-Aug-14	11/11/2014	14-Aug-14
Antimony	1	7.5	40	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Arsenic	1	18	18	4	< 1.0	7.4	< 1.0	3.6	4.3	< 1.0	< 1.0
Barium	5	390	670	128	28	227	84.6	102	149	135	40.1
Beryllium	2	4	8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Available)	0.5	1.5	2	< 0.5	< 0.5	< 0.5	-	0.5	1.3	-	< 0.5
Boron (Total)	5	120	120	6.1	2	7.7	5.8	6.2	9.6	7	2.7
Cadmium	1	1.2	1.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5	< 0.5
Chromium (Total)	5	160	160	18.5	5.6	19.5	13.3	21.1	22.1	11.1	7.8
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cobalt	2	22	80	5	1.7	5.6	4.2	5.2	6.1	3.7	2.2
Copper	5	140	230	25.1	5.3	57.7	15.1	20.7	27.6	17	9.3
Lead	10	120	120	86.3	14.8	**279**	37.8	55.6	118	44.5	20.9
Mercury	0.1	0.27	3.9	0.1	< 0.1	**0.4**	< 0.1	0.1	0.2	0.1	< 0.1
Molybdenum	2	6.9	40	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nickel	5	100	270	12.6	3.2	14.9	8.7	13.6	14.3	9.4	4.6
Selenium	1	2.4	5.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Silver	0.5	20	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Thallium	1	1	3.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Uranium	1	23	33	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	10	86	86	22	9.4	21.6	24.2	25.2	30.5	14.3	12
Zinc	30	340	340	156	34.1	**447**	75.6	87.8	130	172	38.2

Table 7.1
Summary of Metals and Inorganics Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-3	BH14-3	BH14-3	BH14-5	BH14-7	BH14-9	BH14-10	BH14-11
Sample No.				DUP-9			SU5	SU7	SU9	SU10	SU11
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	Average	RPD	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1433286-28			1433286-09	1433286-10	1433286-07	1433286-05	1433286-11
Sample Date				14-Aug-14			14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
Antimony	1	7.5	40	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Arsenic	1	18	18	< 1.0	< 1.0	-	< 1.0	3.6	< 1.0	< 1.0	2.9
Barium	5	390	670	30.7	35.4	27%	53	**1940**	78.5	53	77.1
Beryllium	2	4	8	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Available)	0.5	1.5	2	< 0.5	< 0.5	-	< 0.5	0.8	1.1	< 0.5	1
Boron (Total)	5	120	120	2.2	2.45	-	4.3	5.5	5.8	4	6
Cadmium	1	1.2	1.9	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium (Total)	5	160	160	6	6.9	26%	5.7	30.2	16.9	10.7	16.4
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cobalt	2	22	80	1.7	1.95	-	2	6.9	4.6	3.5	4.5
Copper	5	140	230	6.8	8.05	31%	4.4	30.8	15.2	11.5	16.2
Lead	10	120	120	16.8	18.85	22%	7.6	**123**	20.4	22.8	18.9
Mercury	0.1	0.27	3.9	< 0.1	< 0.1	-	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Molybdenum	2	6.9	40	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nickel	5	100	270	3.5	4.05	-	4.4	17.7	10.2	7.2	10.2
Selenium	1	2.4	5.5	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Silver	0.5	20	40	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Thallium	1	1	3.3	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Uranium	1	23	33	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	10	86	86	9.7	10.85	21%	8.3	34.6	21.7	16	19.9
Zinc	30	340	340	28.4	33.3	29%	7.5	110	51	43.2	53.1

Table 7.1
Summary of Metals and Inorganics Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-13	BH14-13	BH14-13	BH14-13	BH14-19	BH14-20	BH14-22	BH14-23
Sample No.				SU13	DUP-7			SU19	SU20	SU22	SU23
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	0-0.1	Average	RPD	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1433286-13	1433286-26			1433286-19	1446092-04	1446092-05	1446092-06
Sample Date				14-Aug-14	14-Aug-14			14-Aug-14	11-Nov-14	11-Nov-14	11-Nov-14
Antimony	1	7.5	40	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0
Arsenic	1	18	18	2.7	< 1.0	1.85	-	< 1.0	< 1.0	< 1.0	< 1.0
Barium	5	390	670	75.7	76.5	76.1	1%	25.3	88.2	69	82.3
Beryllium	2	4	8	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Available)	0.5	1.5	2	< 0.5	< 0.5	< 0.5	-	0.6	-	-	-
Boron (Total)	5	120	120	4.4	3	3.7	-	2.1	6.1	4.5	4.4
Cadmium	1	1.2	1.9	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Chromium (Total)	5	160	160	11.9	9.5	10.7	22%	4.9	19.6	14.2	14.2
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2
Cobalt	2	22	80	3.7	2.7	3.2	-	1.4	4.9	4	4.1
Copper	5	140	230	17.8	14	15.9	24%	4.7	15.9	11.4	8.4
Lead	10	120	120	47.4	52.1	49.75	9%	6.2	17.8	34.7	12.9
Mercury	0.1	0.27	3.9	< 0.1	< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	2	6.9	40	< 1.0	< 1.0	< 1.0	-	< 1.0	1	< 1.0	< 1.0
Nickel	5	100	270	8.5	6.4	7.45	28%	3.4	11	8.2	8.7
Selenium	1	2.4	5.5	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0
Silver	0.5	20	40	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Thallium	1	1	3.3	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0
Uranium	1	23	33	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	10	86	86	16.6	12.5	14.55	28%	7.8	26.1	21.7	21.3
Zinc	30	340	340	65.2	53.7	59.45	19%	16.6	62.9	50.5	50.2

Table 7.1
Summary of Metals and Inorganics Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-23	BH14-23	BH14-23	BH14-25	BH14-26	BH14-27	BH14-28	BH14-29
Sample No.				DUP-1			SU25	SU26	SU27	SU-28	SU29
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	Average	RPD	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory ID				1446092-07			1433286-22	1433286-25	1433286-24	1433286-21	1433286-20
Sample Date				11-Nov-14			14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
Antimony	1	7.5	40	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Arsenic	1	18	18	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	13.1
Barium	5	390	670	92.5	87.4		40.2	45.2	46.3	46.8	86.8
Beryllium	2	4	8	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Available)	0.5	1.5	2	-	-	-	0.9	< 0.5	0.7	0.5	0.5
Boron (Total)	5	120	120	4.8	4.6	-	4.5	3.1	4.8	3.9	5.1
Cadmium	1	1.2	1.9	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium (Total)	5	160	160	16	15.1	12%	9.6	8.5	10.7	10.9	15.3
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cobalt	2	22	80	4.4	4.25	-	2.9	2.7	3.4	3.3	2.9
Copper	5	140	230	9.1	8.75	8%	7.8	7.1	9.7	8.7	20.8
Lead	10	120	120	14.1	13.5	9%	13	8.4	17.5	16.4	89.5
Mercury	0.1	0.27	3.9	< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	0.1
Molybdenum	2	6.9	40	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nickel	5	100	270	9.4	9.05	8%	5.4	5.4	6	6.2	8.8
Selenium	1	2.4	5.5	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Silver	0.5	20	40	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Thallium	1	1	3.3	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Uranium	1	23	33	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	10	86	86	23.9	22.6	12%	17.3	11.7	18.5	18.5	12.8
Zinc	30	340	340	53.2	51.7	6%	57.6	26.3	53.3	34.4	112

Table 7.1
Summary of Metals and Inorganics Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		SU-1	SU-2	SU-3	SU-4	SU-5	SU-5	SU-5	SU-5
Sample No.				SU-1	SU2	SU3	SU4	SU5	DUP-8		
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	Average	RPD
Laboratory ID				1433286-14	1433286-15	1433286-16	1433286-17	1433286-18	1433286-27		
Sample Date				14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14		
Antimony	1	7.5	40	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-
Arsenic	1	18	18	< 1.0	< 1.0	2.7	3.5	3.6	3.3	3.45	-
Barium	5	390	670	66.6	38.3	74.3	32.9	307	78.1	192.55	119%
Beryllium	2	4	8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-
Boron (Available)	0.5	1.5	2	0.8	0.8	1.2	1.1	1.2	1.1	1.15	-
Boron (Total)	5	120	120	5	3.6	7.5	4.8	6.6	6.5	6.55	2%
Cadmium	1	1.2	1.9	< 0.5	< 0.5	0.5	< 0.5	0.5	< 0.5	0.5	-
Chromium (Total)	5	160	160	17.4	10.1	18.2	6.6	15.3	16.6	15.95	8%
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-
Cobalt	2	22	60	3.8	2.4	4.4	2.9	4.5	4.8	4.65	-
Copper	5	140	230	12.3	8.8	15	9.5	16.1	15.9	16	1%
Lead	10	120	120	16.1	13.9	27.1	20.1	46.4	45.4	45.9	2%
Mercury	0.1	0.27	3.9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.15	-
Molybdenum	2	6.9	40	< 1.0	< 1.0	< 1.0	1.5	1	< 1.0	1	-
Nickel	5	100	270	8.8	5.4	10.6	6.5	10.2	10.6	10.4	4%
Selenium	1	2.4	5.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-
Silver	0.5	20	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-
Thallium	1	1	3.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-
Uranium	1	23	33	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-
Vanadium	10	86	86	23	13.3	23.2	10	22.1	23	22.55	4%
Zinc	30	340	340	58.7	36.9	80	58	88.1	84.2	86.15	5%

Table 7.1
Summary of Metals and Inorganics Analyses -
Surface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		SU-6							
Sample No.				SU-6							
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.1							
Laboratory ID				1446092-01							
Sample Date				11-Nov-14							
Antimony	1	7.5	40	< 1.0							
Arsenic	1	18	18	< 1.0							
Barium	5	390	670	122							
Beryllium	2	4	8	< 1.0							
Boron (Available)	0.5	1.5	2	-							
Boron (Total)	5	120	120	8.8							
Cadmium	1	1.2	1.9	< 0.5							
Chromium (Total)	5	160	160	15.6							
Chromium (vi)	0.2	8	8	< 0.2							
Cobalt	2	22	80	4.5							
Copper	5	140	230	16.5							
Lead	10	120	120	46.5							
Mercury	0.1	0.27	3.9	< 0.1							
Molybdenum	2	6.9	40	< 1.0							
Nickel	5	100	270	10.1							
Selenium	1	2.4	5.5	< 1.0							
Silver	0.5	20	40	< 0.5							
Thallium	1	1	3.3	< 1.0							
Uranium	1	23	33	< 1.0							
Vanadium	10	86	86	22.5							
Zinc	30	340	340	150							

Table 7.2
Summary of Metals and Inorganics Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		MW14-1	MW14-2	MW14-2	MW14-2	MW14-2	MW14-3	MW14-4	MW14-5
Sample No.				SS2	SS2	DUP-2			SS2	SS3	SS1
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0.8-1.5	0.8-1.5	0.8-1.5	Average	RPD	0.8-1.5	1.5-3.0	0-0.8
Laboratory ID				1433170-28	1433106-01	1433106-16			1433170-30	1433313-01	1433170-32
Sample Date				12-Aug-14	11-Aug-14	11-Aug-14			12-Aug-14	15-Aug-14	12-Aug-14
Antimony	1	7.5	40	**18.5**	**9.4**	**11.8**	**10.6**	23%	< 1.0	< 1.0	4.6
Arsenic	1	18	18	**19.1**	**25.9**	**36.5**	**31.2**	34%	4.9	5.2	8.4
Barium	5	390	670	268	370	386	378	4%	179	150	187
Beryllium	2	4	8	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0
Boron (Available)	0.5	1.5	2	< 0.5	< 0.5	0.6	0.6	-	< 0.5	1.2	< 0.5
Boron (Total)	5	120	120	8.1	9.3	10.4	9.85	11%	10.4	10.2	4.6
Cadmium	1	1.2	1.9	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Chromium (Total)	5	160	160	26.1	41.4	39.9	40.65	4%	20.1	17.8	17.1
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2
Cobalt	2	22	80	8.9	16.1	18.2	17.15	12%	6	6.4	6.8
Copper	5	140	230	62.9	127	134	130.5	5%	20.2	38.9	37.9
Lead	10	120	120	**322**	**847**	**848**	**847.5**	0%	34.8	92.5	**203**
Mercury	0.1	0.27	3.9	**0.7**	**0.6**	**0.4**	**0.5**	-	**1.4**	0.2	0.2
Molybdenum	2	6.9	40	3.7	5.6	6.8	6.2	19%	1	1	1.6
Nickel	5	100	270	21.9	48.2	44.6	46.4	8%	13.5	13.4	14.5
Selenium	1	2.4	5.5	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0
Silver	0.5	20	40	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Thallium	1	1	3.3	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0
Uranium	1	23	33	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0
Vanadium	10	86	86	31.5	39.7	44.6	42.15	12%	24.9	25.9	25.9
Zinc	30	340	340	332	**841**	**718**	**779.5**	16%	102	98.3	177

Table 7.2
Summary of Metals and Inorganics Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		DBMW14-2	DBMW14-4	BH14-1	BH14-2	BH14-3	BH14-4	BH14-5	BH14-6
Sample No.				SS1	SS1	SS1	SS1	SS1	SS3	SS2	SS1
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-1.5	0-0.6	0-0.6	0-1.2	0-1.5	1.2-2.4	0.8-1.5	0-0.9
Laboratory ID				1433170-35	1433286-01	1433170-01	1433170-02	1433170-04	1433170-06	1433106-03	1433286-03
Sample Date				12-Aug-14	13-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	11-Aug-14	14-Aug-14
Antimony	1	7.5	40	3.1	4.5	4.4	4.2	**9.2**	3.2	**14.7**	< 1.0
Arsenic	1	18	18	3.7	7.4	6.5	16.5	**20.2**	7.6	16.6	3.6
Barium	5	390	670	192	319	236	245	**463**	174	**1610**	339
Beryllium	2	4	8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Available)	0.5	1.5	2	< 0.5	< 0.5	0.8	0.8	1	0.9	0.9	< 0.5
Boron (Total)	5	120	120	7.5	8.2	10.2	10.1	11.4	9	11.2	4.9
Cadmium	1	1.2	1.9	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium (Total)	5	160	160	16.9	18.1	27.4	31.1	24.1	25.4	19.7	15.3
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cobalt	2	22	80	5.3	5.8	7.8	10.7	10.7	7.7	11.8	4.3
Copper	5	140	230	**189**	51.1	43	55.3	115	55.5	105	19
Lead	10	120	120	73.7	**327**	**222**	**189**	**526**	**122**	**2930**	84.9
Mercury	0.1	0.27	3.9	0.2	**0.5**	**0.3**	0.2	**1.2**	0.2	**1.9**	0.2
Molybdenum	2	6.9	40	< 1.0	1.1	< 1.0	3.4	3.8	4.2	3.5	< 1.0
Nickel	5	100	270	12.9	13.9	18	24.7	24.7	21.6	26.4	9.3
Selenium	1	2.4	5.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Silver	0.5	20	40	< 0.5	< 0.5	< 0.5	< 0.5	1	< 0.5	< 0.5	< 0.5
Thallium	1	1	3.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Uranium	1	23	33	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	10	86	86	22.5	23.9	34.1	35.3	36.3	27.7	31.4	20.3
Zinc	30	340	340	227	290	166	200	**467**	196	**616**	49.7

Table 7.2
Summary of Metals and Inorganics Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-7	BH14-8	BH14-9	BH14-9	BH14-9	BH14-9	BH14-10	BH14-11
Sample No.				SS1	SS2	SS2	DUP-5			SS3	SS2
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.8	0.8-1.5	1.2-2.4	1.2-2.4	Average	RPD	3.0-3.9	0.8-1.5
Laboratory ID				1433106-05	1433106-06	1433170-08	1433170-38			1433170-10	1433170-11
Sample Date				11-Aug-14	11-Aug-14	12-Aug-14	12-Aug-14			12-Aug-14	12-Aug-14
Antimony	1	7.5	40	3	**12.1**	6.2	6.1	6.15	2%	3.2	6.8
Arsenic	1	18	18	3.9	**23.2**	**19.5**	**18.4**	**18.95**	6%	4.5	**23**
Barium	5	390	670	**3990**	**483**	289	324	306.5	11%	130	**445**
Beryllium	2	4	8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0
Boron (Available)	0.5	1.5	2	< 0.5	0.7	1.3	0.9	1.1	-	< 0.5	0.8
Boron (Total)	5	120	120	5.3	10.8	13.6	12.6	13.1	8%	8	14.4
Cadmium	1	1.2	1.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5
Chromium (Total)	5	160	160	32.9	22.9	31.3	30.3	30.8	3%	26.4	22.6
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2
Cobalt	2	22	80	7.7	12.5	13.9	12.3	13.1	12%	10.1	12.6
Copper	5	140	230	51.1	**1060**	**631**	**365**	**498**	53%	30.1	52.3
Lead	10	120	120	94.4	**2660**	**286**	**251**	**268.5**	13%	49.7	**561**
Mercury	0.1	0.27	3.9	0.2	**0.4**	**1.9**	**3.2**	**2.55**	51%	0.2	**0.3**
Molybdenum	2	6.9	40	1.2	5.5	4.7	3.4	4.05	-	< 1.0	4.1
Nickel	5	100	270	19	30.6	34.4	33.6	34	2%	21	26.3
Selenium	1	2.4	5.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0
Silver	0.5	20	40	< 0.5	< 0.5	< 0.5	0.6	0.6	-	< 0.5	< 0.5
Thallium	1	1	3.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0
Uranium	1	23	33	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0
Vanadium	10	86	86	33.9	38.7	41.3	40.6	40.95	2%	35.3	37.2
Zinc	30	340	340	122	**789**	**546**	**446**	**496**	20%	99.9	294

Table 7.2
Summary of Metals and Inorganics Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-12	BH14-13	BH14-14	BH14-15	BH14-16	BH14-17	BH14-18	BH14-19
Sample No.				SS1	SS2	SS3	SS2	SS2	SS2	SS3	SS2
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-1.5	0.8-1.5	1.5-2.3	0.8-1.5	0.8-1.5	0.8-1.5	1.5-2.3	0.8-1.5
Laboratory ID				1433170-13	1433106-08	1433106-10	1433106-12	1433106-14	1433170-15	1433170-17	1433170-19
Sample Date				12-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
Antimony	1	7.5	40	**8.3**	7	**13.7**	**11.2**	5.2	3.1	4.7	6.1
Arsenic	1	18	18	**52.8**	**49.8**	12	**20.1**	**26.8**	16.4	9.6	**18.2**
Barium	5	390	670	353	**953**	272	389	329	191	180	385
Beryllium	2	4	8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Available)	0.5	1.5	2	< 0.5	1	1.4	0.5	1.1	< 0.5	< 0.5	0.7
Boron (Total)	5	120	120	12.5	13.9	9.2	8.1	13.7	5.9	8.9	9.5
Cadmium	1	1.2	1.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium (Total)	5	160	160	28.8	29.5	37.5	95.3	25.6	18.6	22.8	32.4
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cobalt	2	22	80	15.6	17.1	10.6	13.4	12.3	11.9	7.9	10.6
Copper	5	140	230	82.8	120	108	66.1	78.1	65.6	82.4	**152**
Lead	10	120	120	**219**	**1250**	**574**	**2530**	**327**	**189**	**316**	**1570**
Mercury	0.1	0.27	3.9	**0.4**	**0.8**	**0.3**	**0.4**	**0.6**	**0.4**	**0.9**	**3.7**
Molybdenum	2	6.9	40	**11.9**	**7**	2.3	4.1	4.7	4	1.6	3.4
Nickel	5	100	270	42.3	32	29.4	29.7	29.6	25.9	16.3	73.4
Selenium	1	2.4	5.5	< 1.0	**18.5**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Silver	0.5	20	40	< 0.5	0.6	< 0.5	1	< 0.5	< 0.5	< 0.5	1.1
Thallium	1	1	3.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Uranium	1	23	33	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	10	86	86	51.1	32.2	38.9	37.9	40.6	35.3	33.8	30
Zinc	30	340	340	**415**	**615**	172	173	**455**	172	262	**657**

Table 7.2
Summary of Metals and Inorganics Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location		Non-Potable Groundwater (Table 3)		BH14-20	BH14-21	BH14-22	BH14-23	BH14-25	BH14-26	BH14-27	BH14-27
Sample No.				SS1A	SS1	SS1	SS1	SS1	SS3	SS2	DUP-10
Sample Depth (m)		Residential/ Parkland/ Institutional	Industrial/ Commercial/ Community	0-0.8	0-0.8	0-0.8	0-0.8	0-1.5	1.5-2.3	0.8-1.5	0.8-1.5
Laboratory ID				1433170-21	1433170-23	1433170-25	1433170-26	1433313-03	1433313-05	1433313-07	1433313-12
Sample Date				12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14
Antimony	1	7.5	40	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.8	4.8	**23**
Arsenic	1	18	18	4.7	4.8	5.6	4.5	4.3	15.3	11.2	15.7
Barium	5	390	670	99.8	119	113	199	134	321	**408**	**484**
Beryllium	2	4	8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Available)	0.5	1.5	2	< 0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5	0.7	0.7
Boron (Total)	5	120	120	4.1	7.8	4.9	6.9	5.7	5.7	9.2	6.1
Cadmium	1	1.2	1.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.7**	**4.4**
Chromium (Total)	5	160	160	14.5	20.7	21.7	20.2	16.1	36.9	22.6	17.6
Chromium (vi)	0.2	8	8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cobalt	2	22	80	4.7	7.2	7.7	6.7	5.7	11.8	9.5	9.7
Copper	5	140	230	40.4	30.5	52.6	35.7	56.7	58.8	43.4	119
Lead	10	120	120	98.7	65	78.5	87.4	88.1	**1080**	**487**	**791**
Mercury	0.1	0.27	3.9	0.2	0.2	0.2	**0.4**	0.2	0.2	0.2	< 0.1
Molybdenum	2	6.9	40	1.1	< 1.0	1.3	1.1	< 1.0	4.6	2.3	3.1
Nickel	5	100	270	10.6	15	16.1	13.3	11.2	29	18.9	24.4
Selenium	1	2.4	5.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Silver	0.5	20	40	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.7	< 0.5	< 0.5
Thallium	1	1	3.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Uranium	1	23	33	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	10	86	86	21.2	29.9	30.9	28.1	26	37.2	33.3	31.4
Zinc	30	340	340	105	85.6	172	100	109	**536**	**503**	**1090**

Table 7.2
Summary of Metals and Inorganics Analyses -
Subsurface Soil

Parameters	RL	2011 EPA Standards Full Depth Generic Site Condition Standards		Analytical Results - µg/g							
Sample Location Sample No. Sample Depth (m) Laboratory ID Sample Date		Non-Potable Groundwater (Table 3) Residential/ Parkland/ Institutional	Non-Potable Groundwater (Table 3) Industrial/ Commercial/ Community	BH14-27 Average	BH14-27 RPD	BH14-28 SS2 0.8-1.5 1433313-09 15-Aug-14	BH14-28 DUP-11 0.8-1.5 1433313-13 15-Aug-14	BH14-28 Average	BH14-28 RPD	BH14-29 SS1 0-1.5 1433313-10 15-Aug-14	
Antimony	1	7.5	40	**13.9**	131%	< 1.0	2.9	1.95	-	6.9	
Arsenic	1	18	18	13.45	33%	2.4	3.5	2.95	-	**24.6**	
Barium	5	390	670	**446**	17%	234	190	212	21%	**978**	
Beryllium	2	4	8	< 1.0	-	< 1.0	< 1.0	< 1.0	-	< 1.0	
Boron (Available)	0.5	1.5	2	0.7	-	< 0.5	< 0.5	< 0.5	-	0.6	
Boron (Total)	5	120	120	7.65	41%	6.9	4.8	5.85	-	10.4	
Cadmium	1	1.2	1.9	**3.05**	-	< 0.5	< 0.5	< 0.5	-	< 0.5	
Chromium (Total)	5	160	160	20.1	25%	32.3	24.6	28.45	27%	98.6	
Chromium (vi)	0.2	8	8	< 0.2	-	< 0.2	< 0.2	< 0.2	-	< 0.2	
Cobalt	2	22	80	9.6	2%	10.4	8.6	9.5	19%	11.7	
Copper	5	140	230	81.2	93%	44.2	38.6	41.4	14%	123	
Lead	10	120	120	**639**	48%	75.2	64	69.6	16%	**584**	
Mercury	0.1	0.27	3.9	0.15	-	0.2	0.2	0.2	-	**1.1**	
Molybdenum	2	6.9	40	2.7	-	< 1.0	1.2	1.2	-	6.4	
Nickel	5	100	270	21.65	25%	22.7	18.4	20.55	21%	42.9	
Selenium	1	2.4	5.5	< 1.0	-	< 1.0	< 1.0	< 1.0	-	< 1.0	
Silver	0.5	20	40	< 0.5	-	< 0.5	< 0.5	< 0.5	-	0.5	
Thallium	1	1	3.3	< 1.0	-	< 1.0	< 1.0	< 1.0	-	< 1.0	
Uranium	1	23	33	< 1.0	-	< 1.0	< 1.0	< 1.0	-	< 1.0	
Vanadium	10	86	86	32.35	6%	46.4	39.7	43.05	16%	36.9	
Zinc	30	340	340	**796.5**	74%	110	99.4	104.7	10%	**1720**	

Notes on Ground Water Analytical Summary Tables (Tables 8-11)

1) All Units in micrograms per litre (µg/L) Except Where Noted Otherwise.
2) RL = MOE 2011 Analytical Protocol Reporting Limit.
3) DUP = Quality Assurance/Quality Control Duplicate Sample.
4) RPD = Relative Percent Difference (Between Primary and Duplicate Samples).
5) - = Parameter Not Analysed or No Value Derived.
6) < = Less Than Laboratory Analytical Method Detection Limit.
7) masl = Metres Above Sea Level.
8) **Bold** Parameter Concentration Exceeds 2011 EPA Standard (Table 3) for Non-Potable Ground Water Conditions and Coarse Textured Soil.
9) 2011 EPA Standards = Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, Ministry of the Environment, April 15, 2011.

Table 8
Summary of Petroleum Hydrocarbon Ground Water Analyses

Parameters	RL	2011 EPA Standards	Analytical Results - µg/L							
Sample Location		Full Depth Generic	MW14-1	MW14-2	MW14-3	MW14-4	MW14-4	MW14-4	MW14-4	MW14-5
Sample No.		Site Condition Standards	MW14-1	MW14-2	MW14-3	MW14-4	Dup-1			MW14-5
Laboratory ID		Non-Potable Groundwater	1435231-05	1435231-06	1435231-07	1435231-08	1435231-10	Average	RPD	1435231-09
Sample Date (mm/dd/yy)		(Table 3)	08/27/2014	08/27/2014	08/27/2014	08/27/2014	08/27/2014			08/27/2014
PHC F1 (C6 - C10)*	25	750**	< 25	< 25	< 25	< 25	< 25	< 25	-	< 25
PHC F2 (>C10 - C16)	100	150**	< 100	< 100	< 100	< 100	< 100	< 100	-	< 100
PHC F3 (>C16 - C34)	500	500**	< 100	< 100	< 100	< 100	< 100	< 100	-	< 100
PHC F4 (>C34)	500	500**	< 100	< 100	< 100	< 100	< 100	< 100	-	< 100

Notes:
* F1 Fraction Does Not Include BTEX; However, the Proponent has the Choice as to Whether or not to Subtract BTEX from the Analytical Result.
** = For a Site to Meet This Standard There Must be no Evidence of Free Product, Including but not Limited to, Visible Petroleum Hydrocarbon Film or Sheen Present on Groundwater, Surface Water or in any Groundwater or Surface Water Samples.
PHC = Petroleum Hydrocarbons.

Table 9
Summary of Volatile Organic Compound Groundwater Analyses

Parameters	RL 2011	2011 EPA Standards	Analytical Results - µg/L							
Sample Location		Full Depth Generic	MW14-1	MW14-1	MW14-2	MW14-2	MW14-3	MW14-3	MW14-3	MW14-3
Sample No.		Site Condition Standards	MW14-1	MW14-1	MW14-2	MW14-2	MW14-3	MW14-3	Dup-2	
Laboratory ID		Non-Potable Groundwater	1435231-05	1444232-01	1435231-06	1444232-02	1435231-07	1444232-03	1444232-17	Average
Sample Date (mm/dd/yy)		(Table 3)	08/27/2014	10/29/2014	08/27/2014	10/29/2014	08/27/2014	10/29/2014	10/29/2014	
Acetone	30	130000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	0.5	44	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	2	85000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	5	380	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	0.5	5.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.2	0.79	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	1	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	2	82000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromoethane, 1,2- (Ethylene Dibromide	0.2	0.25	< 1.0	< 0.2	< 1.0	< 0.2	< 1.0	< 0.2	< 0.2	< 0.2
Dichlorobenzene, 1,2- (o-DCB)	0.5	4600	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3- (m-DCB)	0.5	9600	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4- (p-DCB)	0.5	8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	2	4400	< 0.5	< 1.0	< 0.5	< 1.0	< 0.5	< 1.0	< 1.0	< 1.0
Dichloroethane, 1,1- (1,1-DCA)	0.5	320	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,2- (1,2-DCA)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, 1,1- (1,1-DCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, cis-1,2- (c-1,2-DCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, trans-1,2- (t-1,2-DCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane (Methylene Chloride)	5	610	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Dichloropropane, 1,2-	0.5	16	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, 1,3-	0.5	5.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	2300	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexane	5	51	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Ethyl Ketone (MEK)	20	470000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl Isobutyl Ketone (MIBK)	20	140000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl Tert Butyl Ether (MTBE)	2	190	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Monochlorobenzene (Chlorobenzene)	0.5	630	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	0.5	1300	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	0.5	3.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	0.5	3.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene (PCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	18000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorobenzene, 1,2,4-	0.5	180	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1- (1,1,1-TCA)	0.5	640	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2- (1,1,2-TCA)	0.5	4.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene (TCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	5	2500	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes, m,p-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes, o-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes (total)	0.5	4200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Table 9
Summary of Volatile Organic Compound Groundwater Analyses

Parameters	RL 2011	2011 EPA Standards	Analytical Results - µg/L							
Sample Location		Full Depth Generic	MW14-3	MW14-4	MW14-4	MW14-4	MW14-4	MW14-4	MW14-5	MW14-5
Sample No.		Site Condition Standards		MW14-4	Dup-1			MW14-4	MW14-5	MW14-5
Laboratory ID		Non-Potable Groundwater	RPD	1435231-08	1435231-10	Average	RPD	1444232-04	1435231-09	1444051-11
Sample Date (mm/dd/yy)		(Table 3)		08/27/2014	08/27/2014			10/29/2014	08/27/2014	10/27/2014
Acetone	30	130000	-	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0
Benzene	0.5	44	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Bromodichloromethane	2	85000	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Bromoform	5	380	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Bromomethane	0.5	5.6	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.2	0.79	-	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2
Chloroform	1	2.4	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dibromochloromethane	2	82000	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dibromoethane, 1,2- (Ethylene Dibromide	0.2	0.25	-	< 1.0	< 1.0	< 1.0	-	< 0.2	< 1.0	< 0.2
Dichlorobenzene, 1,2- (o-DCB)	0.5	4600	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3- (m-DCB)	0.5	9600	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4- (p-DCB)	0.5	8	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	2	4400	-	< 0.5	< 0.5	< 0.5	-	< 1.0	< 0.5	< 1.0
Dichloroethane, 1,1- (1,1-DCA)	0.5	320	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	33.1
Dichloroethane, 1,2- (1,2-DCA)	0.5	1.6	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloroethylene, 1,1- (1,1-DCE)	0.5	1.6	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	**2.1**
Dichloroethylene, cis-1,2- (c-1,2-DCE)	0.5	1.6	-	< 0.5	< 0.5	< 0.5	-	< 0.5	**58.9**	**85.7**
Dichloroethylene, trans-1,2- (t-1,2-DCE)	0.5	1.6	-	< 0.5	< 0.5	< 0.5	-	< 0.5	**22.9**	**96.6**
Dichloromethane (Methylene Chloride)	5	610	-	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0
Dichloropropane, 1,2-	0.5	16	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloropropene, 1,3-	0.5	5.2	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	0.5	-	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	0.5	-	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	2300	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Hexane	5	51	-	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0
Methyl Ethyl Ketone (MEK)	20	470000	-	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0
Methyl Isobutyl Ketone (MIBK)	20	140000	-	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0
Methyl Tert Butyl Ether (MTBE)	2	190	-	< 2.0	< 2.0	< 2.0	-	< 2.0	< 2.0	< 2.0
Monochlorobenzene (Chlorobenzene)	0.5	630	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Styrene	0.5	1300	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	0.5	3.4	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	0.5	3.2	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Tetrachloroethylene (PCE)	0.5	1.6	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Toluene	0.5	18000	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Trichlorobenzene, 1,2,4-	0.5	180	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1- (1,1,1-TCA)	0.5	640	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2- (1,1,2-TCA)	0.5	4.7	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Trichloroethylene (TCE)	0.5	1.6	-	< 0.5	< 0.5	< 0.5	-	< 0.5	**164**	**190**
Trichlorofluoromethane	5	2500	-	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0
Vinyl Chloride	0.5	0.5	-	< 0.5	< 0.5	< 0.5	-	< 0.5	**4.7**	**58.9**
Xylenes, m,p-	-	-	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Xylenes, o-	-	-	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Xylenes (total)	0.5	4200	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5

Table 9
Summary of Volatile Organic Compound Groundwater Analyses

Parameters	RL 2011	2011 EPA Standards	Analytical Results - µg/L							
Sample Location		Full Depth Generic	BMW14-5	BMW14-5	DBMW14-5	DBMW14-5	DBMW14-2	DBMW14-2	DBMW14-4	DBMW14-4
Sample No.		Site Condition Standards	BMW14-5	BMW14-5	DBMW14-5	DBMW14-5	DBMW14-2	DBMW14-2	DBMW14-4	DBMW14-4
Laboratory ID		Non-Potable Groundwater	1435231-04	1444232-13	1435231-03	1444232-16	1435231-01	1444232-14	1435231-02	1444232-15
Sample Date (mm/dd/yy)		(Table 3)	08/27/2014	10/29/2014	08/27/2014	10/29/2014	08/27/2014	10/29/2014	08/27/2014	10/29/2014
Acetone	30	130000	12.8	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	0.5	44	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	2	85000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	5	380	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	0.5	5.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.2	0.79	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	1	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	2	82000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromoethane, 1,2- (Ethylene Dibromide	0.2	0.25	< 1.0	< 0.2	< 1.0	< 0.2	< 1.0	< 0.2	< 1.0	< 0.2
Dichlorobenzene, 1,2- (o-DCB)	0.5	4600	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3- (m-DCB)	0.5	9600	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4- (p-DCB)	0.5	8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	2	4400	< 0.5	< 1.0	< 0.5	< 1.0	< 0.5	< 1.0	< 0.5	< 1.0
Dichloroethane, 1,1- (1,1-DCA)	0.5	320	< 0.5	< 0.5	< 0.5	1	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,2- (1,2-DCA)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, 1,1- (1,1-DCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, cis-1,2- (c-1,2-DCE)	0.5	1.6	0.7	< 0.5	**11.1**	**1.7**	**6**	< 0.5	**1.8**	< 0.5
Dichloroethylene, trans-1,2- (t-1,2-DCE)	0.5	1.6	< 0.5	< 0.5	**3.4**	**3**	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane (Methylene Chloride)	5	610	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Dichloropropane, 1,2-	0.5	16	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, 1,3-	0.5	5.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	2300	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexane	5	51	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Ethyl Ketone (MEK)	20	470000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl Isobutyl Ketone (MIBK)	20	140000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl Tert Butyl Ether (MTBE)	2	190	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Monochlorobenzene (Chlorobenzene)	0.5	630	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	0.5	1300	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	0.5	3.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	0.5	3.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene (PCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	18000	< 0.5	< 0.5	0.9	< 0.5	0.9	< 0.5	0.7	< 0.5
Trichlorobenzene, 1,2,4-	0.5	180	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1- (1,1,1-TCA)	0.5	640	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2- (1,1,2-TCA)	0.5	4.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene (TCE)	0.5	1.6	< 0.5	< 0.5	1.2	< 0.5	1.2	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	5	2500	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes, m,p-	-	-	1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes, o-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes (total)	0.5	4200	1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Table 9
Summary of Volatile Organic Compound Groundwater Analyses

Parameters	RL 2011	2011 EPA Standards	Analytical Results - µg/L							
Sample Location		Full Depth Generic	MW-1	MW-1	MW-1	MW-1	MW-3	MW-4	MW-5	MW-6
Sample No.		Site Condition Standards	MW-1	Dup-1			MW-3	MW-4	MW-5	MW-6
Laboratory ID		Non-Potable Groundwater	1444051-01	1444051-12	Average	RPD	1444051-02	1444051-03	1444051-04	1444051-05
Sample Date (mm/dd/yy)		(Table 3)	10/27/2014	10/27/2014			10/27/2014	10/27/2014	10/27/2014	10/27/2014
Acetone	30	130000	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	0.5	44	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	2	85000	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	5	380	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	0.5	5.6	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.2	0.79	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	1	2.4	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	2	82000	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dibromoethane, 1,2- (Ethylene Dibromide	0.2	0.25	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorobenzene, 1,2- (o-DCB)	0.5	4600	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3- (m-DCB)	0.5	9600	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4- (p-DCB)	0.5	8	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	2	4400	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0
Dichloroethane, 1,1- (1,1-DCA)	0.5	320	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,2- (1,2-DCA)	0.5	1.6	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, 1,1- (1,1-DCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	-	**4.4**	< 0.5	< 0.5	< 0.5
Dichloroethylene, cis-1,2- (c-1,2-DCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	-	**750**	**5.9**	< 0.5	**9.9**
Dichloroethylene, trans-1,2- (t-1,2-DCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	-	**76**	0.7	< 0.5	1.2
Dichloromethane (Methylene Chloride)	5	610	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0	< 5.0
Dichloropropane, 1,2-	0.5	16	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, 1,3-	0.5	5.2	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	2300	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Hexane	5	51	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Ethyl Ketone (MEK)	20	470000	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0	< 5.0
Methyl Isobutyl Ketone (MIBK)	20	140000	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0	< 5.0
Methyl Tert Butyl Ether (MTBE)	2	190	< 2.0	< 2.0	< 2.0	-	< 2.0	< 2.0	< 2.0	< 2.0
Monochlorobenzene (Chlorobenzene)	0.5	630	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	0.5	1300	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	0.5	3.4	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	0.5	3.2	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene (PCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	18000	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorobenzene, 1,2,4-	0.5	180	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1- (1,1,1-TCA)	0.5	640	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2- (1,1,2-TCA)	0.5	4.7	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene (TCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	-	**722**	< 0.5	< 0.5	**3.4**
Trichlorofluoromethane	5	2500	< 1.0	< 1.0	< 1.0	-	< 1.0	1.6	< 1.0	< 1.0
Vinyl Chloride	0.5	0.5	< 0.5	< 0.5	< 0.5	-	**634**	**10.8**	< 0.5	**3.7**
Xylenes, m,p-	-	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes, o-	-	-	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes (total)	0.5	4200	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5

Table 9
Summary of Volatile Organic Compound Groundwater Analyses

Parameters	RL 2011	2011 EPA Standards	Analytical Results - µg/L							
Sample Location		Full Depth Generic	MW-7	MW-8	MW-8	MW-8	MW-8	MW-9	MW-10	MW-11
Sample No.		Site Condition Standards	MW-7	MW-8	Dup-3			MW-9	MW-10	MW-11
Laboratory ID		Non-Potable Groundwater	1444051-06	1444232-05	1444232-18	Average	RPD	1444051-07	1444232-06	1444232-07
Sample Date (mm/dd/yy)		(Table 3)	10/27/2014	10/29/2014	10/29/2014			10/27/2014	10/29/2014	10/29/2014
Acetone	30	130000	< 5.0	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0
Benzene	0.5	44	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Bromodichloromethane	2	85000	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Bromoform	5	380	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Bromomethane	0.5	5.6	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.2	0.79	< 0.2	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2
Chloroform	1	2.4	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dibromochloromethane	2	82000	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dibromoethane, 1,2- (Ethylene Dibromide	0.2	0.25	< 0.2	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2
Dichlorobenzene, 1,2- (o-DCB)	0.5	4600	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3- (m-DCB)	0.5	9600	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4- (p-DCB)	0.5	8	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	2	4400	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0
Dichloroethane, 1,1- (1,1-DCA)	0.5	320	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloroethane, 1,2- (1,2-DCA)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloroethylene, 1,1- (1,1-DCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloroethylene, cis-1,2- (c-1,2-DCE)	0.5	1.6	**17.8**	**12.9**	**13.2**	**13.05**	2%	< 0.5	**1.7**	< 0.5
Dichloroethylene, trans-1,2- (t-1,2-DCE)	0.5	1.6	**2.5**	1	1	1	-	< 0.5	< 0.5	< 0.5
Dichloromethane (Methylene Chloride)	5	610	< 5.0	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0
Dichloropropane, 1,2-	0.5	16	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloropropene, 1,3-	0.5	5.2	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	2300	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Hexane	5	51	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0
Methyl Ethyl Ketone (MEK)	20	470000	< 5.0	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0
Methyl Isobutyl Ketone (MIBK)	20	140000	< 5.0	< 5.0	< 5.0	< 5.0	-	< 5.0	< 5.0	< 5.0
Methyl Tert Butyl Ether (MTBE)	2	190	< 2.0	< 2.0	< 2.0	< 2.0	-	< 2.0	< 2.0	< 2.0
Monochlorobenzene (Chlorobenzene)	0.5	630	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Styrene	0.5	1300	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	0.5	3.4	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	0.5	3.2	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Tetrachloroethylene (PCE)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Toluene	0.5	18000	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Trichlorobenzene, 1,2,4-	0.5	180	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1- (1,1,1-TCA)	0.5	640	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2- (1,1,2-TCA)	0.5	4.7	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Trichloroethylene (TCE)	0.5	1.6	**87.9**	**53.5**	**54.3**	**53.9**	1%	< 0.5	1.1	< 0.5
Trichlorofluoromethane	5	2500	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0
Vinyl Chloride	0.5	0.5	**1.1**	**1.4**	**1.5**	**1.45**	-	< 0.5	< 0.5	< 0.5
Xylenes, m,p-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Xylenes, o-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5
Xylenes (total)	0.5	4200	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5

A0004697_96-00096

Table 9
Summary of Volatile Organic Compound Groundwater Analyses

Parameters	RL 2011	2011 EPA Standards	Analytical Results - µg/L							
Sample Location		Full Depth Generic	MW-12	MW-13	MW-14	MW-16	BMW-1	BMW-2	BMW-3	BMW-4
Sample No.		Site Condition Standards	MW-12	MW-13	MW-14	MW-16	BMW-1	BMW-2	BMW-3	BMW-4
Laboratory ID		Non-Potable Groundwater	1444051-08	1444232-08	1444051-09	1444051-10	1444232-09	1444232-10	1444232-11	1444232-12
Sample Date (mm/dd/yy)		(Table 3)	10/27/2014	10/29/2014	10/27/2014	10/27/2014	10/29/2014	10/29/2014	10/29/2014	10/29/2014
Acetone	30	130000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	0.5	44	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	2	85000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	5	380	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	0.5	5.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.2	0.79	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	1	2.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	2	82000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromoethane, 1,2- (Ethylene Dibromide	0.2	0.25	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorobenzene, 1,2- (o-DCB)	0.5	4600	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,3- (m-DCB)	0.5	9600	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene, 1,4- (p-DCB)	0.5	8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	2	4400	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloroethane, 1,1- (1,1-DCA)	0.5	320	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5	< 0.5
Dichloroethane, 1,2- (1,2-DCA)	0.5	1.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, 1,1- (1,1-DCE)	0.5	1.6	**28.8**	< 0.5	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene, cis-1,2- (c-1,2-DCE)	0.5	1.6	**3700**	< 0.5	< 0.5	**26**	< 0.5	**6.7**	**6.7**	**1.7**
Dichloroethylene, trans-1,2- (t-1,2-DCE)	0.5	1.6	**216**	< 0.5	< 0.5	1.3	< 0.5	**1.8**	< 0.5	< 0.5
Dichloromethane (Methylene Chloride)	5	610	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Dichloropropane, 1,2-	0.5	16	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, 1,3-	0.5	5.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	2300	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexane	5	51	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Ethyl Ketone (MEK)	20	470000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl Isobutyl Ketone (MIBK)	20	140000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl Tert Butyl Ether (MTBE)	2	190	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Monochlorobenzene (Chlorobenzene)	0.5	630	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	0.5	1300	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,1,2-	0.5	3.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane, 1,1,2,2-	0.5	3.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene (PCE)	0.5	1.6	**2.5**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.5	18000	1.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorobenzene, 1,2,4-	0.5	180	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,1- (1,1,1-TCA)	0.5	640	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane, 1,1,2- (1,1,2-TCA)	0.5	4.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene (TCE)	0.5	1.6	**25700**	< 0.5	< 0.5	**330**	< 0.5	1.2	**5.6**	< 0.5
Trichlorofluoromethane	5	2500	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	0.5	0.5	**4400**	< 0.5	< 0.5	**1.3**	< 0.5	**5**	< 0.5	< 0.5
Xylenes, m,p-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes, o-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes (total)	0.5	4200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

A0004697_97-00097

Table 10
Summary of Polynuclear Aromatic Hydrocarbon
Groundwater Analyses

Parameters	RL 2011	2011 EPA Standards	Analytical Results - µg/L							
Sample Location		Full Depth Generic	MW14-1	MW14-2	MW14-3	MW14-4	MW14-4	MW14-4	MW14-4	MW14-5
Sample No.		Site Condition Standards	MW14-1	MW14-2	MW14-3	MW14-4	Dup-1			MW14-5
Laboratory ID		Non-Potable Groundwater	1435231-05	1435231-06	1435231-07	1435231-08	1435231-10	Average	RPD	1435231-09
Sample Date (mm/dd/yy)		(Table 3)	08/27/2014	08/27/2014	08/27/2014	08/27/2014	08/27/2014			08/27/2014
Acenaphthene	1	600	0.39	< 0.05	< 0.05	0.17	0.19	0.18	-	< 0.05
Acenaphthylene	1	1.8	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05
Anthracene	0.1	2.4	0.53	< 0.01	< 0.01	0.08	0.03	0.055	-	< 0.01
Benzo(a)anthracene	0.2	4.7	3.4	0.05	< 0.01	0.23	0.09	0.16	88%	< 0.01
Benzo(a)pyrene	0.01	0.81	**2.85**	< 0.01	< 0.01	0.16	0.06	0.11	91%	< 0.01
Benzo(b)fluoranthene	0.1	0.75	**5.46**	< 0.05	< 0.05	0.25	0.11	0.18	-	< 0.05
Benzo(k)fluoranthene	0.1	0.4	**2.37**	< 0.05	< 0.05	0.14	0.07	0.105	-	< 0.05
Benzo(g,h,i)perylene	0.2	0.2	**1.58**	< 0.05	< 0.05	0.12	< 0.05	0.085	-	< 0.05
Chrysene	0.1	1	**4.44**	< 0.05	< 0.05	0.26	0.09	0.175	-	< 0.05
Dibenzo(a,h)anthracene	0.2	0.52	0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05
Fluoranthene	0.4	130	6.38	0.05	< 0.01	0.45	0.17	0.31	90%	< 0.01
Fluorene	0.5	400	0.38	< 0.05	< 0.05	0.1	0.08	0.09	-	< 0.05
Indeno(1,2,3,c,d)pyrene	0.2	0.2	**1.7**	< 0.05	< 0.05	0.1	< 0.05	0.1	-	< 0.05
Methylnaphthalene, 1-*	2	-	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05
Methylnaphthalene, 2-*	2	-	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05
Methylnaphthalene (1-+2-)	4	1800	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	-	< 0.10
Naphthalene	2	1400	0.19	0.08	< 0.05	0.12	0.15	0.135	-	< 0.05
Phenanthrene	0.1	580	3.84	0.07	< 0.05	0.25	0.1	0.175	-	< 0.05
Pyrene	0.2	68	5.76	0.04	< 0.01	0.39	0.13	0.26	100%	< 0.01

Notes:
* The Methylnaphthalene Standards are Applicable to Both 1-Methylnaphthalene and 2- Methylnaphthalene, with the Provision that if Both are Detected the Sum of the Two Must not Exceed the Standard.

Table 11
Summary of Heavy Metal Groundwater Analyses

Parameters	RL 2011	2011 EPA Standards	Analytical Results - µg/L							
Sample Location Sample No. Laboratory ID Sample Date (mm/dd/yy)		Full Depth Generic Site Condition Standards Non-Potable Groundwater (Table 3)	MW14-1 MW14-1 1435231-05 08/27/2014	MW14-2 MW14-2 1435231-06 08/27/2014	MW14-3 MW14-3 1435231-07 08/27/2014	MW14-4 MW14-4 1435231-08 08/27/2014	MW14-4 Dup-1 1435231-10 08/27/2014	MW14-4 Average	MW14-4 RPD	MW14-5 MW14-5 1435231-09 08/27/2014
Antimony	0.5	20000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5
Arsenic	1	1900	1	4	< 1	3	3	3	-	< 1
Barium	2	29000	306	115	121	168	170	169	1%	231
Beryllium	0.5	67	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-	< 0.5
Boron (Total)	10	45000	115	46	182	208	229	218.5	10%	106
Cadmium	0.5	2.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1
Chromium	10	810	< 1	< 1	< 1	< 1	< 1	< 1	-	< 1
Chromium (VI)	10	140	< 10	< 10	< 10	< 10	< 10	< 10	-	< 10
Cobalt	1	66	0.9	1.5	1.2	1.6	1.6	1.6	-	1.9
Copper	5	87	0.8	< 0.5	2.3	< 0.5	< 0.5	< 0.5	-	3.2
Lead	1	25	< 0.1	< 0.1	0.5	< 0.1	< 0.1	< 0.1	-	< 0.1
Mercury	0.1	0.29	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1
Molybdenum	0.5	9200	0.7	4	2.2	3.9	3.9	3.9	0%	4.3
Nickel	1	490	5	5	9	6	7	6.5	15%	9
Selenium	5	63	< 1	< 1	8	1	1	1	-	1
Silver	0.3	1.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1
Sodium	5000	2300000	51800	2040	16200	32200	31800	32000	1%	868000
Thallium	0.5	510	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1
Uranium	2	420	0.2	0.4	2.5	3.9	3.9	3.9	0%	1.3
Vanadium	0.5	250	10.9	6.6	10.9	8.3	11.1	9.7	29%	9.6
Zinc	5	1100	13	19	19	10	8	9	-	9

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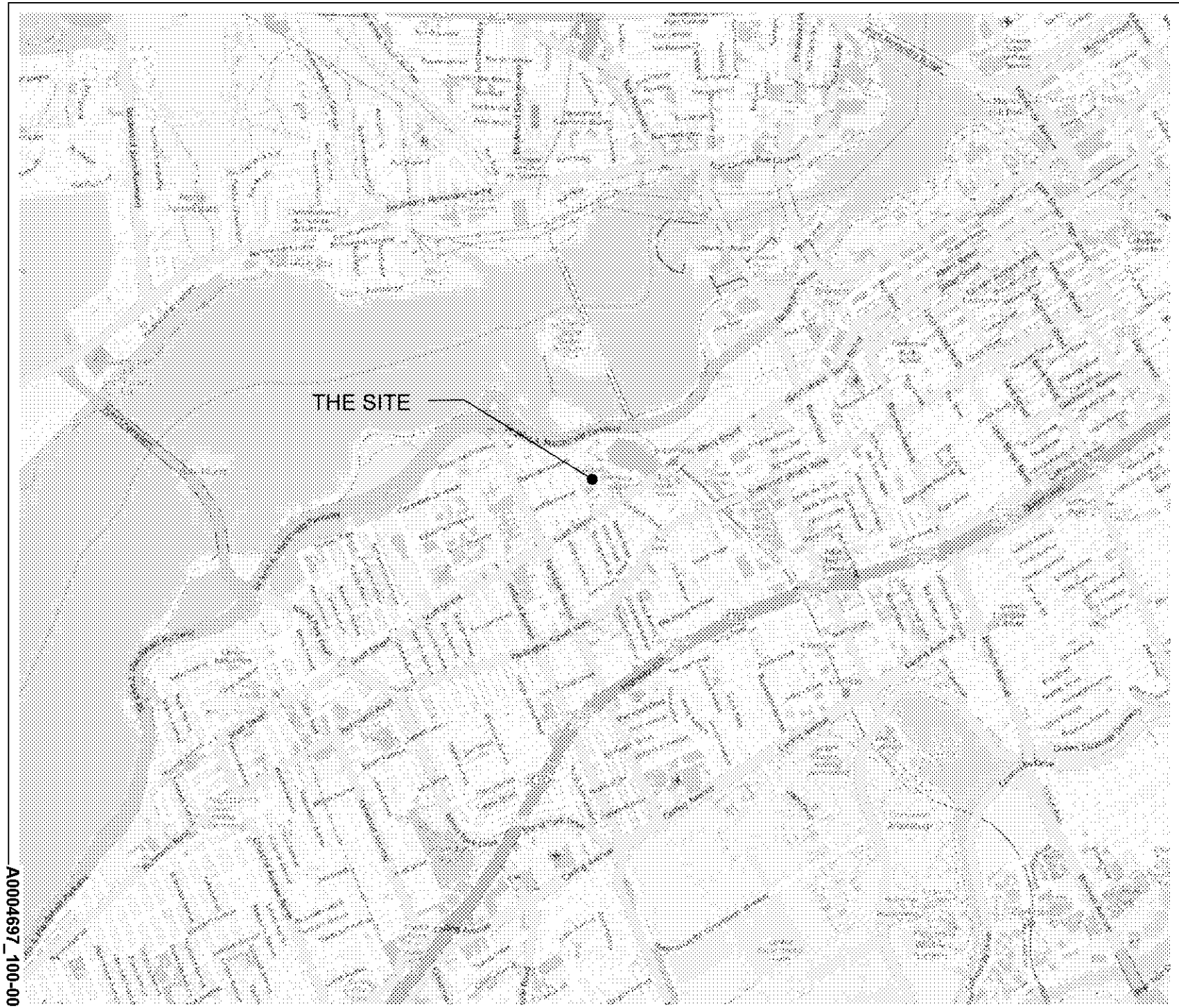

LEGEND

250 0 250 500 750
METRES

amec foster wheeler
ENVIRONMENT & INFRASTRUCTURE
300-210 COLONNADE ROAD
OTTAWA, ONTARIO CANADA

TITLE:
KEY PLAN

PROJECT:
LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT

CLIENT:
Ottawa

DRAWN BY:	BSI
CHECKED BY:	KDH
DATE:	DECEMBER 2014
PROJECT NO:	TZ5100901
SCALE:	1:30,000
FIGURE NO:	1

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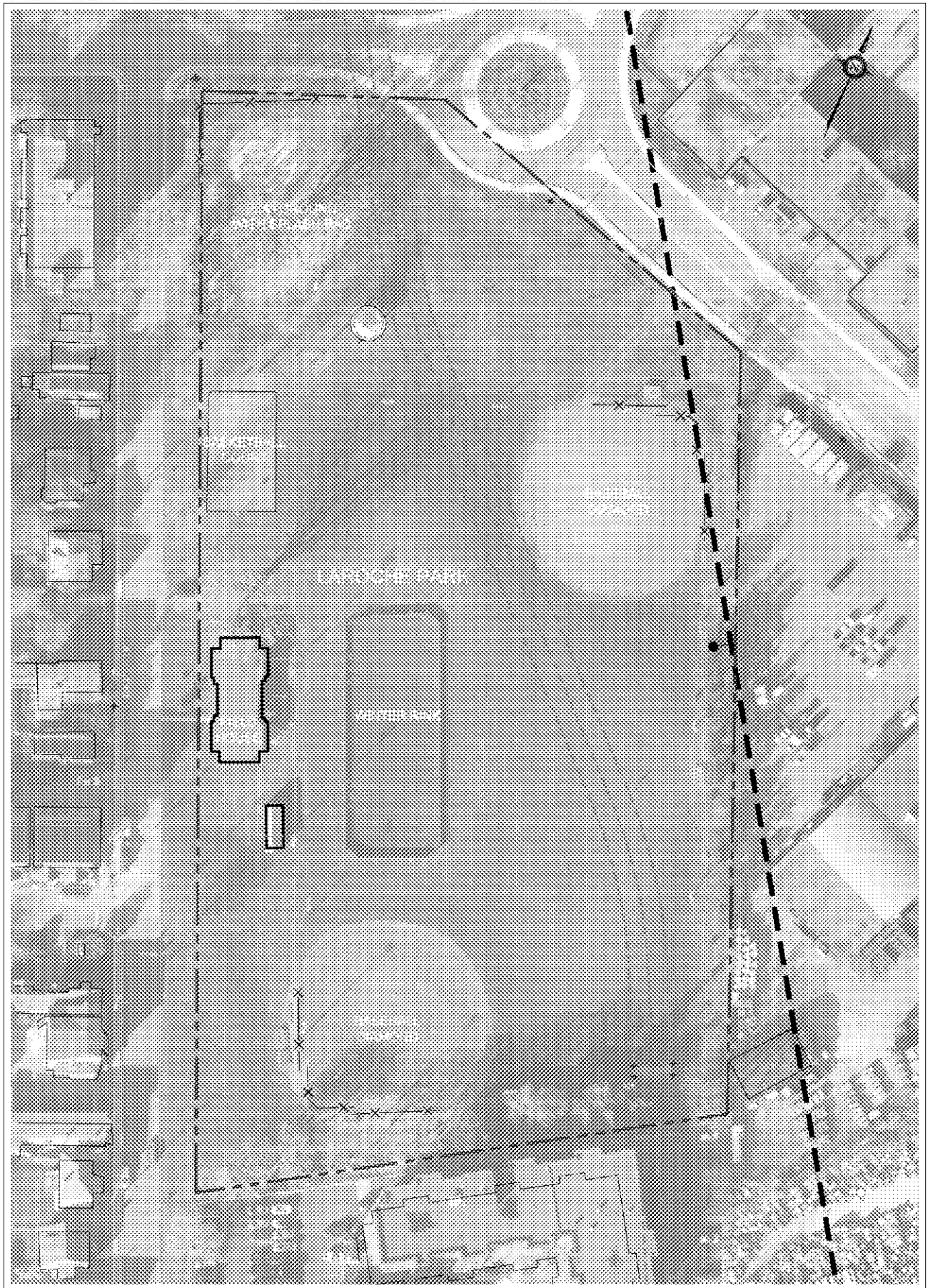

LEGEND
- FENCE
- SITE BOUNDARY
- STORM SEWER
- INFERRED FAULT (WITH DOWN THROWN BLOCK INDICATED)

10 0 10 20 30
METRES

TITLE: **SITE PLAN SHOWING PROPOSED REDEVELOPMENT**

PROJECT: **LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT**

amec foster wheeler
ENVIRONMENT & INFRASTRUCTURE
300-210 COLONNADE ROAD
OTTAWA, ONTARIO, CANADA

CLIENT: Ottawa

DRAWN BY:	BSI
PROJECT NO:	TZ5100901
CHECKED BY:	KDH
SCALE:	1:750
FIGURE NO:	2
DATE	DECEMBER 2014

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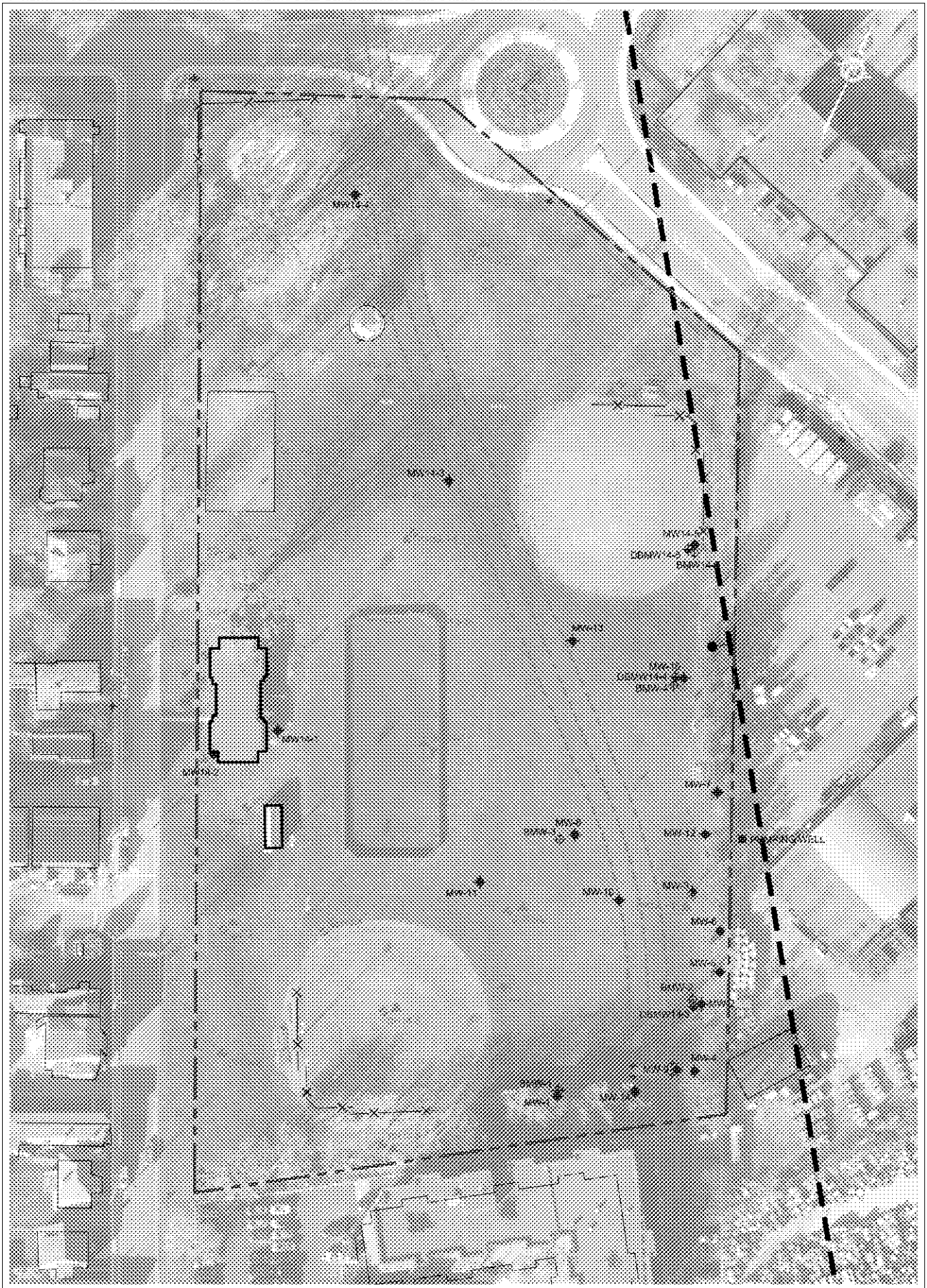

LEGEND

- FENCE
- SITE BOUNDARY
- STORM SEWER
- MW-# OVERBURDEN MONITORING WELL
- BMW-5 SHALLOW BEDROCK MONITORING WELL
- DBMW14-2 DEEP BEDROCK MONITORING WELL
- BH3-01 BOREHOLE (AMEC 2001)
- BH14-1 BOREHOLE (AMEC 2014)
- SS-1 SURFACE SOIL SAMPLE (AMEC 2014)
- INFERRED FAULT (WITH DOWN THROWN BLOCK INDICATED)

10 0 10 20 30
METRES

TITLE:
BOREHOLE, MONITORING WELL AND SURFACE SOIL SAMPLE LOCATION PLAN

PROJECT:
LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT

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ENVIRONMENT & INFRASTRUCTURE
300-210 COLONNADE ROAD
OTTAWA, ONTARIO CANADA

DRAWN BY: BSI
CHECKED BY: KDH

CLIENT: Ottawa

PROJECT NO: TZ5100901
SCALE: 1:750
DATE: SEPTEMBER 2014

FIGURE NO:

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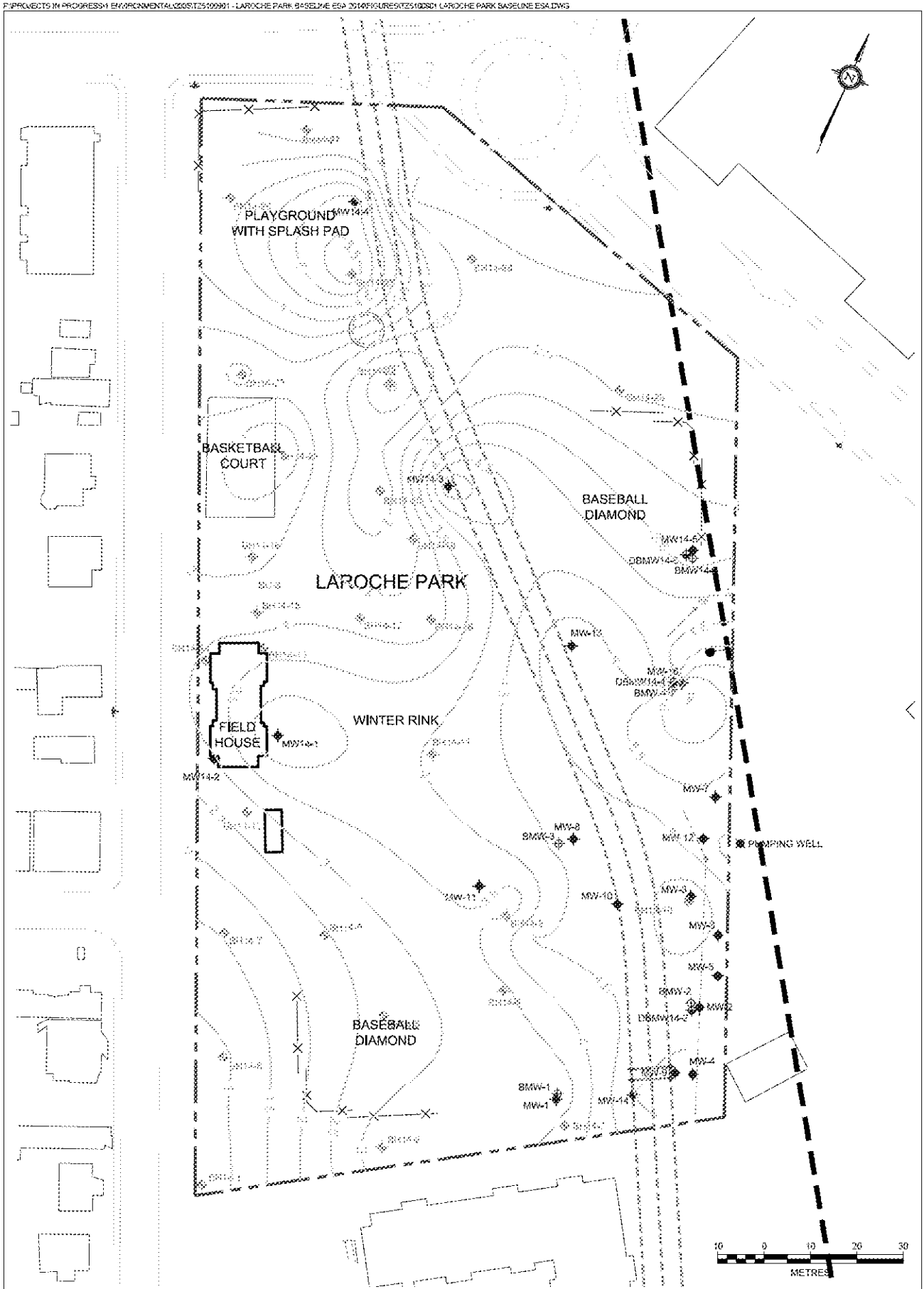

LEGEND

- FENCE
- SITE BOUNDARY
- STORM SEWER
- MW-# OVERBURDEN MONITORING WELL
- BMW-# SHALLOW BEDROCK MONITORING WELL
- DBMW14-2 DEEP BEDROCK MONITORING WELL
- BH3-01 BOREHOLE (AMEC 2003)
- BH14-1 BOREHOLE (AMEC 2014)
- INFERRED FAULT (WITH DOWN THROWN BLOCK INDICATED)
- BEDROCK SURFACE ELEVATION CONTOUR

TITLE: **OVERBURDEN THICKNESS CONTOUR PLAN**

PROJECT: **LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT**

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ENVIRONMENT & INFRASTRUCTURE
300-2 10 COLONNADE ROAD
OTTAWA, ONTARIO CANADA

CLIENT: Ottawa

DRAWN BY:	BSI
CHECKED BY:	KDH
PROJECT NO:	TZ5100901
SCALE:	1:750
DATE	SEPTEMBER 2014
FIGURE NO:	

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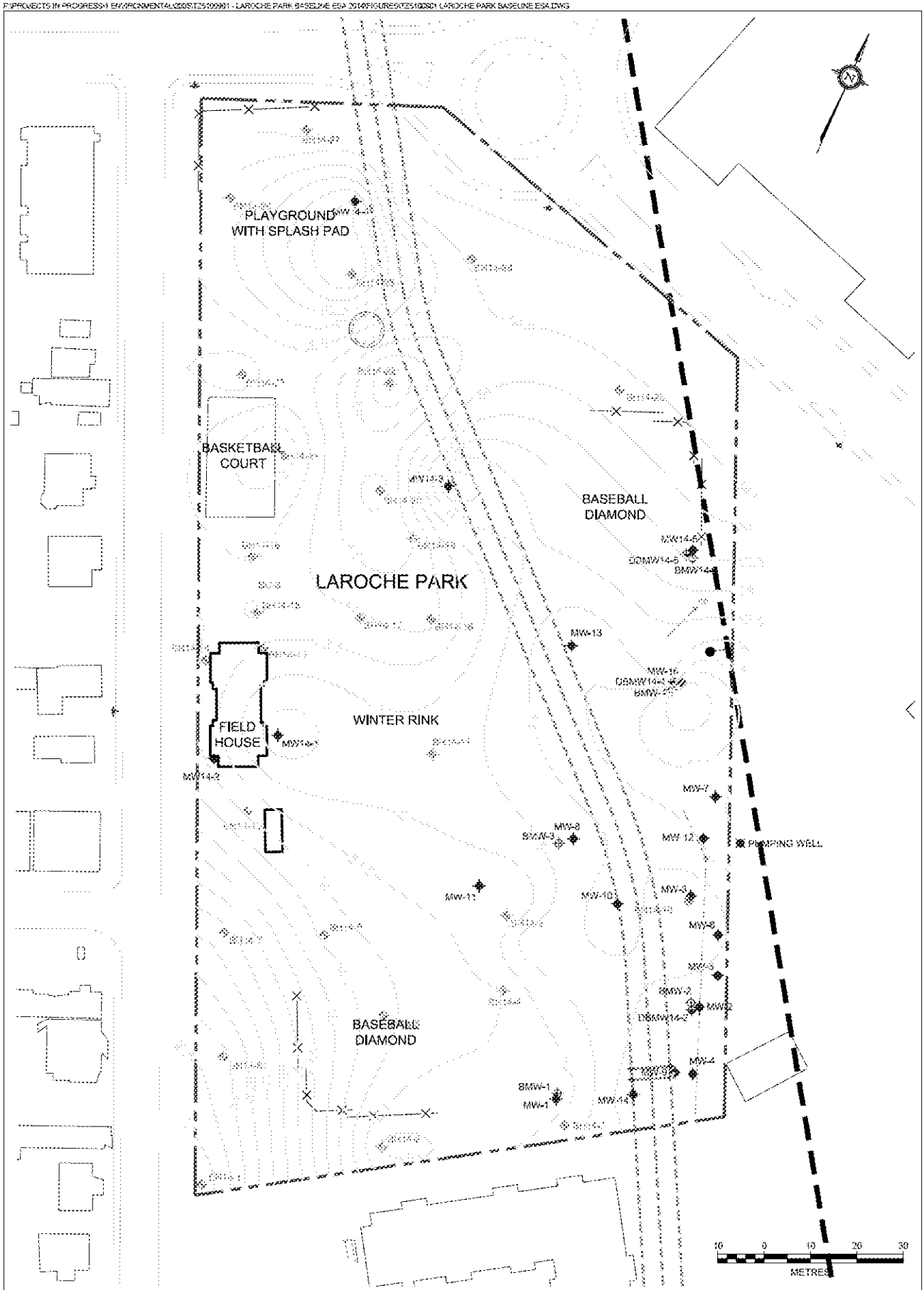

LEGEND

- FENCE
- SITE BOUNDARY
- STORM SEWER
- MW-# OVERBURDEN MONITORING WELL
- BMW-# SHALLOW BEDROCK MONITORING WELL
- DBMW14-2 DEEP BEDROCK MONITORING WELL
- BH3-01 BOREHOLE (AMEC 2003)
- BH14-1 BOREHOLE (AMEC 2014)
- INFERRED FAULT (WITH DOWN THROWN BLOCK INDICATED)
- BEDROCK SURFACE ELEVATION CONTOUR

TITLE: **BEDROCK SURFACE ELEVATION CONTOUR PLAN**

PROJECT: **LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT**

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300-210 COLONNADE ROAD
OTTAWA, ONTARIO CANADA

DRAWN BY: BSI

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CLIENT: Ottawa

PROJECT NO: TZ5100901

SCALE: 1:750

DATE: SEPTEMBER 2014

FIGURE NO:

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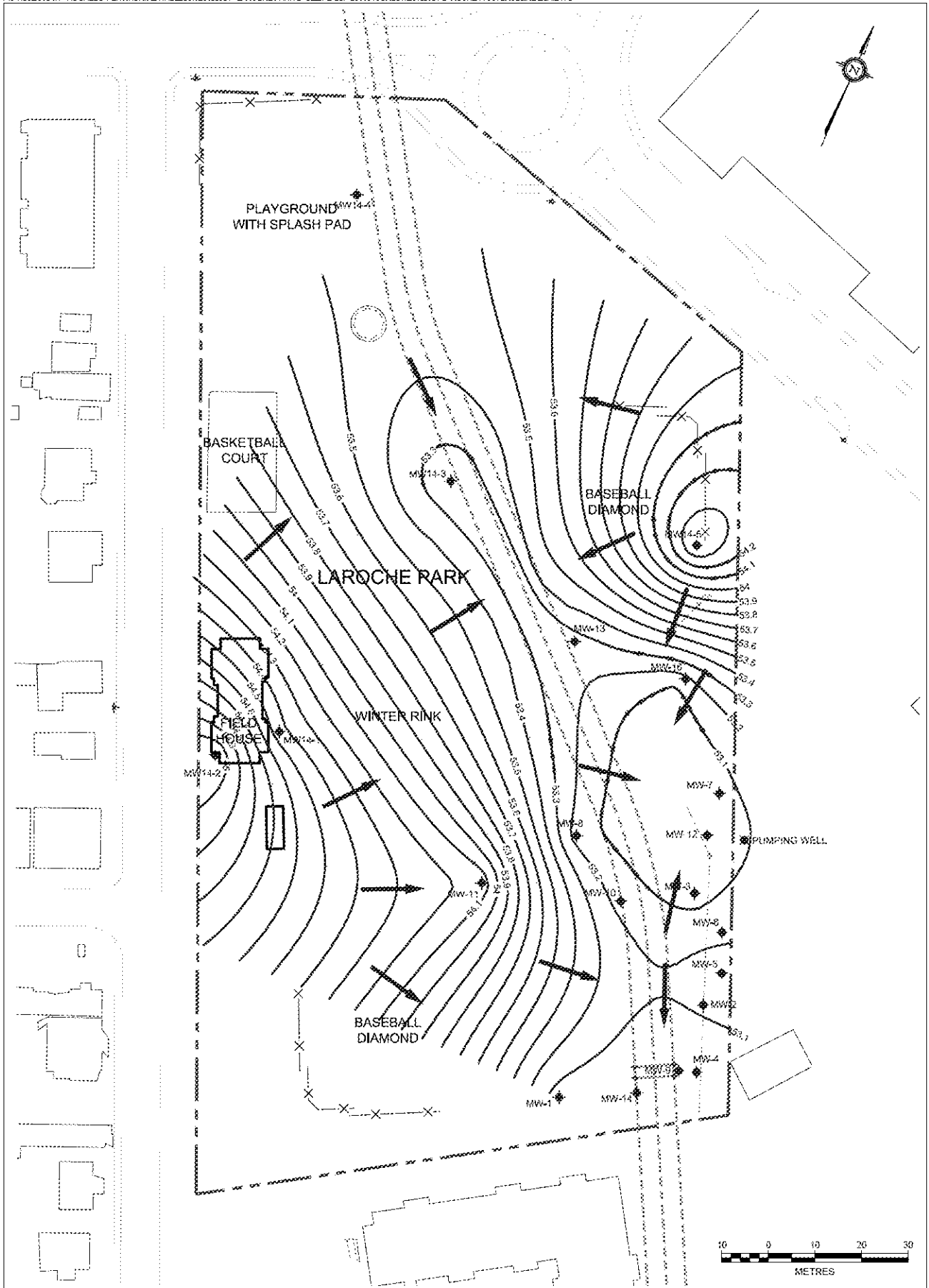

LEGEND

- FENCE
- SITE BOUNDARY
- STORM SEWER
- MW-8 OVERBURDEN MONITORING WELL
- INFERRED FAULT (WITH DOWN THROWN BLOCK INDICATED)
- 53.4 GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

TITLE:	OVERBURDEN GROUNDWATER ELEVATION CONTOUR PLAN
PROJECT:	LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT
CLIENT:	Ottawa
PROJECT NO:	TZ5100901
SCALE:	1:750
DATE	SEPTEMBER 2014

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ENVIRONMENT & INFRASTRUCTURE
300-2 10 COLONNADE ROAD
OTTAWA, ONTARIO CANADA

DRAWN BY:	BSI
CHECKED BY:	KDH
FIGURE NO:	6.

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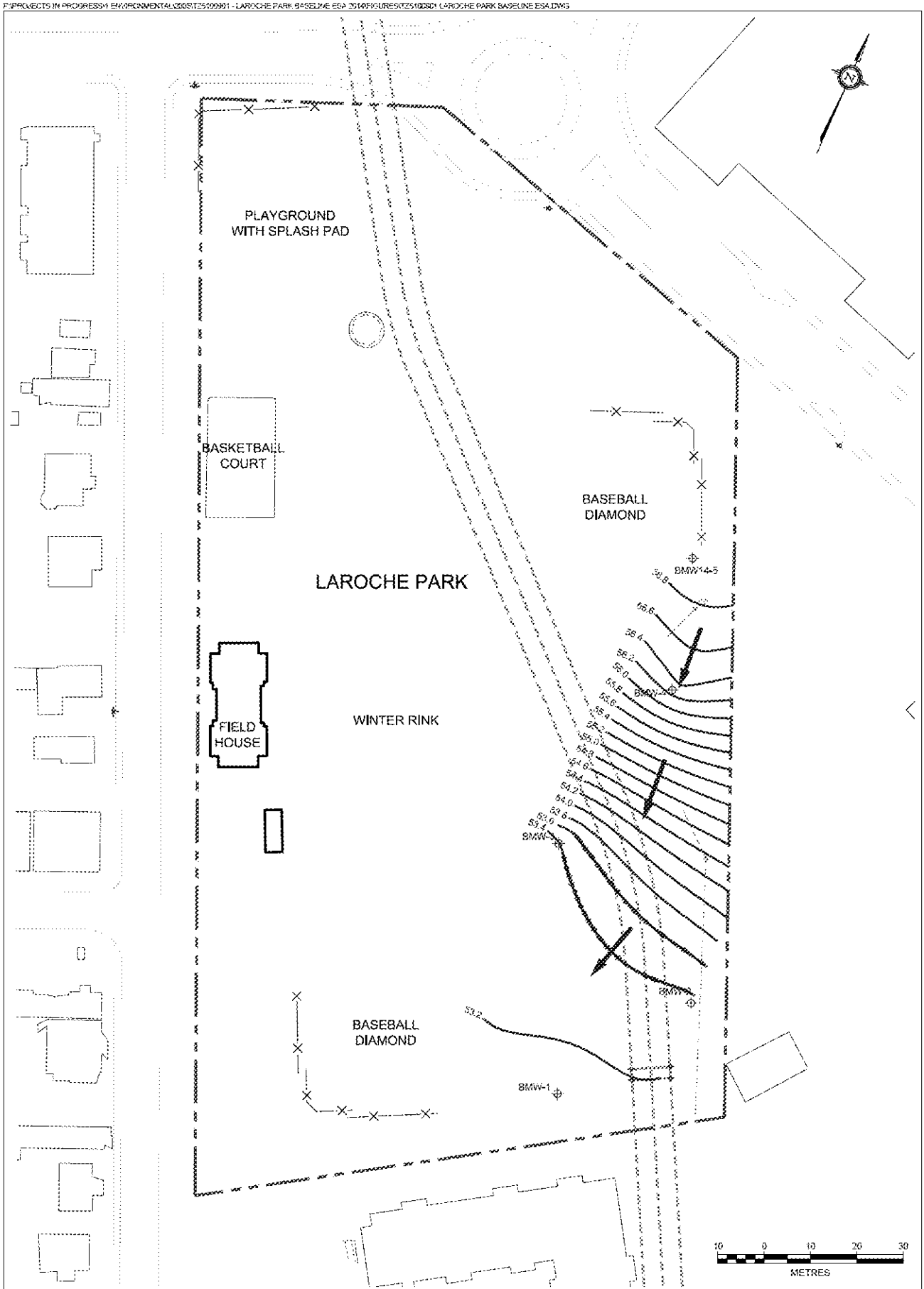

LEGEND

- FENCE
- SITE BOUNDARY
- STORM SEWER
- BMW-5 SHALLOW BEDROCK MONITORING WELL
- INFERRED FAULT (WITH DOWN THROWN BLOCK INDICATED)
- 55.4 POTENTIOMETRIC SURFACE ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

TITLE: SHALLOW BEDROCK POTENTIOMETRIC SURFACE CONTOUR PLAN	PROJECT: LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT	amec foster wheeler ENVIRONMENT & INFRASTRUCTURE 300-210 COLONNADE ROAD OTTAWA, ONTARIO, CANADA
		DRAWN BY: BSI
CLIENT: Ottawa	PROJECT NO: TZ5100901	CHECKED BY: KDH
	SCALE: 1:750	FIGURE NO: 6.
	DATE: SEPTEMBER 2014	

A0004697_106-00106

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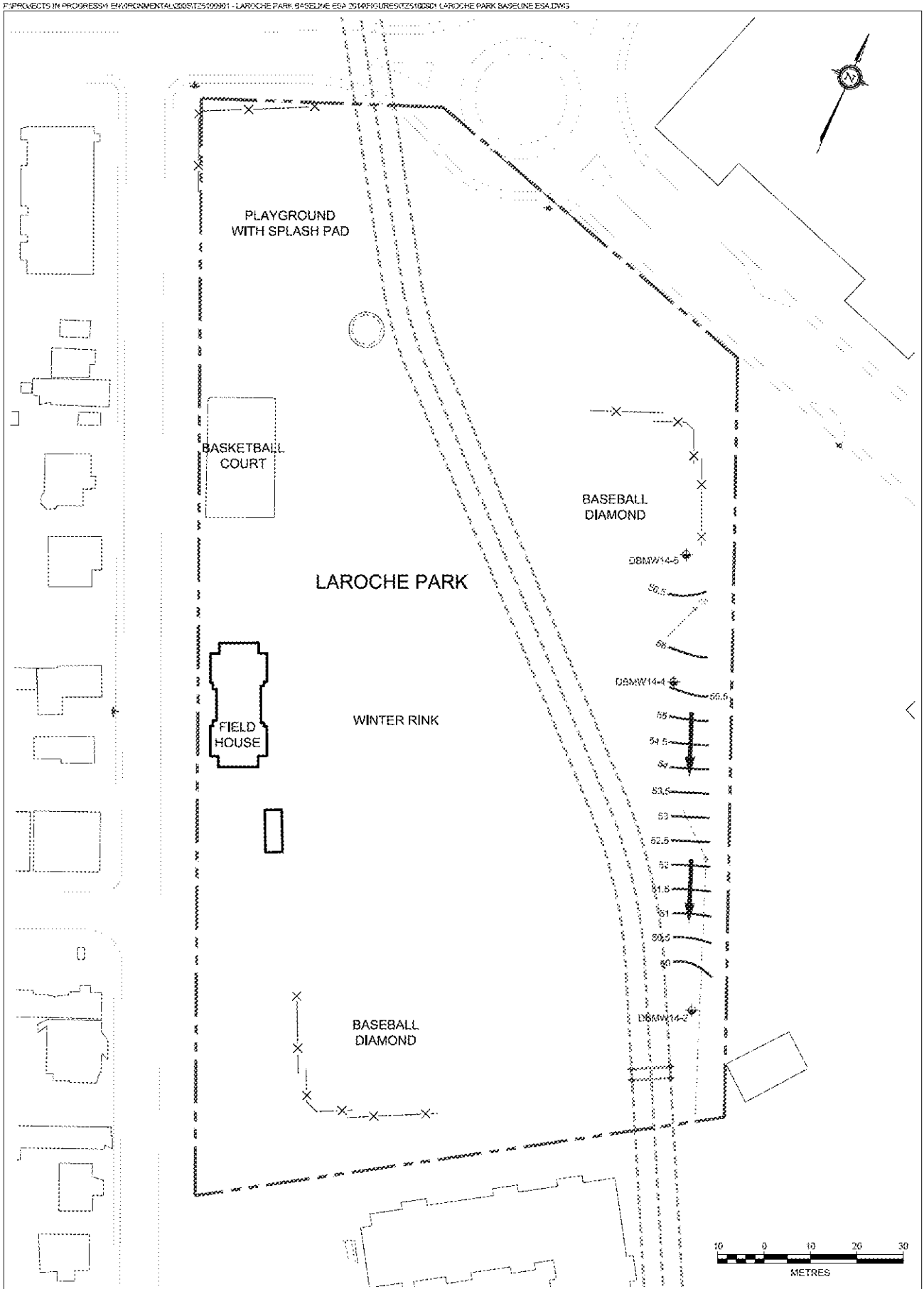


LEGEND
- FENCE
- SITE BOUNDARY
- STORM SEWER
- 56MW14-2 DEEP BEDROCK MONITORING WELL
- INFERRED FAULT (WITH DOWN THROWN BLOCK INDICATED)
- 55.4 POTENTIOMETRIC SURFACE ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

TITLE: **DEEP BEDROCK POTENTIOMETRIC SURFACE CONTOUR PLAN**

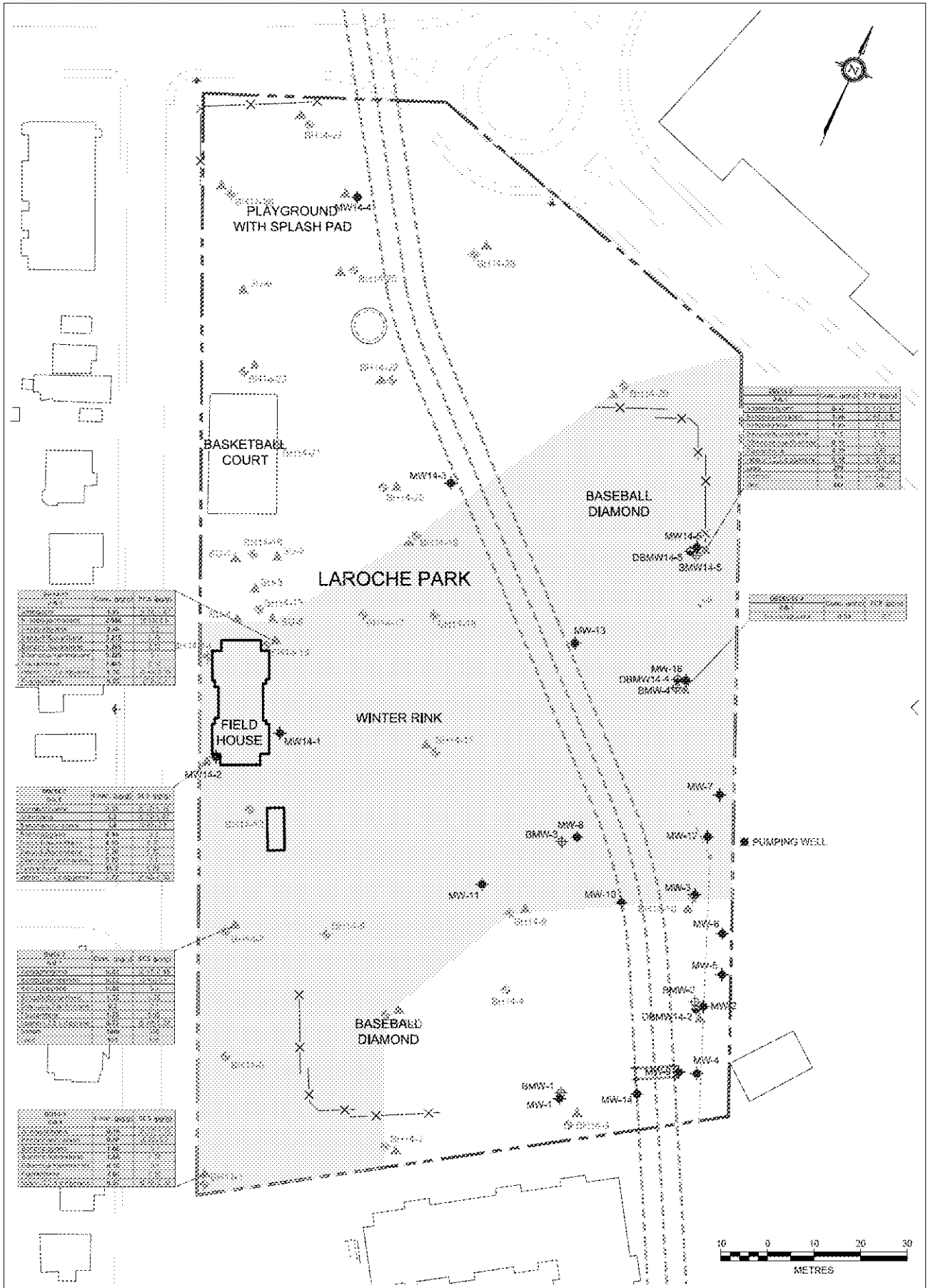
PROJECT: **LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT**

amec foster wheeler
ENVIRONMENT & INFRASTRUCTURE
300-2 10 COLONNADE ROAD
OTTAWA, ONTARIO CANADA

CLIENT: Ottawa

PROJECT NO:	TZ5100901
DRAWN BY:	BSI
CHECKED BY:	KDH
SCALE:	1:750
FIGURE NO:	6.
DATE	SEPTEMBER 2014

P:\PROJECTS IN PROGRESS\1 ENVIRONMENTAL\2008\TZ5100901 - LAROCHE PARK BASELINE ESA 2014\FIGURE\ATZ\100901 LAROCHE PARK BASELINE ESA.DWG



LEGEND

- FENCE
- SITE BOUNDARY
- STORM SEWER
- MW-# MONITORING WELL
- BMW-# BEDROCK MONITORING WELL
- DBMW14-2 DEEP BEDROCK MONITORING WELL
- BH-01 BOREHOLE (AMEC 2001)
- BH14-1 BOREHOLE (AMEC 2014)
- SS-1 SURFACE SOIL SAMPLE (AMEC 2014)

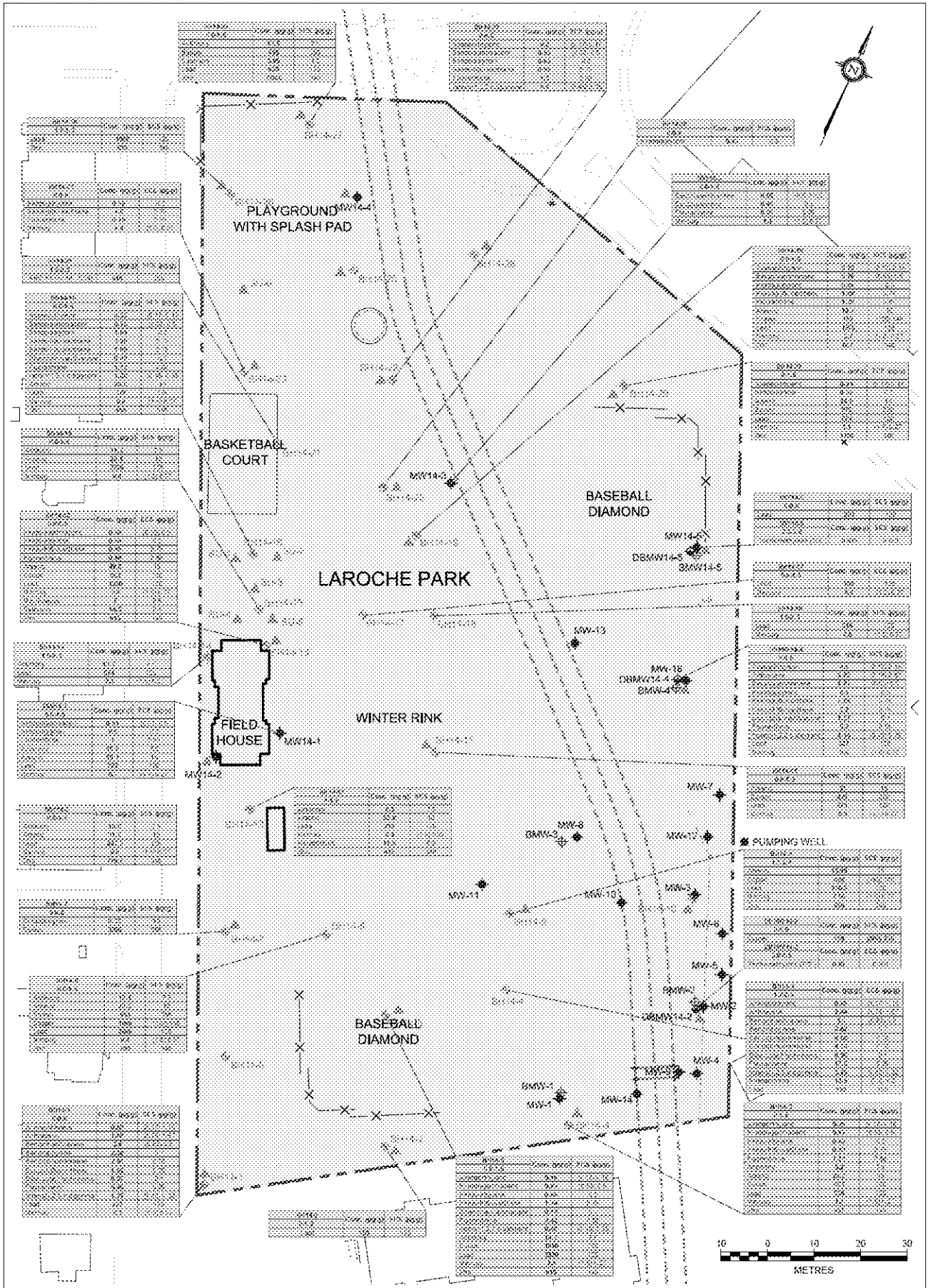
INFERRED EXTENT OF SURFACE SOIL IMPACT EXCEEDING EPA TABLE 3 SCS FOR R/P/I PROPERTY USE

TITLE:	SURFACE SOIL EXCEEDANCES
PROJECT:	LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT
CLIENT:	Ottawa
PROJECT NO:	TZ5100901
SCALE:	1:750
DATE	SEPTEMBER 2014

amec foster wheeler
ENVIRONMENT & INFRASTRUCTURE
300-210 COLONNADE ROAD
OTTAWA, ONTARIO CANADA

DRAWN BY: BSI
CHECKED BY: KDH
FIGURE NO:

P:\PROJECTS IN PROGRESS\1 ENVIRONMENTAL\2665\TZ5100901 - LAROCHE PARK BASELINE ESA 2014\FIGURES\ATZ\100901 LAROCHE PARK BASELINE ESA.DWG



LEGEND

- FENCE
- SITE BOUNDARY
- STORM SEWER
- MW-# MONITORING WELL
- BMW-# BEDROCK MONITORING WELL
- DBMW14-2 DEEP BEDROCK MONITORING WELL
- BH-01 BOREHOLE (AMEC 2001)
- BH14-1 BOREHOLE (AMEC 2014)
- SU-1 SURFACE SOIL SAMPLE (AMEC 2014)

INFERRED EXTENT OF SUBSURFACE SOIL IMPACT EXCEEDING EPA TABLE 3 SCS FOR R/P/I PROPERTY USE

TITLE: **SUBSURFACE SOIL EXCEEDANCES**

PROJECT: **LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT**

amec foster wheeler
ENVIRONMENT & INFRASTRUCTURE
300-210 COLONNADE ROAD
OTTAWA, ONTARIO, CANADA

DRAWN BY: BSI

CHECKED BY: KDH

CLIENT: Ottawa

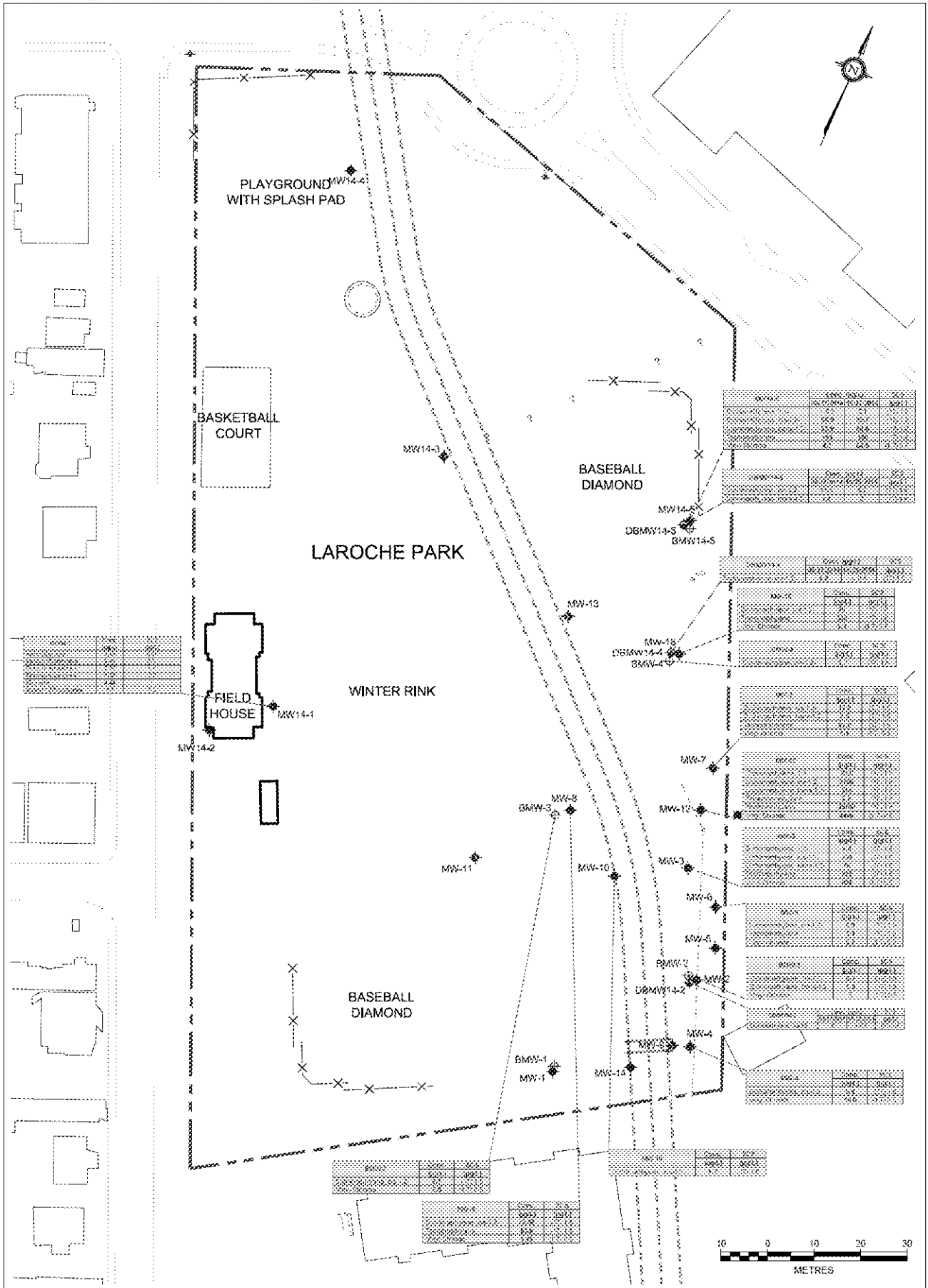
PROJECT NO: TZ5100901

SCALE: 1:750

DATE: SEPTEMBER 2014

FIGURE NO:

P:\PROJECTS IN PROGRESS\1 ENVIRONMENTAL\2008\TZ5100901 - LAROCHE PARK BASELINE ESA 2014\FIGURES\TZ5100901 LAROCHE PARK BASELINE ESA.DWG



LEGEND

- FENCE
- SITE BOUNDARY
- STORM SEWER
- MW-# MONITORING WELL
- BMW-# BEDROCK MONITORING WELL
- DBMW14-2 DEEP BEDROCK MONITORING WELL

INFERRED EXTENT OF VOC GROUNDWATER IMPACT EXCEEDING EPA TABLE 3 SCG

? ? DELINEATION UNCERTAIN

TITLE: GROUNDWATER EXCEEDANCES

PROJECT: LAROCHE PARK BASELINE ENVIRONMENTAL SITE ASSESSMENT

amec foster wheeler
ENVIRONMENT & INFRASTRUCTURE
300-2 10 COLONNADE ROAD
OTTAWA, ONTARIO CANADA

DRAWN BY: BSI

CHECKED BY: KDH

CLIENT: Ottawa

PROJECT NO: TZ5100901

SCALE: 1:750

DATE: SEPTEMBER 2014

FIGURE NO:

APPENDIX A

STRATIGRAPHIC AND INSTRUMENTATION LOGS

Stratigraphic and Instrumentation Log: BH14-1

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

SUBSURFACE PROFILE				SAMPLE DATA							
Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour ○ 250 (ppm) 750 ○ 1250 / Total Organic Vapour ● 20 60 100 140 180 ● (ppm)	Monitoring Well Details	Remarks
0 ft / 0 m		Ground Surface	60.04								
0		**TOPSOIL**	0.00 59.89								
1		**LOAMY SAND** Fine grained sand, some gravel, trace silt, grey, dry	0.15	SS	1			50			BH14-1-SS1 was submitted for PHC F2-F4, PAH and Metals analyses.
2			59.43								
		END OF BOREHOLE - BEDROCK REFUSAL	0.61								
3 / 1											
4											
5											
6 / 2											
7											
8											
9											
10 / 3											
11											
12											
13 / 4											
14											
15											

Elevation: 60.04
Easting: 365224.86
Northing: 503002.63

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_113-00113

Stratigraphic and Instrumentation Log: BH14-2

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.23								
0 / 0		**TOPSOIL**	0.00 56.08								
0 / 0		**FILL** Fine grained sand, trace silt, grey, dry	0.15								BH14-2-SS1 was submitted for PAH and Metals analyses.
2 / 1				SS	1			46	●		
3 / 1		Waste: ash/cinders									
5 / 2			54.71								
5 / 2		**CLAY** Silty clay, brown	1.52	SS	2			63	●		
7 / 2		Grey									
8 / 2				SS	3				●		BH14-2-SS3 was submitted for PHC F2-F4 analyses.
8 / 2		Pieces of rock									
9 / 3			53.49								
9 / 3		**Sand** Fine to coarse grained sand, grey, wet	2.74								
10 / 3				SS	4			67	●		
10 / 3		Pieces of rock									
11 / 3			52.88								
11 / 3		**END OF BOREHOLE - BEDROCK REFUSAL**	3.35								
12 / 4											
13 / 4											
14 / 4											
15 / 4											

Elevation: 56.23
Easting: 365224.86
Northing: 5030025.40

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_114-00114

Stratigraphic and Instrumentation Log: BH14-3

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250; Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.40								
		TOPSOIL	0.00 56.25								
		LOAMY SAND Fine grained sand, some silt, trace gravel, grey, dry	0.15								
		Waste: ash/cinder, glass, ceramic		SS	1			27			BH14-3-SS1 was submitted for PAH and Metals analyses.
1 / 2				SS	2			48			BH14-3-SS2 was submitted for PHC F2-F4 analyses.
		SILT LOAM Silt, some clay, trace sand, trace gravel, brown, damp	54.11 2.29	SS	3						
3		Becomes moist		SS	4			100			
		END OF BOREHOLE - BEDROCK REFUSAL	52.74 3.66								
4											

Elevation: 56.40
Easting: 365259.35
Northing: 5030044.99

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_115-00115

Stratigraphic and Instrumentation Log: BH14-4

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 57.15 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.87								
0 / 0		**TOPSOIL**	0.00 56.72								
1 / 0		**LOAMY SAND** Fine grained sand, trace silt, brown, dry Waste: pieces of glass	0.15	SS	1			65			
2 / 0		Dark brown/black Waste: ash/cinders		SS	2						
3 / 1											
4 / 1				SS	3			29			BH14-4-SS3 was submitted for PAH and Metals analyses.
5 / 1											
6 / 2											
7 / 2		50 mm of wood waste	54.74								
7 / 2		**SILT LOAM** Silt, some sand, trace clay, trace organics, brown, moist	2.13								
8 / 2											
9 / 3		Becomes wet		SS	4			31			BH14-4-SS4 was submitted for PHC F2-F4 analyses.
10 / 3											
11 / 3			53.52								
11 / 3		**END OF BOREHOLE - BEDROCK REFUSAL**	3.35								
12 / 3											
13 / 4											
14 / 4											
15 / 4											

Elevation: 56.87
Easting: 365235.73
Northing: 5030066.49

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_116-00116

Stratigraphic and Instrumentation Log: BH14-5

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 11, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250 — Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	0.00								
0 / 0		**SAND AND GRAVEL** Baseball diamond material	0.00								
			-0.46	SS	1			68			
2		**FILL** Fine grained sand, orange/brown, dry	0.46								
3 / 1		Waste: ash/cinders, glass, ceramic		SS	2						BH14-5-SS2 was submitted for PAH and Metals analyses.
4		Becomes moist									
5		Becomes wet, grey		SS	3			53			
6 / 2											
7		200 mm of wood waste	-2.29								
8		**SILT LOAM** Silt, some clay, trace sand, trace organics, brown, moist	2.29								
9			-2.74	SS	4						BH14-5-SS4 was submitted for PHC F2-F4 analyses.
10 / 3		**CLAY** Clay, grey, some shells, moist	2.74								
11											
12				SS	5			60			
13 / 4			-4.11								
14		**SAND AND GRAVEL** Fine to coarse grained sand and gravel, pieces of shale rock, wet	4.11								
15			-4.57								
15		**END OF BOREHOLE - BEDROCK REFUSAL**	4.57								
16 / 5											
17											

Elevation: 0
Easting: 0
Northing: 0

Casing Elevation: 0
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_117-00117

Stratigraphic and Instrumentation Log: BH14-6

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 11, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	59.08								
0 / 0		**TOPSOIL**	0.00 58.93								
1 / 2		**SAND** Fine grained sand, some gravel, brown, dry	0.15	SS	1			50			BH14-6-SS1 was submitted for PHC F2-F4, PAH and Metals analyses.
3 / 1		**END OF BOREHOLE - BEDROCK REFUSAL**	58.17 0.91								

Elevation: 59.08
Easting: 365185.77
Northing: 5030029.76

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_118-00118

Stratigraphic and Instrumentation Log: BH14-7

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 11, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	58.27								
0		**TOPSOIL**	0.00 58.12								
1		**SAND** Fine grained sand, some gravel. grey, dry	0.15	SS	1			48			BH14-7-SS1 was submitted for PHC F2-F4, PAH and Metals analyses.
2											
3 / 1		Pieces of rock		SS	2						
4											
5			56.75								
5		**END OF BOREHOLE - BEDROCK REFUSAL**	1.52								
6 / 2											
7											
8											
9											
10 / 3											
11											
12											
13 / 4											
14											
15											

Elevation: 58.27
Easting: 365175.31
Northing: 5030054.41

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_119-00119

Stratigraphic and Instrumentation Log: BH14-8

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 11, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.79								
		TOPSOIL	0.00 56.64								
		FILL Silt, some fine grained sand, brown, dry	0.15	SS	1			90			
1		Waste: ash/cinders, glass, ceramic									
2											
3 / 1				SS	2			40			BH14-8-SS2 was submitted for PAH and Metals analyses.
4											
5		Becomes moist									
6 / 2		25 mm of wood waste	54.96								
		SILT LOAM Silt, some clay, trace sand, trace organics, dark brown, moist	1.83	SS	3			42			BH14-8-SS3 was submitted for PHC F2-F4 analyses.
7			54.50								
		CLAY Grey, moist	2.29 54.35								
8		**END OF BOREHOLE - BEDROCK REFUSAL**	2.44								
9											
10 / 3											
11											
12											
13 / 4											
14											
15											

Elevation: 56.79
Easting: 365195.43
Northing: 5030062.41

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_120-00120

Stratigraphic and Instrumentation Log: BH14-9

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 57.15 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft)	Depth (m)	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0	0	Ground Surface	56.91								
		TOPSOIL	0.00 / 56.76								
		FILL Silt, some fine grained sand, brown, dry	0.15								
2		Waste: ash/cinders		SS	1			44			
4		Becomes moist									
6		50 mm of wood waste	55.08	SS	2			38			BH14-9-SS2 was submitted for PAH and Metals analyses (DUP-5).
	2	**SILT LOAM** Silt, some clay, trace sand, trace organics, dark brown, moist	1.83								
8			54.47 / 2.44								
		CLAY Some silt, moist		SS	3			100			BH14-9-SS3 was submitted for PHC F2-F4 analyses.
9				SS	4						
10	3	Pieces of Rock	53.76								
		END OF BOREHOLE - BEDROCK REFUSAL	3.15								
12	4										
14											
15											

Elevation: 56.91
Easting: 365229.96
Northing: 5030085.04

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_121-00121

Stratigraphic and Instrumentation Log: BH14-10

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250; Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.61								
		TOPSOIL	0.00 56.46								
		FILL Silt, some fine grained sand, brown, dry	0.15								
2		Pieces of rock		SS	1			20			
1											
5		Pieces of rock only Becomes moist									
2				SS	2			5			
10 / 3											
		Fine grained sand, some silt, some gravel, trace clay, grey, moist									
		Waste: trace ash, brick		SS	3			44			BH14-10-SS3 was submitted for PHC F2-F4, PAH and Metals analyses.
		Fine grained sand, some silt, pieces of rock, dark grey, moist/wet	52.65								
13 / 4		**END OF BOREHOLE - BEDROCK REFUSAL**	3.96								

Elevation: 56.61
Easting: 365264.86
Northing: 5030100.05

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_122-00122

Stratigraphic and Instrumentation Log: BH14-11

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.84								
0 / 0		**TOPSOIL**	0.00 56.69								
0 / 0		**FILL** Fine grained sand, some silt, some gravel, brown, dry to moist	0.15	SS	1		25	73			
3 / 1		Becomes moist to wet, grey/black Waste: ash/cinder		SS	2		3	53			BH14-11-SS2 was submitted for PAH and Metals analyses.
6 / 2		Fine grained sand, some silt, trace organics, brown, moist		SS	3		1	60			BH14-11-SS3 was submitted for PHC F2-F4 analyses.
8 / 2		Becomes wet Waste: ash/cinders		SS	4		1	50			
10 / 3			53.79								
10 / 3		**SILT LOAM** Clay, some silt, trace sand, trace organic, grey, moist	3.05	SS	5		1	83			
12 / 4			53.03								
13 / 4		**SAND AND GRAVEL** Fine to coarse grained sand, some silt, some gravel, wet	3.81 52.79	SS	6		50	50			
13 / 4		**END OF BOREHOLE - BEDROCK REFUSAL**	4.05								

Elevation: 56.84
Easting: 365201.74
Northing: 5030107.51

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

Stratigraphic and Instrumentation Log: BH14-12

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.66								
0 / 0		**TOPSOIL**	0.00 56.51								
0 / 0		**FILL** Waste: ash/cinders	0.15								
2 / 1				SS	1			43			BH14-12-SS1 was submitted for PAH and Metals analyses.
6 / 2		100 mm of wood waste	54.83 1.83	SS	2			53			
6 / 2		**SILT LOAM** Silt, some clay, trace sand, trace organics, dark brown, moist	54.53 2.13								
7 / 2		**CLAY** Clay, some silt, dark grey, moist									
8 / 2				SS	3						BH14-12-SS3 was submitted for PHC F2-F4 analyses.
9 / 3		**END OF BOREHOLE - BEDROCK REFUSAL**	53.92 2.74								

Elevation: 56.66
Easting: 365169.67
Northing: 5030080.46

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_124-00124

Stratigraphic and Instrumentation Log: BH14-13

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 11, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft)	Depth (m)	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 750 1250 / Total Organic Vapour (ppm) 20 60 100 140 180	Monitoring Well Details	Remarks
0	0	Ground Surface	56.74								
		TOPSOIL	0.00 56.59								
		FILL Fine to medium grained sand, some silt mostly waste Waste: ash/cinders, glass	0.15	SS	1		3	67			
2		Trace gravel Waste: ash/cinders									
3	1			SS	2		2	70			BH14-13-SS2 was submitted for PAH and Metals analyses.
4		Becomes moist									
5											
6		50 mm of wood waste	54.91	SS	3		1	63			
	2	**SILT LOAM** Silt, some clay, trace sand, trace organics, dark brown, moist	1.83 54.53								
7		**CLAY** Clay, some silt, dark grey, moist	2.21								
8											
9		Pieces of shell	53.84	SS	4		1	40			BH14-13-SS4 was submitted for PHC F2-F4 analyses.
10	3	**SAND AND GRAVEL** Fine to coarse grained sand, some gravel, grey, wet	2.90								
		Pieces of rock	53.39	SS	5		50	75			
11		**END OF BOREHOLE - BEDROCK REFUSAL**	3.35								
12											
13	4										
14											
15											

Elevation: 56.74
Easting: 365159.15
Northing: 5030114.38

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_125-00125

Stratigraphic and Instrumentation Log: BH14-14

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 11, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
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Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250 — Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	57.01								
		TOPSOIL	0.00 56.86								
		FILL Fine to medium grained sand,some gravel, brown, dry	0.15	SS	1		4	40			
2		Waste: ash/cinders, glass									
3 / 1		Fine grained sand, some silt, trace gravel, no waste, grey, dry		SS	2		4	50			
4		Waste: ash/cinders									
6 / 2		50 mm of wood waste	55.18								
		SILT LOAM Silt, some clay, trace sand, trace organics, dark brown, moist	1.83 54.72	SS	3		1	73			BH14-14-SS3 was submitted for PAH and Metals analyses.
8		**CLAY** Clay, some silt, grey, moist	2.29	SS	4		1	100			BH14-14-SS4 was submitted for PHC F2-F4 analyses (DUP-3).
10 / 3		**SAND AND GRAVEL** Fine to coarse grained sand, some gravel, pieces of rock, grey, wet	54.11 2.90 53.96 3.05								
		END OF BOREHOLE - BEDROCK REFUSAL									
13 / 4											
15											

Elevation: 57.01
Easting: 365148.64
Northing: 5030107.00

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_126-00126

Stratigraphic and Instrumentation Log: BH14-15

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 11, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250 — Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.71								
0		**TOPSOIL**	0.00 56.56								
0		**FILL** 50 mm of wood waste Silt, some fine grained sand, brown, dry	0.15	SS	1		6	70			
1		Waste: ash/cinders, glass, ceramic									
2											
3 / 1		Waste: ash/cinders		SS	2		1	63			BH14-15-SS2 was submitted for PAH and Metals analyses.
4											
5		Becomes moist									
6 / 2			54.88	SS	3		1	70			BH14-15-SS3 was submitted for PHC F2-F4 analyses.
6		**SILT LOAM** Silt, some sand, trace organics, dark brown, moist	1.83 54.58								
7		**SAND AND GRAVEL** Fine to coarse grained sand, some gravel, pieces of rock, grey, wet	2.13	SS	4		50	27			
8			54.12								
9		**END OF BOREHOLE - BEDROCK REFUSAL**	2.59								
10 / 3											
11											
12											
13 / 4											
14											
15											

Elevation: 56.71
Easting: 365154.82
Northing: 5030120.90

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

Stratigraphic and Instrumentation Log: BH14-16

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 11, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250 — Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.62								
0 / 0		**TOPSOIL**	0.00 56.47								
0 / 0		**FILL** Fine grained sand, some silt, trace gravel, light to dark brown, dry	0.15	SS	1			53			
1 / 0		Waste: ash/cinders									
2 / 0											
3 / 1		Waste: ash/cinders, glass, bone		SS	2						BH14-16-SS2 was submitted for PHC F2-F4, PAH and Metals analyses.
4 / 1											
5 / 1		Becomes moist									
6 / 2		50 mm of wood waste	54.79								
6 / 2		**SILT LOAM** Silt, trace clay, trace organics, dark brown, moist	1.83	SS	3			77			
7 / 2			54.33								
8 / 2		**CLAY** Clay, some silt, grey, moist	2.29								
9 / 3				SS	4						
10 / 3				SS	5			0			
10 / 3			53.42								
11 / 3		**END OF BOREHOLE - BEDROCK REFUSAL**	3.20								
12 / 4											
13 / 4											
14 / 4											
15 / 4											

Elevation: 56.62
Easting: 365149.03
Northing: 5030131.41

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_128-00128

Stratigraphic and Instrumentation Log: BH14-17

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.75								
0		**TOPSOIL**	0.00 56.60								
0		**FILL** Fine grained sand, some silt, trace gravel, brown, dry Trace waste: ash/cinders	0.15	SS	1		13	53			
1 / 1		Becomes moist Waste: ash/cinders		SS	2		1	37			BH14-17-SS2 was submitted for PAH and Metals analyses.
2		Waste: ash/cinders		SS	3		16	30			
2 / 2			54.46								
2		**SAND AND GRAVEL** Fine to coarse grained sand, some gravel, grey/brown, moist to wet	2.29	SS	4		50	47			BH14-17-SS4 was submitted for PHC F2-F4 analyses.
3 / 3			53.93								
3		**END OF BOREHOLE - BEDROCK REFUSAL**	2.82								
4 / 4											

Elevation: 56.75
Easting: 365175.85
Northing: 5030128.44

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_129-00129

Stratigraphic and Instrumentation Log: BH14-18

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250 — Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.87								
		TOPSOIL	0.00 56.72								
		FILL Fine grained sand, pieces of rock, brown/grey, dry	0.15	SS	1		31	53			
3 / 1		Fine grained sand, some silt, pieces of rock, brown, moist Waste: ash/cinders		SS	2		10	50			
5 / 2		Waste: ash/cinders, glass		SS	3		5	47			BH14-18-SS3 was submitted for PAH and Metals analyses.
		SAND AND GRAVEL Fine to coarse grained sand, some gravel, brown, moist	54.58 2.29 54.20	SS	4		50	40			BH14-18-SS4 was submitted for PHC F2-F4 analyses.
9 / 3		**END OF BOREHOLE - BEDROCK REFUSAL**	2.67								
13 / 4											
15											

Elevation: 56.87
Easting: 365189.88
Northing: 5030134.31

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_130-00130

Stratigraphic and Instrumentation Log: BH14-19

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.87								
0 / 0		**TOPSOIL**	0.00 56.72								
0 / 0		**FILL** Fine grained sand, some silt, brown, dry Waste: glass	0.15	SS	1		18	80			
3 / 1		Brown/black, moist Waste: ash/cinders, glass		SS	2		2	50			BH14-19-SS2 was submitted for PAH analysis.
5 / 2		Waste: ash/cinders, glass		SS	3		12	63			BH14-19-SS3 was submitted for PHC F2-F4 analyses.
7 / 2		**SAND AND GRAVEL** Pieces of rock	54.58 2.29	SS	4		50	13			
8 / 2		**END OF BOREHOLE - BEDROCK REFUSAL**									
15 / 4											

Elevation: 56.87
Easting: 365179.52
Northing: 5030148.68

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_131-00131

Stratigraphic and Instrumentation Log: BH14-20

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.80								
0 / 0		**TOPSOIL**	0.00 56.65								
1 / 0		**FILL** Fine grained sand, some silt, trace gravel, brown, dry Waste: ash/cinders	0.15	SS	1A/B		12	43			Sample BH14-20-SS1A was submitted for PAH, Metals. SS1B was submitted for PHC F2-F4 analysis.
2 / 0			56.04								
3 / 1		**SILT LOAM** Silt, some clay, pieces of rock, grey	0.76	SS	2		24	47			
4 / 1			55.35								
5 / 1		**END OF BOREHOLE - BEDROCK REFUSAL**	1.45								Note: Sample BH14-20-SS1A collected at adjacent location with shallow refusal. Sample BH14-20-SS1B collected from final borehole location.
6 / 2											
7 / 2											
8 / 2											
9 / 2											
10 / 3											
11 / 3											
12 / 3											
13 / 4											
14 / 4											
15 / 4											

Elevation: 56.80
Easting: 365168.97
Northing: 5030155.31

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

Stratigraphic and Instrumentation Log: BH14-21

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Depth (ft)	Depth (m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0	0		Ground Surface	56.55								
			TOPSOIL	0.00 56.40								
			FILL Fine grained sand, some silt, brown, dry	0.15								
1			Waste: ash/cinders		SS	1		3	60	○ ●		BH14-21-SS1 was submitted for PAH and Metals analyses.
2			Becomes moist Waste: ash/cinders, glass									
3	1				SS	2		1	10	○ ●		
4												
5												
6					SS	3		1	37	○ ●		BH14-21-SS3 was submitted for PHC F2-F4 analyses.
7	2			54.42								
			SILT LOAM Silt, some clay, trace organics, brown, moist	2.13								
8												
9				53.81	SS	4		23	60	○ ●		
			SAND AND GRAVEL Fine to coarse grained sand, some gravel, grey/brown, moist to wet	2.74								
10	3			53.50								
			SILT LOAM Silt, some fine grained sand, grey, moist to wet	3.05								
11					SS	5		18	80	○ ●		
12												
13	4		Pieces of rock		SS	6		50	0	○		
				52.31								
14			**END OF BOREHOLE - BEDROCK REFUSAL**	4.24								
15												

Elevation: 56.55
Easting: 365144.75
Northing: 5030155.02

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_133-00133

Stratigraphic and Instrumentation Log: BH14-22

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.91								
0		**TOPSOIL**	0.00 56.76								
1		**FILL** Fine grained sand, some silt, trace gravel, brown, dry Waste: ash/cinders	0.15	SS	1		8	60			BH14-22-SS1 was submitted for PAH, Metals and PHC F2-F4 analyses.
2			56.15								
3 / 1		**SANDY LOAM** Sand, some silt, pieces of rock, dark brown, moist	0.76	SS	2		50	13			
4		**END OF BOREHOLE - BEDROCK REFUSAL**									
5											
6 / 2											
7											
8											
9											
10 / 3											
11											
12											
13 / 4											
14											
15											

Elevation: 56.91
Easting: 365161.87
Northing: 5030177.39

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_134-00134

Stratigraphic and Instrumentation Log: BH14-23

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250 — Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.61								
0		**TOPSOIL**	0.00 56.46								
0		**FILL** Silt, some fine grained sand, brown/grey, dry Waste: ash/cinders	0.15	SS	1		15	67			BH14-23-SS1 was submitted for PAH and Metals analyses.
3 / 1		Waste: ash/cinders		SS	2		3	10			
5			55.09								
5		**CLAY** Clay, some silt, grey, damp	1.52								
6 / 2				SS	3		3	37			BH14-23-SS3 was submitted for PHC F2-F4 analyses.
7			54.32								
8		**END OF BOREHOLE - BEDROCK REFUSAL**	2.29								
10 / 3											
13 / 4											
15											

Elevation: 56.61
Easting: 365131.84
Northing: 5030166.61

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_135-00135

Stratigraphic and Instrumentation Log: BH14-25

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 15, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250 — Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.77								
0 / 0		**TOPSOIL**	0.00								
1 / 0		**FILL** Fine grained sand, brown, dry Waste: ash/cinders		SS	1			32			BH14-25-SS1 was submitted for PAH and Metals analyses.
5 / 1			56.25								
5 / 1		**SILT LOAM** Silt, trace sand, trace grave, pieces of rock, brownish/grey, damp to moist	1.52	SS	2			62			
8 / 2		Grey, trace gravel, damp 50 mm sand seam		SS	3						
11 / 3			53.42								
11 / 3		**TILL** Silt, some clay, some sand, trace gravel, grey, moist to wet	3.35	SS	4			100			
13 / 4				SS	5						
16 / 5				SS	6			100			BH14-25-SS6 was submitted for PHC F2-F4 analyses (DUP-12).
19 / 6			50.83								
20 / 6		**END OF BOREHOLE - BEDROCK REFUSAL**	5.94								

Elevation: 56.77
Easting: 365145.05
Northing: 5030195.82

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_136-00136

Stratigraphic and Instrumentation Log: BH14-26

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 15, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0	Ground Surface	57.11								
	TOPSOIL	0.00 56.96								
1	**FILL** Silt, some fine grained sand, brown, dry Waste: ash/cinders	0.15	SS	1			38			
2										
3 / 1			SS	2						
4	Waste: ash/cinders, ceramic, glass									
5										
6 / 2			SS	3			33			BH14-26-SS3 was submitted for PAH and Metals analyses.
7	Waste: ash/cinders	54.82								
8	**CLAY** Clay, some silt, grey, pieces of shell, damp	2.29								
9			SS	4						
10 / 3			SS	5			35			
11										
12		53.45	SS	6						BH14-26-SS6 was submitted for PHC F2-F4 analyses.
	Sand Fine to coarse grained sand, grey, wet Pieces of rock	3.66 53.30								
13 / 4	**END OF BOREHOLE - BEDROCK REFUSAL**	3.81								
14										
15										

Elevation: 57.11
Easting: 365114.26
Northing: 5030200.69

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_137-00137

Stratigraphic and Instrumentation Log: BH14-27

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 15, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.85								
0 / 0		**TOPSOIL**	0.00 56.70								
0 / 0		**FILL** Fine grained sand, some silt, brown, dry Waste: ash/cinders	0.15	SS	1			42			
3 / 1				SS	2						BH14-27-SS2 was submitted for PAH and Metals analyses (DUP-10).
4 / 1		Waste: ash/cinders, ceramic, glass									
6 / 2				SS	3			35			
7 / 2			54.56								
8 / 2		**CLAY** Clay, some silt, brownish/grey, damp	2.29	SS	4						BH14-27-SS4 was submitted for PHC F2-F4 analyses.
8 / 2			54.26								
9 / 3		**END OF BOREHOLE - BEDROCK REFUSAL**	2.59								

Elevation: 56.85
Easting: 365123.76
Northing: 5030220.87

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_138-00138

Stratigraphic and Instrumentation Log: BH14-28

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 15, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.85								
0 / 0		**TOPSOIL**	0.00 56.70								
0 / 0		**FILL** Fine grained sand, some silt, brown, dry	0.15	SS	1			52			
3 / 1		Silt, some fine grained sand, trace gravel, brownish/grey Waste: ash/cinders, pieces of brick		SS	2						BH14-28-SS2 was submitted for PHC F2-F4, PAH and Metals analyses (DUP-11).
6 / 2		**CLAY** Clay, some silt, pieces of rock, brown, damp	55.10 1.75 54.87 1.98	SS	3			38			
7 / 2		**END OF BOREHOLE - BEDROCK REFUSAL**									

Elevation: 56.85
Easting: 365149.62
Northing: 5030215.14

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_139-00139

Stratigraphic and Instrumentation Log: BH14-29

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 15, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.79								
0 / 0		**TOPSOIL**	0.00 56.64								
0 / 0		**FILL** Waste: ash/cinders	0.15								
2 / 1				SS	1			27			BH14-29-SS1 was submitted for PAH and Metals analyses.
5 / 2			55.04								
6 / 2		**SAND** Fine to coarse grained sand, some gravel/pieces of rock, trace silt, brown, damp	1.75	SS	2			53			BH14-29-SS2 was submitted for PHC F2-F4 analyses.
8 / 2			54.35								
8 / 2		**END OF BOREHOLE - BEDROCK REFUSAL**	2.44								

Elevation: 56.79
Easting: 365207.86
Northing: 5030195.67

Casing Elevation: N/A
Well Casing Size / Slot Size: N/A
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_140-00140

Stratigraphic and Instrumentation Log: MW14-1

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft)	Depth (m)	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 750 1250 / Total Organic Vapour (ppm) 20 60 100 140 180	Monitoring Well Details	Remarks
0	0	Ground Surface	56.67								
		TOPSOIL	0.00								
1		**FILL** Silt, some fine grained sand, dark brown, dry Waste: ash/cinders		SS	1		11	37			
2											
3	1	Fine grained sand, some silt, brown, trace gravel, becomes moist Waste: ash/cinders		SS	2		2	40			MW14-1-SS2 was submitted for PAH and Metals analyses.
4											
5		Becomes moist to wet									
6				SS	3		3	13			
7	2										
8											
		wood waste	54.08								
9		**SILT LOAM** Silt, some clay, trace sand, dark brown, moist	2.59	SS	4		1	53			MW14-1-SS4 was submitted for BTEX and PHC F1-F4 analyses.
10	3										
11				SS	5			87			
12			52.86								
13	4	**CLAY** Clay, some silt, grey, moist to wet	3.81								
14				SS	6		48	77			
		Pieces of rock	52.10								
15		**END OF BOREHOLE - BEDROCK REFUSAL**	4.57								
16	5										
17											

Elevation: 56.67
Easting: 365169.35
Northing: 5030098.18

Casing Elevation: 56.58
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

Stratigraphic and Instrumentation Log: MW14-2

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 11, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.78								
		TOPSOIL	0.00 56.63								
		FILL Silt, some fine grained sand, dark brown, dry Waste: ash/cinders	0.15	SS	1		3	40			
2		Becomes damp Waste: ash/cinders, glass		SS	2		5	37			MW14-2-SS2 was submitted for PAH and Metals analyses (DUP-2).
5		Becomes moist to wet		SS	3		9	47			MW14-2-SS3 was submitted for PHC F1 and BTEX analyses (DUP-1).
6 / 2		76 mm of wood waste	54.80								
7		**SILT LOAM** Silt, some clay, trace sand, dark brown, moist	1.98 54.49								
8		**CLAY** Clay, some silt, grey, moist	2.29	SS	4		1	100			
10 / 3		Pieces of shell and rock	53.58	SS	5		50	100			
11		**END OF BOREHOLE - BEDROCK REFUSAL**	3.20								
13 / 4											
15											

Elevation: 56.78
Easting: 365158.70
Northing: 5030088.13

Casing Elevation: 56.66
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

Stratigraphic and Instrumentation Log: MW14-3

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 15, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.92								
0		**TOPSOIL**	0.00								
1		**FILL** Fine grained sand, some silt, pieces of rock, brown, dry to moist		SS	1		19	77			
3 / 1		Pieces of rock, some fine grained sand, trace silt, grey		SS	2		19	40			MW14-3-SS2 was submitted for PAH and Metals analyses.
5		Fine grained sand, some silt, some gravel, brown, moist Waste: ash/cinder		SS	3		50	100			MW14-3-SS3 was submitted for PHC F2-F4 analyses.
6 / 2											
10 / 3		Fine to coarse grained sand, some gravel, trace silt, brown, moist Waste: ash/cinders									
12			53.26								
12		**SAND AND GRAVEL** Fine to coarse grained sand, some gravel, trace silt, brown, wet	3.66	SS	4			30			
15 / 4											
16 / 5				SS	5			67			
18			51.43								
18		**END OF BOREHOLE - BEDROCK REFUSAL**	5.49								
19 / 6											
20											

Elevation: 56.92
Easting: 365182.07
Northing: 5030162.01

Casing Elevation: 56.87
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_143-00143

Stratigraphic and Instrumentation Log: MW14-4

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 15, 2014
Hole Size: 82.55 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.76								
0		**TOPSOIL**	0.00								
1		**FILL** Fine grained sand, trace silt, brown, dry		SS	1			45			
2											
3 / 1		Fine grained sand, some silt, dark brown Waste: ash/cinders		SS	2						
4											
5		Silt, some fine grained sand, trace clay, trace gravel, dark brownish grey Waste: ash/cinders, pieces of coal									
6											
7 / 2				SS	3			22			MW14-4-SS3 was submitted for PAH and Metals analyses.
8											
9											
10 / 3			53.71								
11		**TILL** Clay, some silt, some sand, some gravel, grey, moist to wet	3.05								
12											
13 / 4				SS	4			15			MW14-4-SS4 was submitted for PHC F2-F4 analyses.
14											
15											
16											
17 / 5			51.43								
18		**END OF BOREHOLE - BEDROCK REFUSAL**	5.33								
19											
20 / 6											

Elevation: 56.76
Easting: 365139.46
Northing: 5030210.58

Casing Elevation: 56.66
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_144-00144

Stratigraphic and Instrumentation Log: MW14-5

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Remarks
0 / 0	Ground Surface	56.92						
	BASEBALL DIAMOND MATERIAL	0.00 / 56.77						
	FILL Fine grained sand, trace silt, brown, dry Waste: ash/cinders	0.15	SS	1			43	MW14-5-SS1 was submitted for PAH and Metals analyses.
3 / 1	Clay, some silt, brown		SS	2				
4	Fine to medium grained sand, trace silt, brown	55.40						
5 / 2	**SANDY SILT** Silt, some fine grained sand, treace gravel, grey, damp	1.52	SS	3			72	
8	Slight hydrocarbon odour		SS	4				MW14-5-SS4 was submitted for VOC and PHC F1 (DUP-4) and PHC F2-F4 (DUP-6) analyses.
9 / 3	Pieces of rock							
10	Slight hydrocarbon odour		SS	5			100	
11	Pieces of rock	53.57						
	END OF BOREHOLE - BEDROCK REFUSAL	3.35						
12 / 4								
13								
14								
15								

Combustible Vapour (ppm): 250 750 1250
Total Organic Vapour (ppm): 20 60 100 140 180

Monitoring Well Details

Elevation: 56.92
Easting: 365236.03
Northing: 5030170.06

Casing Elevation: 56.85
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 1

A0004697_145-00145

Stratigraphic and Instrumentation Log: BMW14-5

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

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Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) 250 / 750 / 1250 — Total Organic Vapour (ppm) 20 / 60 / 100 / 140 / 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.88								
		BASEBALL DIAMOND MATERIAL	0.00 56.73								
		FILL Fine grained sand, trace silt, brown, dry Waste: ash/cinders	0.15	SS	1			43			
3 / 1		Clay, some silt, brown		SS	2						
5		Fine to medium grained sand, trace silt, brown	55.36 1.52								
		SANDY SILT Silt, some fine grained sand. treace gravel, grey, damp		SS	3			72			
8 / 2		Slight hydrocarbon odour									
9				SS	4						
10 / 3		Pieces of rock									
		Slight hydrocarbon odour		SS	5			100			
11		Pieces of rock	53.53 3.35								
		LIMESTONE									
13 / 4											
16											

Elevation: 56.88
Easting: 365236.62
Northing: 5030168.43

Casing Elevation: 56.79
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 2

Stratigraphic and Instrumentation Log: BMW14-5

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

SUBSURFACE PROFILE				SAMPLE DATA					Combustible Vapour ○ 250 (ppm) 750 ○ 1250 Total Organic Vapour ● 20 60 100 140 180 ● (ppm)		
Depth	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)		Monitoring Well Details	Remarks
5											
17											
18											
19											
6											
20				AH	6						
21											
22											
7											
23											
24											
25											
26											
8											
27											
28											
29											
9											
30			47.74								
		END OF BOREHOLE	9.14								
31											
32											

Elevation: 56.88
Easting: 365236.62
Northing: 5030168.43

Casing Elevation: 56.79
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 2 of 2

A0004697_147-00147

Stratigraphic and Instrumentation Log: DBMW14-5

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.90								
0 / 0		**SAND AND GRAVEL** Baseball diamond material	0.00								
1		**FILL** Fine grained sand, trace silt, brown, dry Waste: ash/cinders		SS	1			43			
2											
3 / 1		Clay, some silt, brown		SS	2						
4		Fine to medium grained sand, trace silt, brown	55.38								
5		**SANDY SILT** Silt, some fine grained sand, treace gravel, grey, damp	1.52	SS	3			72			
6 / 2											
7											
8		Slight hydrocarbon odour		SS	4						
9											
10 / 3		Pieces of rock									
11		Slight hydrocarbon odour Pieces of rock	53.55	SS	5			100			
11		**LIMESTONE**	3.35								
12											
13 / 4											
14											
15											
16 / 5											
17											
18											
19											
20 / 6											
21											
22											

Elevation: 56.90
Easting: 365235.10
Northing: 5030168.63

Casing Elevation: 56.79
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 2

Stratigraphic and Instrumentation Log: DBMW14-5

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

SUBSURFACE PROFILE				SAMPLE DATA					Combustible Vapour ○ 250 (ppm) 750 ○ 1250 Total Organic Vapour ● 20 60 100 140 180 (ppm) ●		
Depth	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)		Monitoring Well Details	Remarks
23											
7											
24											
25											
26				AH	6						
8											
27											
28											
29											
9											
30											
31											
32											
10											
33											
34											
35											
36											
11											
37											
38											
39											
12											
40											
41											
42			44.10								
		END OF BOREHOLE	12.80								
13											
43											
44											

Elevation: 56.90
Easting: 365235.10
Northing: 5030168.63

Casing Elevation: 56.79
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 2 of 2

Stratigraphic and Instrumentation Log: DBMW14-2

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.64								
0		**TOPSOIL**	0.00								
1		**FILL** Fine grained sand, brown, dry									
2		Fine grained sand, pieces of rock, grey		SS	1			28			DBMW14-2-SS1 was submitted for PAH and Metals analyses.
3 / 1		Waste: trace ash									
5											
6				SS	2			28			
7 / 2			54.51								
8		**SAND AND GRAVEL** Fine grained sand, pieces of rock, grey, moist to wet	2.13								
9											
10 / 3											
11		Fine to coarse grained sand, trace gravel, brown, wet									
12				SS	3			37			DBMW14-2-SS3 was submitted for VOC and PHC F1-F4 analyses.
13 / 4											
14											
15			52.07								
15		**LIMESTONE**	4.57								
16											
17 / 5											
18											
19											
20 / 6											
21											
22											

Elevation: 56.64
Easting: 365274.78
Northing: 5030078.75

Casing Elevation: 56.57
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 2

A0004697_150-00150

Stratigraphic and Instrumentation Log: DBMW14-2

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 12, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

SUBSURFACE PROFILE				SAMPLE DATA					Combustible Vapour ○ 250 (ppm) 750 ○ 1250 Total Organic Vapour ● 20 60 100 140 180 ● (ppm)		
Depth	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)		Monitoring Well Details	Remarks
23											
24											
25											
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27											
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29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42			43.84								
		END OF BOREHOLE	12.80								
43											
44											

7 8 9 10 11 12 13

Elevation: 56.64
Easting: 365274.78
Northing: 5030078.75

Casing Elevation: 56.57
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 2 of 2

A0004697_151-00151

Stratigraphic and Instrumentation Log: DBMW14-4

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 13, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

Depth (ft / m)	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)	Combustible Vapour (ppm) ○ 250 750 1250 / Total Organic Vapour (ppm) ● 20 60 100 140 180	Monitoring Well Details	Remarks
0 / 0		Ground Surface	56.70								
0 / 0		**TOPSOIL**	0.00								
1		**FILL** Silt, fine grained sand, trace gravel, brown/grey, dry Waste: trace ash	56.09 0.61	SS	1			42			DBMW14-4-SS1 was submitted for PAH and Metals analyses.
2 / 1		**SAND AND GRAVEL** Fine to medium grained sand, trace gravel, pieces of rock, brownish grey, dry		SS	2						
5											
6 / 2			54.72	SS	3			60			
7		**SANDY SILT** Silt, some sand, trace gravel, grey, moist	1.98								
8				SS	4						
9 / 3											
10				SS	5			100			
11											
12				SS	6						DBMW14-4-SS6 was submitted for VOC and PHC F1-F4 analyses.
13 / 4		**DIRECT PUSH REFUSAL**	52.74 3.96								
14											
15											
16 / 5											
17											
18											
19											
20 / 6											
21			50.30								
22		**LIMESTONE**	6.40								

Elevation: 56.70
Easting: 365243.40
Northing: 5030142.33

Casing Elevation: 56.63
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 1 of 2

Stratigraphic and Instrumentation Log: DBMW14-4

Project No: TZ5100901
Location: Laroche Park
Logged By: JFT
Drill Date: August 13, 2014
Hole Size: 114 mm

Project Name: Laroche Park Baseline ESA
Client: City of Ottawa
Entered By: JFT
Drill Method: Direct Push
Drilled By: Strata Drilling Group

amec foster wheeler
300-210 Colonnade Road
Ottawa, Ontario K2E 7L5

SUBSURFACE PROFILE				SAMPLE DATA					Combustible Vapour ○ 250 (ppm) 750 ○ 1250 Total Organic Vapour ● 20 60 100 140 180 ● (ppm)		
Depth	Symbol	Description	Elevation (m)	Type	Number	Sample	N or RQD	Recovery (%)		Monitoring Well Details	Remarks
23	7										
24											
25											
26	8			AH	7						
27											
28											
29											
30	9										
31											
32											
33	10										
34											
35											
36	11										
37											
38											
39											
40	12		44.51								
		END OF BOREHOLE	12.19								
41											
42											
43	13										
44											

Elevation: 56.70
Easting: 365243.40
Northing: 5030142.33

Casing Elevation: 56.63
Well Casing Size / Slot Size: 38 mm/#10 slot
Vapour Unit: RKI Eagle II

Datum: Geodetic
Checked by: BI
Sheet: 2 of 2

APPENDIX B

LABORATORY REPORTS OF ANALYSIS

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

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Ottawa, Ontario K1G 4J8
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www.paracellabs.com

Certificate of Analysis

AMEC Environment & Infrastructure (Ottawa)
300-210 Colonnade Rd. S
Ottawa, ON K2E 7L5
Attn: Brock Ibbott

Phone: (613) 727-0658
Fax: (613) 727-9465

Client PO: 45064625
Project: TZ5100901/ Laroche Park
Custody: 19043/5

Report Date: 19-Aug-2014
Order Date: 11-Aug-2014
Order #: 1433106

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

Paracel ID	Client ID
1433106-01	MW14-2-SS2
1433106-02	MW14-2-SS3
1433106-03	BH14-5-SS2
1433106-04	BH14-5-SS4
1433106-05	BH14-7-SS1
1433106-06	BH14-8-SS2
1433106-07	BH14-8-SS3
1433106-08	BH14-13-SS2
1433106-09	BH14-13-SS4
1433106-10	BH14-14-SS3
1433106-11	BH14-14-SS4
1433106-12	BH14-15-SS2
1433106-13	BH14-15-SS3
1433106-14	BH14-16-SS2
1433106-15	DUP-1
1433106-16	DUP-2
1433106-17	DUP-3

Approved By:

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

Certificate of Analysis

Report Date: 19-Aug-2014
Order Date: 11-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	15-Aug-14	15-Aug-14
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	13-Aug-14	15-Aug-14
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	13-Aug-14	15-Aug-14
Mercury	EPA 7471B - CVAA, digestion	18-Aug-14	19-Aug-14
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	15-Aug-14	15-Aug-14
PHC F1	CWS Tier 1 - P&T GC-FID	13-Aug-14	15-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	15-Aug-14	15-Aug-14
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	13-Aug-14	15-Aug-14
Solids, %	Gravimetric, calculation	13-Aug-14	13-Aug-14

Certificate of Analysis

Report Date: 19-Aug-2014
Order Date:11-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-2-SS2	MW14-2-SS3	BH14-5-SS2	BH14-5-SS4
	Sample Date:	11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14
	Sample ID:	1433106-01	1433106-02	1433106-03	1433106-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	65.3	50.8	75.5	55.3
Metals					
Antimony	1.0 ug/g dry	9.4	-	14.7	-
Arsenic	1.0 ug/g dry	25.9	-	16.6	-
Barium	1.0 ug/g dry	370	-	1610	-
Beryllium	1.0 ug/g dry	<1.0	-	<1.0	-
Boron	1.0 ug/g dry	9.3	-	11.2	-
Boron, available	0.5 ug/g dry	<0.5	-	0.9	-
Cadmium	0.5 ug/g dry	<0.5	-	<0.5	-
Chromium	1.0 ug/g dry	41.4	-	19.7	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	<0.2	-
Cobalt	1.0 ug/g dry	16.1	-	11.8	-
Copper	1.0 ug/g dry	127	-	105	-
Lead	1.0 ug/g dry	847	-	2930	-
Mercury	0.1 ug/g dry	0.6	-	1.9	-
Molybdenum	1.0 ug/g dry	5.6	-	3.5	-
Nickel	1.0 ug/g dry	48.2	-	26.4	-
Selenium	1.0 ug/g dry	<1.0	-	<1.0	-
Silver	0.5 ug/g dry	<0.5	-	<0.5	-
Thallium	1.0 ug/g dry	<1.0	-	<1.0	-
Uranium	1.0 ug/g dry	<1.0	-	<1.0	-
Vanadium	1.0 ug/g dry	39.7	-	31.4	-
Zinc	1.0 ug/g dry	841	-	616	-
Volatiles					
Benzene	0.02 ug/g dry	-	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	-	<0.05	-	-
Toluene	0.05 ug/g dry	-	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	-	<0.05	-	-
o-Xylene	0.05 ug/g dry	-	<0.05	-	-
Xylenes, total	0.05 ug/g dry	-	<0.05	-	-
Toluene-d8	Surrogate	-	79.2%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	<7	-	-

Certificate of Analysis

Report Date: 19-Aug-2014
Order Date:11-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625   Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-2-SS2	MW14-2-SS3	BH14-5-SS2	BH14-5-SS4
	Sample Date:	11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14
	Sample ID:	1433106-01	1433106-02	1433106-03	1433106-04
	MDL/Units	Soil	Soil	Soil	Soil
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
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	0.04	-	0.09	-
Acenaphthylene	0.02 ug/g dry	0.03	-	0.16	-
Anthracene	0.02 ug/g dry	0.10	-	0.39	-
Benzo [a] anthracene	0.02 ug/g dry	0.25	-	0.84	-
Benzo [a] pyrene	0.02 ug/g dry	0.19	-	0.66	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.35	-	1.24	-
Benzo [g,h,i] perylene	0.02 ug/g dry	0.14	-	0.52	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.13	-	0.44	-
Chrysene	0.02 ug/g dry	0.24	-	0.95	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.03	-	0.14	-
Fluoranthene	0.02 ug/g dry	0.46	-	2.42	-
Fluorene	0.02 ug/g dry	0.03	-	0.11	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.12	-	0.49	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	0.09	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	0.10	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	0.18	-
Naphthalene	0.01 ug/g dry	0.02	-	0.18	-
Phenanthrene	0.02 ug/g dry	0.35	-	2.48	-
Pyrene	0.02 ug/g dry	0.38	-	1.91	-
2-Fluorobiphenyl	Surrogate	58.6%	-	68.0%	-
Terphenyl-d14	Surrogate	57.0%	-	58.1%	-

Certificate of Analysis

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625

Report Date: 19-Aug-2014
Order Date: 11-Aug-2014
Project Description: TZ5100901/ Laroche Park

Client ID:		BH14-7-SS1	BH14-8-SS2	BH14-8-SS3	BH14-13-SS2
Sample Date:		11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14
Sample ID:		1433106-05	1433106-06	1433106-07	1433106-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	95.1	81.2	65.6	79.2
Metals					
Antimony	1.0 ug/g dry	3.0	12.1	-	7.0
Arsenic	1.0 ug/g dry	3.9	23.2	-	49.8
Barium	1.0 ug/g dry	3990	483	-	953
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Boron	1.0 ug/g dry	5.3	10.8	-	13.9
Boron, available	0.5 ug/g dry	<0.5	0.7	-	1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	<0.5
Chromium	1.0 ug/g dry	32.9	22.9	-	29.5
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	-	<0.2
Cobalt	1.0 ug/g dry	7.7	12.5	-	17.1
Copper	1.0 ug/g dry	51.1	1060	-	120
Lead	1.0 ug/g dry	94.4	2660	-	1250
Mercury	0.1 ug/g dry	0.2	0.4	-	0.8
Molybdenum	1.0 ug/g dry	1.2	5.5	-	7.0
Nickel	1.0 ug/g dry	19.0	30.6	-	32.0
Selenium	1.0 ug/g dry	<1.0	<1.0	-	18.5
Silver	0.5 ug/g dry	<0.5	<0.5	-	0.6
Thallium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Vanadium	1.0 ug/g dry	33.9	38.7	-	32.2
Zinc	1.0 ug/g dry	122	789	-	615
Hydrocarbons					
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	77	-	110	-
F4 PHCs (C34-C50)	6 ug/g dry	26	-	33	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	-	0.06
Acenaphthylene	0.02 ug/g dry	0.14	<0.02	-	0.14
Anthracene	0.02 ug/g dry	0.14	<0.02	-	0.28
Benzo [a] anthracene	0.02 ug/g dry	0.29	0.05	-	0.58
Benzo [a] pyrene	0.02 ug/g dry	0.33	0.04	-	0.54

Certificate of Analysis

Report Date: 19-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:11-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-7-SS1	BH14-8-SS2	BH14-8-SS3	BH14-13-SS2
	Sample Date:	11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14
	Sample ID:	1433106-05	1433106-06	1433106-07	1433106-08
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	0.62	0.09	-	0.95
Benzo [g,h,i] perylene	0.02 ug/g dry	0.25	0.04	-	0.40
Benzo [k] fluoranthene	0.02 ug/g dry	0.22	0.04	-	0.34
Chrysene	0.02 ug/g dry	0.32	0.06	-	0.57
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.05	<0.02	-	0.10
Fluoranthene	0.02 ug/g dry	0.45	0.08	-	0.96
Fluorene	0.02 ug/g dry	<0.02	<0.02	-	0.09
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.20	0.03	-	0.37
1-Methylnaphthalene	0.02 ug/g dry	<0.02	0.07	-	0.06
2-Methylnaphthalene	0.02 ug/g dry	<0.02	0.08	-	0.09
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	0.14	-	0.15
Naphthalene	0.01 ug/g dry	0.02	0.05	-	0.13
Phenanthrene	0.02 ug/g dry	0.19	0.08	-	0.89
Pyrene	0.02 ug/g dry	0.41	0.07	-	0.86
2-Fluorobiphenyl	Surrogate	76.9%	62.5%	-	66.5%
Terphenyl-d14	Surrogate	66.4%	58.4%	-	62.4%

Certificate of Analysis

Report Date: 19-Aug-2014
Order Date:11-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-13-SS4	BH14-14-SS3	BH14-14-SS4	BH14-15-SS2
	Sample Date:	11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14
	Sample ID:	1433106-09	1433106-10	1433106-11	1433106-12
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	60.6	62.2	72.3	71.2
Metals					
Antimony	1.0 ug/g dry	-	13.7	-	11.2
Arsenic	1.0 ug/g dry	-	12.0	-	20.1
Barium	1.0 ug/g dry	-	272	-	389
Beryllium	1.0 ug/g dry	-	<1.0	-	<1.0
Boron	1.0 ug/g dry	-	9.2	-	8.1
Boron, available	0.5 ug/g dry	-	1.4	-	0.5
Cadmium	0.5 ug/g dry	-	<0.5	-	<0.5
Chromium	1.0 ug/g dry	-	37.5	-	95.3
Chromium (VI)	0.2 ug/g dry	-	<0.2	-	<0.2
Cobalt	1.0 ug/g dry	-	10.6	-	13.4
Copper	1.0 ug/g dry	-	108	-	66.1
Lead	1.0 ug/g dry	-	574	-	2530
Mercury	0.1 ug/g dry	-	0.3	-	0.4
Molybdenum	1.0 ug/g dry	-	2.3	-	4.1
Nickel	1.0 ug/g dry	-	29.4	-	29.7
Selenium	1.0 ug/g dry	-	<1.0	-	<1.0
Silver	0.5 ug/g dry	-	<0.5	-	1.0
Thallium	1.0 ug/g dry	-	<1.0	-	<1.0
Uranium	1.0 ug/g dry	-	<1.0	-	<1.0
Vanadium	1.0 ug/g dry	-	38.9	-	37.9
Zinc	1.0 ug/g dry	-	172	-	173
Hydrocarbons					
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	201	-	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	73	-	<6	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	<0.02	-	<0.02
Acenaphthylene	0.02 ug/g dry	-	0.03	-	0.04
Anthracene	0.02 ug/g dry	-	0.06	-	0.03
Benzo [a] anthracene	0.02 ug/g dry	-	0.15	-	0.08
Benzo [a] pyrene	0.02 ug/g dry	-	0.11	-	0.06

Certificate of Analysis

Report Date: 19-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:11-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Client ID:		BH14-13-SS4	BH14-14-SS3	BH14-14-SS4	BH14-15-SS2
Sample Date:		11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14
Sample ID:		1433106-09	1433106-10	1433106-11	1433106-12
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	-	0.21	-	0.15
Benzo [g,h,i] perylene	0.02 ug/g dry	-	0.08	-	0.08
Benzo [k] fluoranthene	0.02 ug/g dry	-	0.11	-	0.05
Chrysene	0.02 ug/g dry	-	0.13	-	0.09
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	<0.02	-	<0.02
Fluoranthene	0.02 ug/g dry	-	0.23	-	0.10
Fluorene	0.02 ug/g dry	-	<0.02	-	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	0.07	-	0.05
1-Methylnaphthalene	0.02 ug/g dry	-	<0.02	-	<0.02
2-Methylnaphthalene	0.02 ug/g dry	-	<0.02	-	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	-	<0.04	-	<0.04
Naphthalene	0.01 ug/g dry	-	0.02	-	0.02
Phenanthrene	0.02 ug/g dry	-	0.15	-	0.06
Pyrene	0.02 ug/g dry	-	0.20	-	0.08
2-Fluorobiphenyl	Surrogate	-	54.6%	-	87.8%
Terphenyl-d14	Surrogate	-	65.1%	-	65.6%

Certificate of Analysis

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625

Report Date: 19-Aug-2014

Order Date: 11-Aug-2014

Project Description: TZ5100901/ Laroche Park

Client ID:		BH14-15-SS3	BH14-16-SS2	DUP-1	DUP-2
Sample Date:		11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14
Sample ID:		1433106-13	1433106-14	1433106-15	1433106-16
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	56.9	81.4	50.8	68.2
Metals					
Antimony	1.0 ug/g dry	-	5.2	-	11.8
Arsenic	1.0 ug/g dry	-	26.8	-	36.5
Barium	1.0 ug/g dry	-	329	-	386
Beryllium	1.0 ug/g dry	-	<1.0	-	<1.0
Boron	1.0 ug/g dry	-	13.7	-	10.4
Boron, available	0.5 ug/g dry	-	1.1	-	0.6
Cadmium	0.5 ug/g dry	-	<0.5	-	<0.5
Chromium	1.0 ug/g dry	-	25.6	-	39.9
Chromium (VI)	0.2 ug/g dry	-	<0.2	-	<0.2
Cobalt	1.0 ug/g dry	-	12.3	-	18.2
Copper	1.0 ug/g dry	-	78.1	-	134
Lead	1.0 ug/g dry	-	327	-	848
Mercury	0.1 ug/g dry	-	0.6	-	0.4
Molybdenum	1.0 ug/g dry	-	4.7	-	6.8
Nickel	1.0 ug/g dry	-	29.6	-	44.6
Selenium	1.0 ug/g dry	-	<1.0	-	<1.0
Silver	0.5 ug/g dry	-	<0.5	-	<0.5
Thallium	1.0 ug/g dry	-	<1.0	-	<1.0
Uranium	1.0 ug/g dry	-	<1.0	-	<1.0
Vanadium	1.0 ug/g dry	-	40.6	-	44.6
Zinc	1.0 ug/g dry	-	455	-	718
Volatiles					
Benzene	0.02 ug/g dry	-	-	<0.02	-
Ethylbenzene	0.05 ug/g dry	-	-	<0.05	-
Toluene	0.05 ug/g dry	-	-	<0.05	-
m,p-Xylenes	0.05 ug/g dry	-	-	<0.05	-
o-Xylene	0.05 ug/g dry	-	-	<0.05	-
Xylenes, total	0.05 ug/g dry	-	-	<0.05	-
Toluene-d8	Surrogate	-	-	57.7%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	-	<7	-

Certificate of Analysis

Report Date: 19-Aug-2014
Order Date:11-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-15-SS3	BH14-16-SS2	DUP-1	DUP-2
	Sample Date:	11-Aug-14	11-Aug-14	11-Aug-14	11-Aug-14
	Sample ID:	1433106-13	1433106-14	1433106-15	1433106-16
	MDL/Units	Soil	Soil	Soil	Soil
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	201	69	-	-
F4 PHCs (C34-C50)	6 ug/g dry	49	<6	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	<0.02	-	<0.02
Acenaphthylene	0.02 ug/g dry	-	0.32	-	0.03
Anthracene	0.02 ug/g dry	-	0.30	-	0.07
Benzo [a] anthracene	0.02 ug/g dry	-	0.78	-	0.22
Benzo [a] pyrene	0.02 ug/g dry	-	1.04	-	0.20
Benzo [b] fluoranthene	0.02 ug/g dry	-	3.28	-	0.37
Benzo [g,h,i] perylene	0.02 ug/g dry	-	1.51	-	0.13
Benzo [k] fluoranthene	0.02 ug/g dry	-	1.09	-	0.15
Chrysene	0.02 ug/g dry	-	0.90	-	0.22
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	0.43	-	<0.02
Fluoranthene	0.02 ug/g dry	-	1.13	-	0.40
Fluorene	0.02 ug/g dry	-	<0.02	-	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	1.39	-	0.11
1-Methylnaphthalene	0.02 ug/g dry	-	0.02	-	<0.02
2-Methylnaphthalene	0.02 ug/g dry	-	0.03	-	0.03
Methylnaphthalene (1&2)	0.04 ug/g dry	-	0.05	-	<0.04
Naphthalene	0.01 ug/g dry	-	0.03	-	0.03
Phenanthrene	0.02 ug/g dry	-	0.32	-	0.24
Pyrene	0.02 ug/g dry	-	0.99	-	0.29
2-Fluorobiphenyl	Surrogate	-	74.2%	-	73.4%
Terphenyl-d14	Surrogate	-	69.1%	-	68.9%

Certificate of Analysis

Report Date: 19-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date: 11-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	DUP-3	-	-	-
	Sample Date:	11-Aug-14	-	-	-
	Sample ID:	1433106-17	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	57.3	-	-	-
Hydrocarbons					
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-

Certificate of Analysis

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625

Report Date: 19-Aug-2014
Order Date: 11-Aug-2014

Project Description: TZ5100901/ Laroche Park

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						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	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						
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	*0.927*		*ug/g*		*69.5*	*50-140*			
Surrogate: Terphenyl-d14	*0.928*		*ug/g*		*69.6*	*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						

Certificate of Analysis

Report Date: 19-Aug-2014
Order Date:11-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Surrogate: Toluene-d8	*2.79*		*ug/g*		*87.3*	*50-140*			

Certificate of Analysis

Report Date: 19-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:11-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

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	
Metals									
Antimony	9.24	1.0	ug/g dry	9.42			2.0	30	
Arsenic	26.2	1.0	ug/g dry	25.9			1.1	30	
Barium	350	1.0	ug/g dry	370			5.5	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	8.52	1.0	ug/g dry	9.29			8.7	30	
Cadmium	1.08	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	41.5	1.0	ug/g dry	41.4			0.3	30	
Cobalt	15.8	1.0	ug/g dry	16.1			1.6	30	
Copper	129	1.0	ug/g dry	127			1.8	30	
Lead	842	1.0	ug/g dry	847			0.6	30	
Mercury	0.582	0.1	ug/g dry	0.564			3.2	35	
Molybdenum	5.64	1.0	ug/g dry	5.63			0.1	30	
Nickel	46.7	1.0	ug/g dry	48.2			3.2	30	
Selenium	ND	1.0	ug/g dry	ND				30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND				30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	39.0	1.0	ug/g dry	39.7			1.9	30	
Zinc	799	1.0	ug/g dry	841			5.1	30	
Physical Characteristics									
% Solids	85.2	0.1	% by Wt.	86.5			1.5	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	ND				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	
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	ND				40	
Surrogate: 2-Fluorobiphenyl	*1.07*		*ug/g dry*	*ND*	*71.9*	*50-140*			
Surrogate: Terphenyl-d14	*1.09*		*ug/g dry*	*ND*	*73.2*	*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	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	*1.44*		*ug/g dry*	*ND*	*81.8*	*50-140*			

Certificate of Analysis

Report Date: 19-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:11-Aug-2014

Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	207	7	ug/g	ND	104	80-120			
F2 PHCs (C10-C16)	140	4	ug/g	ND	140	60-140			
F3 PHCs (C16-C34)	242	8	ug/g	ND	117	60-140			
F4 PHCs (C34-C50)	173	6	ug/g	ND	126	60-140			
Metals									
Antimony	457		ug/L	188	107	70-130			
Arsenic	804		ug/L	519	114	70-130			
Barium	263		ug/L	ND	105	70-130			
Beryllium	259		ug/L	1.64	103	70-130			
Boron, available	4.00	0.5	ug/g	ND	80.0	70-122			
Boron	441		ug/L	186	102	70-130			
Cadmium	295		ug/L	ND	118	70-130			
Chromium (VI)	5.0	0.2	ug/g	ND	98.0	70-130			
Chromium	1060		ug/L	827	92.4	70-130			
Cobalt	566		ug/L	322	97.5	70-130			
Copper	2750		ug/L	2540	82.2	70-130			
Lead	250		ug/L	ND	100	70-130			
Mercury	2.04	0.1	ug/g	0.564	98.6	72-128			
Molybdenum	377		ug/L	113	106	70-130			
Nickel	1190		ug/L	964	91.9	70-130			
Selenium	262		ug/L	ND	105	70-130			
Silver	268		ug/L	6.82	104	70-130			
Thallium	201		ug/L	ND	80.5	70-130			
Uranium	295		ug/L	ND	118	70-130			
Vanadium	1030		ug/L	795	93.6	70-130			
Zinc	256		ug/L	ND	102	70-130			
Semi-Volatiles									
Acenaphthene	0.142	0.02	ug/g	ND	76.7	50-140			
Acenaphthylene	0.099	0.02	ug/g	ND	53.4	50-140			
Anthracene	0.142	0.02	ug/g	ND	76.4	50-140			
Benzo [a] anthracene	0.170	0.02	ug/g	ND	91.6	50-140			
Benzo [a] pyrene	0.114	0.02	ug/g	ND	61.7	50-140			
Benzo [b] fluoranthene	0.169	0.02	ug/g	ND	91.1	50-140			
Benzo [g,h,i] perylene	0.138	0.02	ug/g	ND	74.7	50-140			
Benzo [k] fluoranthene	0.161	0.02	ug/g	ND	86.9	50-140			
Chrysene	0.159	0.02	ug/g	ND	85.5	50-140			
Dibenzo [a,h] anthracene	0.122	0.02	ug/g	ND	65.8	50-140			
Fluoranthene	0.129	0.02	ug/g	ND	69.9	50-140			
Fluorene	0.127	0.02	ug/g	ND	68.3	50-140			
Indeno [1,2,3-cd] pyrene	0.135	0.02	ug/g	ND	73.1	50-140			
1-Methylnaphthalene	0.140	0.02	ug/g	ND	75.8	50-140			
2-Methylnaphthalene	0.146	0.02	ug/g	ND	78.8	50-140			
Naphthalene	0.146	0.01	ug/g	ND	78.6	50-140			
Phenanthrene	0.135	0.02	ug/g	ND	72.7	50-140			
Pyrene	0.132	0.02	ug/g	ND	71.4	50-140			
Surrogate: 2-Fluorobiphenyl	*1.19*		*ug/g*		*80.3*	*50-140*			
Volatiles									

Certificate of Analysis

Report Date: 19-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:11-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzene	3.48	0.02	ug/g	ND	87.0	60-130			
Ethylbenzene	3.35	0.05	ug/g	ND	83.6	60-130			
Toluene	3.24	0.05	ug/g	ND	80.9	60-130			
m,p-Xylenes	6.35	0.05	ug/g	ND	79.4	60-130			
o-Xylene	3.22	0.05	ug/g	ND	80.6	60-130			

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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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Head Office

Chain of Custody

Page 1 of 2

Client Name: AMEC	Project Reference: TZ 510001		
Contact Name: Brock Elliott	Quote #		
Address: 3020 Glenmount Rd South, Ottawa	PO # CT of Ottawa [illegible]		
Telephone: 613-727-0658	Email Address: Brock.Elliott@amec.com	Date Required:	

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1433106

Required Analyses

#	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Notes
1	[illegible] MW14-2-SS2	S		1	Aug 28 2014		X	X				[illegible]
2	[illegible] MW14-2-SS3	S		[illegible]			[illegible]		X	X		[illegible] vial
3	[illegible] BH14-5-SS2	S		1			X	X				
4	[illegible] BH14-5-SS4	S		1					X			
5	BH14-6-SS1	S		1			X	X	X			Missing [illegible]
6	[illegible] BH14-7-SS1	S		1			X	X	X			[illegible]
7	[illegible] BH14-9-SS2	S		1			X	X				
8	[illegible] BH14-9-SS3	S		1					X			
9	[illegible] BH14-13-SS2	S		1			X	X				
10	[illegible] BH14-13-SS4	S		1					X			

Comments: Brock Park [illegible] * full list of metals & sample [illegible] submitted for both MW14-2-SS3 & [illegible] per [illegible]

Relinquished By (Sign):

Relinquished By (Print): Brock Elliott

Date/Time: Aug 28, 2014

Chain of Custody (Env.) - Rev. 0.2 May 2013

A0004697_175-00175

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Chain of Custody
(Lab Use Only)
Nº [illegible]

Client Name: [illegible]	Project Reference: [illegible]
Contact Name: [illegible]	Quote #:
Address: [illegible]	PO #: [illegible]
Telephone: [illegible]	Email Address: [illegible]

TAT: [illegible] [ ] 3 Day [ ] 2 Day [ ] 1 Day

Date Required: ____________

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1433106

Required Analyses

#	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	[illegible]	[illegible]	[illegible]	[illegible]							
1	[illegible] BH14-14-SS3	S		1	[illegible]		X	X					[illegible]	[illegible]			
2	[illegible] BH14-14-SS4	S		1	[illegible]				X								
3	[illegible] BH14-15-SS2	S		1			X	X									
4	[illegible] BH14-15-SS3	S		1					X								
5	[illegible] BH14-16-SS2	S		1			X	X	X					√			
6	[illegible] DUP-1	S		2						X			√	[illegible]	[illegible]		
7	[illegible] DUP-2	S		1			X	X						[illegible]			
8	[illegible] DUP-3	S		1	[illegible]				X					√			
9																	
10																	

Comments: [illegible] Park

Method of Delivery: [illegible]

Relinquished By (Sign): [illegible]	Received by Driver/Depot: [illegible]	Received at Lab: [illegible]	Verified By: [illegible]
Relinquished By (Print): [illegible]	Date/Time: [illegible]	Date/Time: [illegible]	Date/Time: [illegible]
Date/Time: [illegible], 2014	Temperature: [illegible]	Temperature: [illegible]	pH Verified [ ] By: [illegible]

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Certificate of Analysis

AMEC Environment & Infrastructure (Ottawa)
300-210 Colonnade Rd. S
Ottawa, ON K2E 7L5
Attn: Brock Ibbott

Phone: (613) 727-0658
Fax: (613) 727-9465

Client PO: 45064625
Project: TZ5100901/ Laroche Park
Custody: 19050/1/2/3

Report Date: 20-Aug-2014
Order Date: 12-Aug-2014
Order #: 1433170

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

Paracel ID	Client ID
1433170-01	BH14-1-SS1
1433170-02	BH14-2-SS1
1433170-03	BH14-2-SS3
1433170-04	BH14-3-SS1
1433170-05	BH14-3-SS2
1433170-06	BH14-4-SS3
1433170-07	BH14-4-SS4
1433170-08	BH14-9-SS2
1433170-09	BH14-9-SS3
1433170-10	BH14-10-SS3
1433170-11	BH14-11-SS2
1433170-12	BH14-11-SS3
1433170-13	BH14-12-SS1
1433170-14	BH14-12-SS3
1433170-15	BH14-17-SS2
1433170-16	BH14-17-SS4
1433170-17	BH14-18-SS3
1433170-18	BH14-18-SS4
1433170-19	BH14-19-SS2
1433170-20	BH14-19-SS3
1433170-21	BH14-20-SS1A
1433170-22	BH14-20-SS1B
1433170-23	BH14-21-SS1
1433170-24	BH14-21-SS3
1433170-25	BH14-22-SS1
1433170-26	BH14-23-SS1

Approved By: 

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

1433170-27	BH14-23-SS3
1433170-28	MW14-1-SS2
1433170-29	MW14-1-SS4
1433170-30	MW14-3-SS2
1433170-31	MW14-3-SS3
1433170-32	MW14-5-SS1
1433170-33	MW14-5-SS4
1433170-34	MW14-5 SU-5
1433170-35	DBMW14-2-SS1
1433170-36	DBMW14-2-SS3
1433170-37	DUP-4
1433170-38	DUP-5
1433170-39	DUP-6

Certificate of Analysis

Report Date: 20-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)** Order Date:12-Aug-2014
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC, water extraction	14-Aug-14	18-Aug-14
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	15-Aug-14	18-Aug-14
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	15-Aug-14	16-Aug-14
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	13-Aug-14	19-Aug-14
Mercury	EPA 7471B - CVAA, digestion	18-Aug-14	19-Aug-14
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	15-Aug-14	15-Aug-14
pH	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	20-Aug-14	20-Aug-14
PHC F1	CWS Tier 1 - P&T GC-FID	15-Aug-14	16-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	15-Aug-14	16-Aug-14
REG 153 - VOCs by P&T GC/MS	EPA 8260 - P&T GC-MS	15-Aug-14	16-Aug-14
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	13-Aug-14	16-Aug-14
Resistivity	EPA 120.1 - probe, water extraction	18-Aug-14	18-Aug-14
Solids, %	Gravimetric, calculation	14-Aug-14	14-Aug-14

Certificate of Analysis

Report Date: 20-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:12-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-1-SS1	BH14-2-SS1	BH14-2-SS3	BH14-3-SS1
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-01	1433170-02	1433170-03	1433170-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	90.0	83.7	54.7	82.7
Metals					
Antimony	1.0 ug/g dry	4.4	4.2	-	9.2
Arsenic	1.0 ug/g dry	6.5	16.5	-	20.2
Barium	1.0 ug/g dry	236	245	-	463
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Boron	1.0 ug/g dry	10.2	10.1	-	11.4
Boron, available	0.5 ug/g dry	0.8	0.8	-	1.0
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	<0.5
Chromium	1.0 ug/g dry	27.4	31.1	-	24.1
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	-	<0.2
Cobalt	1.0 ug/g dry	7.8	10.7	-	10.7
Copper	1.0 ug/g dry	43.0	55.3	-	115
Lead	1.0 ug/g dry	222	189	-	526
Mercury	0.1 ug/g dry	0.3	0.2	-	1.2
Molybdenum	1.0 ug/g dry	<1.0	3.4	-	3.8
Nickel	1.0 ug/g dry	18.0	24.7	-	24.7
Selenium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	-	1.0
Thallium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Vanadium	1.0 ug/g dry	34.1	35.3	-	36.3
Zinc	1.0 ug/g dry	166	200	-	467
Hydrocarbons					
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	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	0.17	<0.02	-	0.03
Acenaphthylene	0.02 ug/g dry	0.59	0.06	-	0.25
Anthracene	0.02 ug/g dry	1.08	0.05	-	0.26
Benzo [a] anthracene	0.02 ug/g dry	2.60	0.11	-	0.67
Benzo [a] pyrene	0.02 ug/g dry	2.39	0.12	-	0.62

Certificate of Analysis

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625

Report Date: 20-Aug-2014

Order Date:12-Aug-2014

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-1-SS1	BH14-2-SS1	BH14-2-SS3	BH14-3-SS1
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-01	1433170-02	1433170-03	1433170-04
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	2.91	0.15	-	0.93
Benzo [g,h,i] perylene	0.02 ug/g dry	1.11	<0.02	-	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	1.52	0.05	-	0.35
Chrysene	0.02 ug/g dry	2.42	0.13	-	0.65
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.37	<0.02	-	0.10
Fluoranthene	0.02 ug/g dry	5.48	0.21	-	1.21
Fluorene	0.02 ug/g dry	0.19	<0.02	-	0.04
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	1.27	0.07	-	0.36
1-Methylnaphthalene	0.02 ug/g dry	0.08	0.04	-	0.06
2-Methylnaphthalene	0.02 ug/g dry	0.09	0.04	-	0.07
Methylnaphthalene (1&2)	0.04 ug/g dry	0.17	0.07	-	0.13
Naphthalene	0.01 ug/g dry	0.12	0.03	-	0.05
Phenanthrene	0.02 ug/g dry	2.78	0.14	-	0.53
Pyrene	0.02 ug/g dry	4.80	0.16	-	1.01
2-Fluorobiphenyl	Surrogate	73.3%	68.1%	-	84.0%
Terphenyl-d14	Surrogate	58.0%	56.6%	-	53.6%

Certificate of Analysis

Report Date: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-3-SS2	BH14-4-SS3	BH14-4-SS4	BH14-9-SS2
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-05	1433170-06	1433170-07	1433170-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	71.5	78.3	42.4	64.1
Metals					
Antimony	1.0 ug/g dry	-	3.2	-	6.2
Arsenic	1.0 ug/g dry	-	7.6	-	19.5
Barium	1.0 ug/g dry	-	174	-	289
Beryllium	1.0 ug/g dry	-	<1.0	-	<1.0
Boron	1.0 ug/g dry	-	9.0	-	13.6
Boron, available	0.5 ug/g dry	-	0.9	-	1.3
Cadmium	0.5 ug/g dry	-	<0.5	-	<0.5
Chromium	1.0 ug/g dry	-	25.4	-	31.3
Chromium (VI)	0.2 ug/g dry	-	<0.2	-	<0.2
Cobalt	1.0 ug/g dry	-	7.7	-	13.9
Copper	1.0 ug/g dry	-	55.5	-	631
Lead	1.0 ug/g dry	-	122	-	286
Mercury	0.1 ug/g dry	-	0.2	-	1.9
Molybdenum	1.0 ug/g dry	-	4.2	-	4.7
Nickel	1.0 ug/g dry	-	21.6	-	34.4
Selenium	1.0 ug/g dry	-	<1.0	-	<1.0
Silver	0.5 ug/g dry	-	<0.5	-	<0.5
Thallium	1.0 ug/g dry	-	<1.0	-	<1.0
Uranium	1.0 ug/g dry	-	<1.0	-	<1.0
Vanadium	1.0 ug/g dry	-	27.7	-	41.3
Zinc	1.0 ug/g dry	-	196	-	546
Hydrocarbons					
F2 PHCs (C10-C16)	4 ug/g dry	12	-	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	216	-	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	99	-	<6	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	0.53	-	<0.02
Acenaphthylene	0.02 ug/g dry	-	0.65	-	<0.02
Anthracene	0.02 ug/g dry	-	2.84	-	<0.02
Benzo [a] anthracene	0.02 ug/g dry	-	6.10	-	<0.02
Benzo [a] pyrene	0.02 ug/g dry	-	6.67	-	<0.02

Certificate of Analysis

Report Date: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-3-SS2	BH14-4-SS3	BH14-4-SS4	BH14-9-SS2
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-05	1433170-06	1433170-07	1433170-08
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	-	6.59	-	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	-	2.52	-	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	-	4.74	-	<0.02
Chrysene	0.02 ug/g dry	-	6.03	-	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	0.96	-	<0.02
Fluoranthene	0.02 ug/g dry	-	17.8	-	<0.02
Fluorene	0.02 ug/g dry	-	1.42	-	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	3.59	-	<0.02
1-Methylnaphthalene	0.02 ug/g dry	-	0.15	-	<0.02
2-Methylnaphthalene	0.02 ug/g dry	-	0.16	-	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	-	0.31	-	<0.04
Naphthalene	0.01 ug/g dry	-	0.25	-	<0.01
Phenanthrene	0.02 ug/g dry	-	12.5	-	<0.02
Pyrene	0.02 ug/g dry	-	14.0	-	<0.02
2-Fluorobiphenyl	Surrogate	-	64.5%	-	57.4%
Terphenyl-d14	Surrogate	-	51.2%	-	51.4%

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Order #: 1433170

Certificate of Analysis

Report Date: 20-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:12-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-9-SS3	BH14-10-SS3	BH14-11-SS2	BH14-11-SS3
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-09	1433170-10	1433170-11	1433170-12
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	55.7	80.2	73.8	38.5
Metals					
Antimony	1.0 ug/g dry	-	3.2	6.8	-
Arsenic	1.0 ug/g dry	-	4.5	23.0	-
Barium	1.0 ug/g dry	-	130	445	-
Beryllium	1.0 ug/g dry	-	<1.0	<1.0	-
Boron	1.0 ug/g dry	-	8.0	14.4	-
Boron, available	0.5 ug/g dry	-	<0.5	0.8	-
Cadmium	0.5 ug/g dry	-	<0.5	<0.5	-
Chromium	1.0 ug/g dry	-	26.4	22.6	-
Chromium (VI)	0.2 ug/g dry	-	<0.2	<0.2	-
Cobalt	1.0 ug/g dry	-	10.1	12.6	-
Copper	1.0 ug/g dry	-	30.1	52.3	-
Lead	1.0 ug/g dry	-	49.7	561	-
Mercury	0.1 ug/g dry	-	0.2	0.3	-
Molybdenum	1.0 ug/g dry	-	<1.0	4.1	-
Nickel	1.0 ug/g dry	-	21.0	26.3	-
Selenium	1.0 ug/g dry	-	<1.0	<1.0	-
Silver	0.5 ug/g dry	-	<0.5	<0.5	-
Thallium	1.0 ug/g dry	-	<1.0	<1.0	-
Uranium	1.0 ug/g dry	-	<1.0	<1.0	-
Vanadium	1.0 ug/g dry	-	35.3	37.2	-
Zinc	1.0 ug/g dry	-	99.9	294	-
Hydrocarbons					
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
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	<0.02	<0.02	-
Acenaphthylene	0.02 ug/g dry	-	<0.02	0.13	-
Anthracene	0.02 ug/g dry	-	<0.02	0.12	-
Benzo [a] anthracene	0.02 ug/g dry	-	0.03	0.26	-
Benzo [a] pyrene	0.02 ug/g dry	-	<0.02	0.24	-

Certificate of Analysis

Report Date: 20-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:12-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-9-SS3	BH14-10-SS3	BH14-11-SS2	BH14-11-SS3
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-09	1433170-10	1433170-11	1433170-12
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	-	0.05	0.40	-
Benzo [g,h,i] perylene	0.02 ug/g dry	-	<0.02	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	-	<0.02	<0.02	-
Chrysene	0.02 ug/g dry	-	0.03	0.26	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	<0.02	0.04	-
Fluoranthene	0.02 ug/g dry	-	0.05	0.30	-
Fluorene	0.02 ug/g dry	-	<0.02	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	<0.02	0.14	-
1-Methylnaphthalene	0.02 ug/g dry	-	<0.02	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	-	<0.02	0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	-	<0.04	<0.04	-
Naphthalene	0.01 ug/g dry	-	<0.01	0.03	-
Phenanthrene	0.02 ug/g dry	-	<0.02	0.17	-
Pyrene	0.02 ug/g dry	-	0.05	0.32	-
2-Fluorobiphenyl	Surrogate	-	51.4%	50.2%	-
Terphenyl-d14	Surrogate	-	52.7%	52.3%	-

Certificate of Analysis

Report Date: 20-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:12-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-12-SS1	BH14-12-SS3	BH14-17-SS2	BH14-17-SS4
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-13	1433170-14	1433170-15	1433170-16
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	63.9	44.7	77.8	91.5
Metals					
Antimony	1.0 ug/g dry	8.3	-	3.1	-
Arsenic	1.0 ug/g dry	52.8	-	16.4	-
Barium	1.0 ug/g dry	353	-	191	-
Beryllium	1.0 ug/g dry	<1.0	-	<1.0	-
Boron	1.0 ug/g dry	12.5	-	5.9	-
Boron, available	0.5 ug/g dry	<0.5	-	<0.5	-
Cadmium	0.5 ug/g dry	<0.5	-	<0.5	-
Chromium	1.0 ug/g dry	28.8	-	18.6	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	<0.2	-
Cobalt	1.0 ug/g dry	15.6	-	11.9	-
Copper	1.0 ug/g dry	82.8	-	65.6	-
Lead	1.0 ug/g dry	219	-	189	-
Mercury	0.1 ug/g dry	0.4	-	0.4	-
Molybdenum	1.0 ug/g dry	11.9	-	4.0	-
Nickel	1.0 ug/g dry	42.3	-	25.9	-
Selenium	1.0 ug/g dry	<1.0	-	<1.0	-
Silver	0.5 ug/g dry	<0.5	-	<0.5	-
Thallium	1.0 ug/g dry	<1.0	-	<1.0	-
Uranium	1.0 ug/g dry	<1.0	-	<1.0	-
Vanadium	1.0 ug/g dry	51.1	-	35.3	-
Zinc	1.0 ug/g dry	415	-	172	-
Hydrocarbons					
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
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	<0.02	-
Acenaphthylene	0.02 ug/g dry	<0.02	-	<0.02	-
Anthracene	0.02 ug/g dry	<0.02	-	0.03	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	-	0.06	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	-	0.04	-

Certificate of Analysis

Report Date: 20-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:12-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-12-SS1	BH14-12-SS3	BH14-17-SS2	BH14-17-SS4
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-13	1433170-14	1433170-15	1433170-16
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	-	0.07	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	-	0.03	-
Chrysene	0.02 ug/g dry	<0.02	-	0.06	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	-	<0.02	-
Fluoranthene	0.02 ug/g dry	0.03	-	0.09	-
Fluorene	0.02 ug/g dry	<0.02	-	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	-	0.03	-
1-Methylnaphthalene	0.02 ug/g dry	0.31	-	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	0.43	-	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	0.74	-	<0.04	-
Naphthalene	0.01 ug/g dry	0.32	-	<0.01	-
Phenanthrene	0.02 ug/g dry	0.23	-	0.06	-
Pyrene	0.02 ug/g dry	0.04	-	0.08	-
2-Fluorobiphenyl	Surrogate	50.3%	-	71.0%	-
Terphenyl-d14	Surrogate	61.4%	-	56.5%	-

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Order #: 1433170

Certificate of Analysis

Report Date: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-18-SS3	BH14-18-SS4	BH14-19-SS2	BH14-19-SS3
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-17	1433170-18	1433170-19	1433170-20
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	85.7	91.2	75.6	88.5
General Inorganics					
pH	0.05 pH Units	-	-	7.41	-
Resistivity	0.10 Ohm.m	-	-	24.6	-
Anions					
Chloride	5 ug/g dry	-	-	<5	-
Sulphate	5 ug/g dry	-	-	100	-
Metals					
Antimony	1.0 ug/g dry	4.7	-	6.1	-
Arsenic	1.0 ug/g dry	9.6	-	18.2	-
Barium	1.0 ug/g dry	180	-	385	-
Beryllium	1.0 ug/g dry	<1.0	-	<1.0	-
Boron	1.0 ug/g dry	8.9	-	9.5	-
Boron, available	0.5 ug/g dry	<0.5	-	0.7	-
Cadmium	0.5 ug/g dry	<0.5	-	<0.5	-
Chromium	1.0 ug/g dry	22.8	-	32.4	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	<0.2	-
Cobalt	1.0 ug/g dry	7.9	-	10.6	-
Copper	1.0 ug/g dry	82.4	-	152	-
Lead	1.0 ug/g dry	316	-	1570	-
Mercury	0.1 ug/g dry	0.9	-	3.7	-
Molybdenum	1.0 ug/g dry	1.6	-	3.4	-
Nickel	1.0 ug/g dry	16.3	-	73.4	-
Selenium	1.0 ug/g dry	<1.0	-	<1.0	-
Silver	0.5 ug/g dry	<0.5	-	1.1	-
Thallium	1.0 ug/g dry	<1.0	-	<1.0	-
Uranium	1.0 ug/g dry	<1.0	-	<1.0	-
Vanadium	1.0 ug/g dry	33.8	-	30.0	-
Zinc	1.0 ug/g dry	262	-	657	-
Hydrocarbons					
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: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-18-SS3	BH14-18-SS4	BH14-19-SS2	BH14-19-SS3
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-17	1433170-18	1433170-19	1433170-20
	MDL/Units	Soil	Soil	Soil	Soil
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	0.07	-
Acenaphthylene	0.02 ug/g dry	0.05	-	0.23	-
Anthracene	0.02 ug/g dry	0.05	-	<0.02	-
Benzo [a] anthracene	0.02 ug/g dry	0.17	-	0.95	-
Benzo [a] pyrene	0.02 ug/g dry	0.15	-	0.85	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.21	-	1.08	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	0.37	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.06	-	0.41	-
Chrysene	0.02 ug/g dry	0.18	-	0.90	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	-	0.09	-
Fluoranthene	0.02 ug/g dry	0.24	-	1.39	-
Fluorene	0.02 ug/g dry	<0.02	-	0.08	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.08	-	0.35	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	0.04	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	0.04	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	0.09	-
Naphthalene	0.01 ug/g dry	0.02	-	0.06	-
Phenanthrene	0.02 ug/g dry	0.12	-	0.98	-
Pyrene	0.02 ug/g dry	0.22	-	1.14	-
2-Fluorobiphenyl	Surrogate	60.2%	-	63.7%	-
Terphenyl-d14	Surrogate	52.7%	-	51.7%	-

Certificate of Analysis

Report Date: 20-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)** Order Date:12-Aug-2014
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-20-SS1A	BH14-20-SS1B	BH14-21-SS1	BH14-21-SS3
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-21	1433170-22	1433170-23	1433170-24
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	91.1	86.1	84.5	49.1
Metals					
Antimony	1.0 ug/g dry	<1.0	-	<1.0	-
Arsenic	1.0 ug/g dry	4.7	-	4.8	-
Barium	1.0 ug/g dry	99.8	-	119	-
Beryllium	1.0 ug/g dry	<1.0	-	<1.0	-
Boron	1.0 ug/g dry	4.1	-	7.8	-
Boron, available	0.5 ug/g dry	<0.5	-	<0.5	-
Cadmium	0.5 ug/g dry	<0.5	-	<0.5	-
Chromium	1.0 ug/g dry	14.5	-	20.7	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	<0.2	-
Cobalt	1.0 ug/g dry	4.7	-	7.2	-
Copper	1.0 ug/g dry	40.4	-	30.5	-
Lead	1.0 ug/g dry	98.7	-	65.0	-
Mercury	0.1 ug/g dry	0.2	-	0.2	-
Molybdenum	1.0 ug/g dry	1.1	-	<1.0	-
Nickel	1.0 ug/g dry	10.6	-	15.0	-
Selenium	1.0 ug/g dry	<1.0	-	<1.0	-
Silver	0.5 ug/g dry	<0.5	-	<0.5	-
Thallium	1.0 ug/g dry	<1.0	-	<1.0	-
Uranium	1.0 ug/g dry	<1.0	-	<1.0	-
Vanadium	1.0 ug/g dry	21.2	-	29.9	-
Zinc	1.0 ug/g dry	105	-	85.6	-
Hydrocarbons					
F2 PHCs (C10-C16)	4 ug/g dry	-	<4	-	<4
F3 PHCs (C16-C34)	8 ug/g dry	-	<8	-	416
F4 PHCs (C34-C50)	6 ug/g dry	-	<6	-	297
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	<0.02	-
Acenaphthylene	0.02 ug/g dry	0.11	-	0.02	-
Anthracene	0.02 ug/g dry	0.11	-	0.02	-
Benzo [a] anthracene	0.02 ug/g dry	0.32	-	0.08	-
Benzo [a] pyrene	0.02 ug/g dry	0.43	-	0.10	-

Certificate of Analysis

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625

Report Date: 20-Aug-2014

Order Date:12-Aug-2014

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-20-SS1A	BH14-20-SS1B	BH14-21-SS1	BH14-21-SS3
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-21	1433170-22	1433170-23	1433170-24
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	0.44	-	0.09	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.16	-	0.05	-
Chrysene	0.02 ug/g dry	0.31	-	0.12	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.07	-	<0.02	-
Fluoranthene	0.02 ug/g dry	0.58	-	0.17	-
Fluorene	0.02 ug/g dry	<0.02	-	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.23	-	0.06	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	<0.04	-
Naphthalene	0.01 ug/g dry	0.02	-	<0.01	-
Phenanthrene	0.02 ug/g dry	0.18	-	0.08	-
Pyrene	0.02 ug/g dry	0.57	-	0.15	-
2-Fluorobiphenyl	Surrogate	86.0%	-	50.4%	-
Terphenyl-d14	Surrogate	51.4%	-	52.8%	-

Certificate of Analysis

Report Date: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-22-SS1	BH14-23-SS1	BH14-23-SS3	MW14-1-SS2
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-25	1433170-26	1433170-27	1433170-28
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	79.7	89.9	62.5	81.8
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	-	18.5
Arsenic	1.0 ug/g dry	5.6	4.5	-	19.1
Barium	1.0 ug/g dry	113	199	-	268
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Boron	1.0 ug/g dry	4.9	6.9	-	8.1
Boron, available	0.5 ug/g dry	<0.5	<0.5	-	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	<0.5
Chromium	1.0 ug/g dry	21.7	20.2	-	26.1
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	-	<0.2
Cobalt	1.0 ug/g dry	7.7	6.7	-	8.9
Copper	1.0 ug/g dry	52.6	35.7	-	62.9
Lead	1.0 ug/g dry	78.5	87.4	-	322
Mercury	0.1 ug/g dry	0.2	0.4	-	0.7
Molybdenum	1.0 ug/g dry	1.3	1.1	-	3.7
Nickel	1.0 ug/g dry	16.1	13.3	-	21.9
Selenium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	-	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Vanadium	1.0 ug/g dry	30.9	28.1	-	31.5
Zinc	1.0 ug/g dry	172	100	-	332
Hydrocarbons					
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	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	0.04	0.10	-	0.07
Acenaphthylene	0.02 ug/g dry	0.20	0.07	-	0.08
Anthracene	0.02 ug/g dry	0.28	0.20	-	0.21
Benzo [a] anthracene	0.02 ug/g dry	0.59	0.45	-	0.51
Benzo [a] pyrene	0.02 ug/g dry	0.63	0.52	-	0.50
Benzo [b] fluoranthene	0.02 ug/g dry	0.92	0.80	-	0.66

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Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625

Report Date: 20-Aug-2014

Order Date:12-Aug-2014

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-22-SS1	BH14-23-SS1	BH14-23-SS3	MW14-1-SS2
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-25	1433170-26	1433170-27	1433170-28
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	0.37	0.32	-	0.21
Chrysene	0.02 ug/g dry	0.59	0.48	-	0.48
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.10	0.07	-	0.08
Fluoranthene	0.02 ug/g dry	1.30	0.79	-	1.00
Fluorene	0.02 ug/g dry	0.05	0.07	-	0.08
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.40	0.23	-	0.30
1-Methylnaphthalene	0.02 ug/g dry	<0.02	0.02	-	0.03
2-Methylnaphthalene	0.02 ug/g dry	<0.02	0.03	-	0.04
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	0.05	-	0.07
Naphthalene	0.01 ug/g dry	0.04	0.10	-	0.09
Phenanthrene	0.02 ug/g dry	0.72	0.64	-	0.85
Pyrene	0.02 ug/g dry	1.14	0.63	-	0.97
2-Fluorobiphenyl	Surrogate	54.4%	73.0%	-	50.5%
Terphenyl-d14	Surrogate	51.2%	51.0%	-	54.0%

PARACEL

Order #: 1433170

Certificate of Analysis

Report Date: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Client ID:		MW14-1-SS4	MW14-3-SS2	MW14-3-SS3	MW14-5-SS1
Sample Date:		12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
Sample ID:		1433170-29	1433170-30	1433170-31	1433170-32
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	45.8	85.4	86.1	87.0
Metals					
Antimony	1.0 ug/g dry	-	<1.0	-	4.6
Arsenic	1.0 ug/g dry	-	4.9	-	8.4
Barium	1.0 ug/g dry	-	179	-	187
Beryllium	1.0 ug/g dry	-	<1.0	-	<1.0
Boron	1.0 ug/g dry	-	10.4	-	4.6
Boron, available	0.5 ug/g dry	-	<0.5	-	<0.5
Cadmium	0.5 ug/g dry	-	<0.5	-	<0.5
Chromium	1.0 ug/g dry	-	20.1	-	17.1
Chromium (VI)	0.2 ug/g dry	-	<0.2	-	<0.2
Cobalt	1.0 ug/g dry	-	6.0	-	6.8
Copper	1.0 ug/g dry	-	20.2	-	37.9
Lead	1.0 ug/g dry	-	34.8	-	203
Mercury	0.1 ug/g dry	-	1.4	-	0.2
Molybdenum	1.0 ug/g dry	-	1.0	-	1.6
Nickel	1.0 ug/g dry	-	13.5	-	14.5
Selenium	1.0 ug/g dry	-	<1.0	-	<1.0
Silver	0.5 ug/g dry	-	<0.5	-	<0.5
Thallium	1.0 ug/g dry	-	<1.0	-	<1.0
Uranium	1.0 ug/g dry	-	<1.0	-	<1.0
Vanadium	1.0 ug/g dry	-	24.9	-	25.9
Zinc	1.0 ug/g dry	-	102	-	177
Volatiles					
Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	80.7%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-

Certificate of Analysis

Report Date: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-1-SS4	MW14-3-SS2	MW14-3-SS3	MW14-5-SS1
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-29	1433170-30	1433170-31	1433170-32
	MDL/Units	Soil	Soil	Soil	Soil
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	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	0.07	-	<0.02
Acenaphthylene	0.02 ug/g dry	-	0.06	-	0.03
Anthracene	0.02 ug/g dry	-	0.24	-	0.03
Benzo [a] anthracene	0.02 ug/g dry	-	0.52	-	0.05
Benzo [a] pyrene	0.02 ug/g dry	-	0.41	-	0.06
Benzo [b] fluoranthene	0.02 ug/g dry	-	0.55	-	0.11
Benzo [g,h,i] perylene	0.02 ug/g dry	-	0.15	-	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	-	0.19	-	0.03
Chrysene	0.02 ug/g dry	-	0.47	-	0.05
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	0.05	-	<0.02
Fluoranthene	0.02 ug/g dry	-	0.81	-	0.06
Fluorene	0.02 ug/g dry	-	0.10	-	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	0.20	-	0.04
1-Methylnaphthalene	0.02 ug/g dry	-	0.02	-	<0.02
2-Methylnaphthalene	0.02 ug/g dry	-	0.03	-	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	-	0.05	-	<0.04
Naphthalene	0.01 ug/g dry	-	0.05	-	<0.01
Phenanthrene	0.02 ug/g dry	-	0.70	-	0.04
Pyrene	0.02 ug/g dry	-	0.64	-	0.06
2-Fluorobiphenyl	Surrogate	-	50.4%	-	57.8%
Terphenyl-d14	Surrogate	-	54.9%	-	53.8%

Certificate of Analysis

Report Date: 20-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:12-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Client ID:		MW14-5-SS4	MW14-5 SU-5	DBMW14-2-SS1	DBMW14-2-SS3
Sample Date:		12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
Sample ID:		1433170-33	1433170-34	1433170-35	1433170-36
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	91.1	83.7	94.9	87.5
Metals					
Antimony	1.0 ug/g dry	-	<1.0	3.1	-
Arsenic	1.0 ug/g dry	-	7.4	3.7	-
Barium	1.0 ug/g dry	-	227	192	-
Beryllium	1.0 ug/g dry	-	<1.0	<1.0	-
Boron	1.0 ug/g dry	-	7.7	7.5	-
Boron, available	0.5 ug/g dry	-	<0.5	<0.5	-
Cadmium	0.5 ug/g dry	-	<0.5	<0.5	-
Chromium	1.0 ug/g dry	-	19.5	16.9	-
Chromium (VI)	0.2 ug/g dry	-	<0.2	<0.2	-
Cobalt	1.0 ug/g dry	-	5.6	5.3	-
Copper	1.0 ug/g dry	-	57.7	189	-
Lead	1.0 ug/g dry	-	279	73.7	-
Mercury	0.1 ug/g dry	-	0.4	0.2	-
Molybdenum	1.0 ug/g dry	-	1.1	<1.0	-
Nickel	1.0 ug/g dry	-	14.9	12.9	-
Selenium	1.0 ug/g dry	-	<1.0	<1.0	-
Silver	0.5 ug/g dry	-	<0.5	<0.5	-
Thallium	1.0 ug/g dry	-	<1.0	<1.0	-
Uranium	1.0 ug/g dry	-	<1.0	<1.0	-
Vanadium	1.0 ug/g dry	-	21.6	22.5	-
Zinc	1.0 ug/g dry	-	447	227	-
Volatiles					
Acetone	0.50 ug/g dry	<0.50	-	-	<0.50
Benzene	0.02 ug/g dry	<0.02	-	-	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	-	-	<0.05
Bromoform	0.05 ug/g dry	<0.05	-	-	<0.05
Bromomethane	0.05 ug/g dry	<0.05	-	-	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	-	-	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
Chloroform	0.05 ug/g dry	<0.05	-	-	<0.05
Dibromochloromethane	0.05 ug/g dry	<0.05	-	-	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	-	-	<0.05

Certificate of Analysis

Report Date: 20-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:12-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Client ID:		MW14-5-SS4	MW14-5 SU-5	DBMW14-2-SS1	DBMW14-2-SS3
Sample Date:		12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
Sample ID:		1433170-33	1433170-34	1433170-35	1433170-36
	MDL/Units	Soil	Soil	Soil	Soil
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	-	-	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	-	-	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	<0.05
Ethylene dibromide (dibromoethar	0.05 ug/g dry	<0.05	-	-	<0.05
Hexane	0.05 ug/g dry	<0.05	-	-	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	-	-	<0.50
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	-	-	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	-	-	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	-	-	<0.05
Styrene	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	-	-	<0.05
Toluene	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	-	-	<0.05
Trichloroethylene	0.05 ug/g dry	0.83	-	-	0.87
Trichlorofluoromethane	0.05 ug/g dry	<0.05	-	-	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	-	-	<0.02
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
4-Bromofluorobenzene	Surrogate	107%	-	-	107%
Dibromofluoromethane	Surrogate	109%	-	-	105%

Certificate of Analysis

Report Date: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-5-SS4	MW14-5 SU-5	DBMW14-2-SS1	DBMW14-2-SS3
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	12-Aug-14
	Sample ID:	1433170-33	1433170-34	1433170-35	1433170-36
	MDL/Units	Soil	Soil	Soil	Soil
Toluene-d8	Surrogate	74.6%	-	-	74.8%
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	-	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	246	-	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	184	-	<6
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	0.13	<0.02	-
Acenaphthylene	0.02 ug/g dry	-	0.47	0.05	-
Anthracene	0.02 ug/g dry	-	0.58	0.06	-
Benzo [a] anthracene	0.02 ug/g dry	-	1.26	0.11	-
Benzo [a] pyrene	0.02 ug/g dry	-	1.23	0.14	-
Benzo [b] fluoranthene	0.02 ug/g dry	-	1.10	0.31	-
Benzo [g,h,i] perylene	0.02 ug/g dry	-	<0.02	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	-	0.42	0.10	-
Chrysene	0.02 ug/g dry	-	1.17	0.12	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	0.15	<0.02	-
Fluoranthene	0.02 ug/g dry	-	4.39	0.17	-
Fluorene	0.02 ug/g dry	-	0.10	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	0.48	0.07	-
1-Methylnaphthalene	0.02 ug/g dry	-	0.04	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	-	0.05	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	-	0.09	<0.04	-
Naphthalene	0.01 ug/g dry	-	0.06	<0.01	-
Phenanthrene	0.02 ug/g dry	-	1.39	0.11	-
Pyrene	0.02 ug/g dry	-	4.06	0.16	-
2-Fluorobiphenyl	Surrogate	-	71.3%	61.4%	-
Terphenyl-d14	Surrogate	-	55.1%	53.8%	-

Certificate of Analysis

Report Date: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	DUP-4	DUP-5	DUP-6	-
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	-
	Sample ID:	1433170-37	1433170-38	1433170-39	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	91.1	69.5	92.4	-
Metals					
Antimony	1.0 ug/g dry	-	6.1	-	-
Arsenic	1.0 ug/g dry	-	18.4	-	-
Barium	1.0 ug/g dry	-	324	-	-
Beryllium	1.0 ug/g dry	-	<1.0	-	-
Boron	1.0 ug/g dry	-	12.6	-	-
Boron, available	0.5 ug/g dry	-	0.9	-	-
Cadmium	0.5 ug/g dry	-	<0.5	-	-
Chromium	1.0 ug/g dry	-	30.3	-	-
Chromium (VI)	0.2 ug/g dry	-	<0.2	-	-
Cobalt	1.0 ug/g dry	-	12.3	-	-
Copper	1.0 ug/g dry	-	365	-	-
Lead	1.0 ug/g dry	-	251	-	-
Mercury	0.1 ug/g dry	-	3.2	-	-
Molybdenum	1.0 ug/g dry	-	3.4	-	-
Nickel	1.0 ug/g dry	-	33.6	-	-
Selenium	1.0 ug/g dry	-	<1.0	-	-
Silver	0.5 ug/g dry	-	0.6	-	-
Thallium	1.0 ug/g dry	-	<1.0	-	-
Uranium	1.0 ug/g dry	-	<1.0	-	-
Vanadium	1.0 ug/g dry	-	40.6	-	-
Zinc	1.0 ug/g dry	-	446	-	-
Volatiles					
Acetone	0.50 ug/g dry	<0.50	-	-	-
Benzene	0.02 ug/g dry	<0.02	-	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	-	-	-
Bromoform	0.05 ug/g dry	<0.05	-	-	-
Bromomethane	0.05 ug/g dry	<0.05	-	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	-	-	-
Chlorobenzene	0.05 ug/g dry	<0.05	-	-	-
Chloroform	0.05 ug/g dry	<0.05	-	-	-
Dibromochloromethane	0.05 ug/g dry	<0.05	-	-	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	-	-	-

Certificate of Analysis

Report Date: 20-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:12-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	DUP-4	DUP-5	DUP-6	-
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	-
	Sample ID:	1433170-37	1433170-38	1433170-39	-
	MDL/Units	Soil	Soil	Soil	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05	-	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Ethylene dibromide (dibromoetha	0.05 ug/g dry	<0.05	-	-	-
Hexane	0.05 ug/g dry	<0.05	-	-	-
Methyl Ethyl Ketone (2-Butanone	0.50 ug/g dry	<0.50	-	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	-	-	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	-	-	-
Methylene Chloride	0.05 ug/g dry	<0.05	-	-	-
Styrene	0.05 ug/g dry	<0.05	-	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	-
Tetrachloroethylene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	-	-	-
Trichloroethylene	0.05 ug/g dry	0.24	-	-	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	-	-	-
Vinyl chloride	0.02 ug/g dry	<0.02	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
4-Bromofluorobenzene	Surrogate	112%	-	-	-
Dibromofluoromethane	Surrogate	112%	-	-	-

Certificate of Analysis

Report Date: 20-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:12-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	DUP-4	DUP-5	DUP-6	-
	Sample Date:	12-Aug-14	12-Aug-14	12-Aug-14	-
	Sample ID:	1433170-37	1433170-38	1433170-39	-
	MDL/Units	Soil	Soil	Soil	-
Toluene-d8	Surrogate	74.4%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	-	-	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	-	-	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	-	-	<6	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	-	<0.02	-	-
Acenaphthylene	0.02 ug/g dry	-	<0.02	-	-
Anthracene	0.02 ug/g dry	-	0.03	-	-
Benzo [a] anthracene	0.02 ug/g dry	-	0.07	-	-
Benzo [a] pyrene	0.02 ug/g dry	-	0.09	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	-	0.12	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	-	<0.02	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	-	0.04	-	-
Chrysene	0.02 ug/g dry	-	0.09	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	-	<0.02	-	-
Fluoranthene	0.02 ug/g dry	-	0.12	-	-
Fluorene	0.02 ug/g dry	-	<0.02	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	-	0.06	-	-
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	-	0.08	-	-
Pyrene	0.02 ug/g dry	-	0.11	-	-
2-Fluorobiphenyl	Surrogate	-	50.5%	-	-
Terphenyl-d14	Surrogate	-	52.2%	-	-

Certificate of Analysis

Report Date: 20-Aug-2014
Order Date:12-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	5	ug/g						
Sulphate	ND	5	ug/g						
General Inorganics									
Resistivity	ND	0.10	Ohm.m						
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						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	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						
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	*0.995*		*ug/g*		*74.6*	*50-140*			
Surrogate: Terphenyl-d14	*0.873*		*ug/g*		*65.5*	*50-140*			
Volatiles									

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Ethylene dibromide (dibromoethane	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	*3.34*		*ug/g*		*104*	*50-140*			
Surrogate: Dibromofluoromethane	*3.57*		*ug/g*		*112*	*50-140*			
Surrogate: Toluene-d8	*2.79*		*ug/g*		*87.3*	*50-140*			
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	*2.79*		*ug/g*		*87.3*	*50-140*			

PARACEL

Order #: 1433170

Certificate of Analysis

Report Date: 20-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:12-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	ND	5	ug/g dry	ND				20	
Sulphate	290	5	ug/g dry	285			1.6	20	
General Inorganics									
pH	ND	0.05	pH Units	ND				10	
Resistivity	51.3	0.10	Ohm.m	52.0			1.3	20	
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	
Metals									
Antimony	9.24	1.0	ug/g dry	9.42			2.0	30	
Arsenic	26.2	1.0	ug/g dry	25.9			1.1	30	
Barium	350	1.0	ug/g dry	370			5.5	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	8.52	1.0	ug/g dry	9.29			8.7	30	
Cadmium	1.08	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	41.5	1.0	ug/g dry	41.4			0.3	30	
Cobalt	15.8	1.0	ug/g dry	16.1			1.6	30	
Copper	129	1.0	ug/g dry	127			1.8	30	
Lead	842	1.0	ug/g dry	847			0.6	30	
Mercury	0.582	0.1	ug/g dry	0.564			3.2	35	
Molybdenum	5.64	1.0	ug/g dry	5.63			0.1	30	
Nickel	46.7	1.0	ug/g dry	48.2			3.2	30	
Selenium	ND	1.0	ug/g dry	ND				30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND				30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	39.0	1.0	ug/g dry	39.7			1.9	30	
Zinc	799	1.0	ug/g dry	841			5.1	30	
Physical Characteristics									
% Solids	89.7	0.1	% by Wt.	90.0			0.2	25	
Semi-Volatiles									
Acenaphthene	0.105	0.02	ug/g dry	0.026			122.0	40	QR-04
Acenaphthylene	0.254	0.02	ug/g dry	0.245			3.3	40	
Anthracene	0.518	0.02	ug/g dry	0.260			66.2	40	QR-04
Benzo [a] anthracene	0.913	0.02	ug/g dry	0.667			31.1	40	
Benzo [a] pyrene	0.809	0.02	ug/g dry	0.624			25.8	40	
Benzo [b] fluoranthene	1.16	0.02	ug/g dry	0.934			21.2	40	
Benzo [g,h,i] perylene	ND	0.02	ug/g dry	ND				40	
Benzo [k] fluoranthene	0.430	0.02	ug/g dry	0.351			20.3	40	
Chrysene	0.946	0.02	ug/g dry	0.645			37.8	40	
Dibenzo [a,h] anthracene	0.140	0.02	ug/g dry	0.102			31.1	40	
Fluoranthene	1.71	0.02	ug/g dry	1.21			34.1	40	
Fluorene	0.291	0.02	ug/g dry	0.038			154.0	40	QR-04
Indeno [1,2,3-cd] pyrene	0.557	0.02	ug/g dry	0.361			42.7	40	QR-04
1-Methylnaphthalene	0.145	0.02	ug/g dry	0.060			83.2	40	QR-04
2-Methylnaphthalene	0.233	0.02	ug/g dry	0.066			111.0	40	QR-04
Naphthalene	0.542	0.01	ug/g dry	0.051			166.0	40	QR-04
Phenanthrene	1.68	0.02	ug/g dry	0.530			104.0	40	QR-04

Certificate of Analysis

Report Date: 20-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:12-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Pyrene	1.34	0.02	ug/g dry	1.01			28.1	40	
Surrogate: 2-Fluorobiphenyl	*0.834*		*ug/g dry*	*ND*	*51.7*	*50-140*			
Surrogate: Terphenyl-d14	*0.812*		*ug/g dry*	*ND*	*50.4*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Ethylene dibromide (dibromoethane	ND	0.05	ug/g dry	ND				50	
Hexane	ND	0.05	ug/g dry	ND				50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	*2.52*		*ug/g dry*	*ND*	*111*	*50-140*			
Surrogate: Dibromofluoromethane	*2.45*		*ug/g dry*	*ND*	*108*	*50-140*			
Surrogate: Toluene-d8	*1.77*		*ug/g dry*	*ND*	*77.9*	*50-140*			
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	*1.77*		*ug/g dry*	*ND*	*77.9*	*50-140*			

Certificate of Analysis

Report Date: 20-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:12-Aug-2014

Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	9.9		mg/L	0.08	98.0	78-113			
Sulphate	38.1		mg/L	28.5	95.7	78-111			
Hydrocarbons									
F1 PHCs (C6-C10)	207	7	ug/g	ND	104	80-120			
F2 PHCs (C10-C16)	128	4	ug/g	ND	64.2	60-140			
F3 PHCs (C16-C34)	429	8	ug/g	ND	104	60-140			
F4 PHCs (C34-C50)	302	6	ug/g	ND	109	60-140			
Metals									
Antimony	457		ug/L	188	107	70-130			
Arsenic	804		ug/L	519	114	70-130			
Barium	263		ug/L	ND	105	70-130			
Beryllium	259		ug/L	1.64	103	70-130			
Boron, available	4.00	0.5	ug/g	ND	80.0	70-122			
Boron	441		ug/L	186	102	70-130			
Cadmium	295		ug/L	ND	118	70-130			
Chromium (VI)	5.0	0.2	ug/g	ND	99.5	70-130			
Chromium	1060		ug/L	827	92.4	70-130			
Cobalt	566		ug/L	322	97.5	70-130			
Copper	2750		ug/L	2540	82.2	70-130			
Lead	250		ug/L	ND	100	70-130			
Mercury	2.04	0.1	ug/g	0.564	98.6	72-128			
Molybdenum	377		ug/L	113	106	70-130			
Nickel	1190		ug/L	964	91.9	70-130			
Selenium	262		ug/L	ND	105	70-130			
Silver	268		ug/L	6.82	104	70-130			
Thallium	201		ug/L	ND	80.5	70-130			
Uranium	295		ug/L	ND	118	70-130			
Vanadium	1030		ug/L	795	93.6	70-130			
Zinc	256		ug/L	ND	102	70-130			
Semi-Volatiles									
Acenaphthene	0.172	0.02	ug/g	ND	103	50-140			
Acenaphthylene	0.173	0.02	ug/g	ND	104	50-140			
Anthracene	0.186	0.02	ug/g	ND	112	50-140			
Benzo [a] anthracene	0.166	0.02	ug/g	ND	99.4	50-140			
Benzo [a] pyrene	0.158	0.02	ug/g	ND	94.8	50-140			
Benzo [b] fluoranthene	0.155	0.02	ug/g	ND	93.3	50-140			
Benzo [g,h,i] perylene	0.144	0.02	ug/g	ND	86.6	50-140			
Benzo [k] fluoranthene	0.153	0.02	ug/g	ND	91.6	50-140			
Chrysene	0.174	0.02	ug/g	ND	104	50-140			
Dibenzo [a,h] anthracene	0.136	0.02	ug/g	ND	81.5	50-140			
Fluoranthene	0.154	0.02	ug/g	ND	92.4	50-140			
Fluorene	0.146	0.02	ug/g	ND	87.9	50-140			
Indeno [1,2,3-cd] pyrene	0.142	0.02	ug/g	ND	84.9	50-140			
1-Methylnaphthalene	0.138	0.02	ug/g	ND	83.1	50-140			
2-Methylnaphthalene	0.143	0.02	ug/g	ND	85.9	50-140			
Naphthalene	0.152	0.01	ug/g	ND	91.0	50-140			
Phenanthrene	0.173	0.02	ug/g	ND	104	50-140			

Certificate of Analysis

Report Date: 20-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:12-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Pyrene	0.161	0.02	ug/g	ND	96.4	50-140			
Surrogate: 2-Fluorobiphenyl	*1.09*		*ug/g*		*81.8*	*50-140*			
Volatiles									
Acetone	7.68	0.50	ug/g	ND	76.8	50-140			
Benzene	3.48	0.02	ug/g	ND	87.0	60-130			
Bromodichloromethane	3.14	0.05	ug/g	ND	78.6	60-130			
Bromoform	3.22	0.05	ug/g	ND	80.5	60-130			
Bromomethane	4.76	0.05	ug/g	ND	119	50-140			
Carbon Tetrachloride	3.12	0.05	ug/g	ND	77.9	60-130			
Chlorobenzene	3.80	0.05	ug/g	ND	95.1	60-130			
Chloroform	3.29	0.05	ug/g	ND	82.2	60-130			
Dibromochloromethane	2.79	0.05	ug/g	ND	69.9	60-130			
Dichlorodifluoromethane	3.72	0.05	ug/g	ND	92.9	50-140			
1,2-Dichlorobenzene	3.95	0.05	ug/g	ND	98.7	60-130			
1,3-Dichlorobenzene	3.99	0.05	ug/g	ND	99.8	60-130			
1,4-Dichlorobenzene	3.76	0.05	ug/g	ND	93.9	60-130			
1,1-Dichloroethane	3.30	0.05	ug/g	ND	82.5	60-130			
1,2-Dichloroethane	3.13	0.05	ug/g	ND	78.2	60-130			
1,1-Dichloroethylene	3.38	0.05	ug/g	ND	84.5	60-130			
cis-1,2-Dichloroethylene	3.45	0.05	ug/g	ND	86.1	60-130			
trans-1,2-Dichloroethylene	3.16	0.05	ug/g	ND	79.0	60-130			
1,2-Dichloropropane	3.56	0.05	ug/g	ND	89.1	60-130			
cis-1,3-Dichloropropylene	4.46	0.05	ug/g	ND	111	60-130			
trans-1,3-Dichloropropylene	3.24	0.05	ug/g	ND	81.0	60-130			
Ethylbenzene	3.35	0.05	ug/g	ND	83.6	60-130			
Ethylene dibromide (dibromoethane	3.12	0.05	ug/g	ND	78.0	60-130			
Hexane	3.26	0.05	ug/g	ND	81.4	60-130			
Methyl Ethyl Ketone (2-Butanone)	7.36	0.50	ug/g	ND	73.6	50-140			
Methyl Isobutyl Ketone	10.5	0.50	ug/g	ND	105	50-140			
Methyl tert-butyl ether	9.85	0.05	ug/g	ND	98.5	50-140			
Methylene Chloride	3.43	0.05	ug/g	ND	85.7	60-130			
Styrene	3.54	0.05	ug/g	ND	88.4	60-130			
1,1,1,2-Tetrachloroethane	3.43	0.05	ug/g	ND	85.8	60-130			
1,1,2,2-Tetrachloroethane	2.74	0.05	ug/g	ND	68.5	60-130			
Tetrachloroethylene	3.23	0.05	ug/g	ND	80.6	60-130			
Toluene	3.24	0.05	ug/g	ND	80.9	60-130			
1,1,1-Trichloroethane	3.28	0.05	ug/g	ND	82.0	60-130			
1,1,2-Trichloroethane	4.28	0.05	ug/g	ND	107	60-130			
Trichloroethylene	3.51	0.05	ug/g	ND	87.7	60-130			
Trichlorofluoromethane	3.02	0.05	ug/g	ND	75.5	50-140			
Vinyl chloride	4.48	0.02	ug/g	ND	112	50-140			
m,p-Xylenes	6.35	0.05	ug/g	ND	79.4	60-130			
o-Xylene	3.22	0.05	ug/g	ND	80.6	60-130			
Benzene	3.48	0.02	ug/g	ND	87.0	60-130			
Ethylbenzene	3.35	0.05	ug/g	ND	83.6	60-130			
Toluene	3.24	0.05	ug/g	ND	80.9	60-130			
m,p-Xylenes	6.35	0.05	ug/g	ND	79.4	60-130			
o-Xylene	3.22	0.05	ug/g	ND	80.6	60-130			

Qualifier Notes:

QC Qualifiers :

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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Chain of Custody

Client Name: [illegible]	Project Reference: 7250D901	TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Contact Name: [illegible]	Quote #:	
Address: [illegible]	PO #: [illegible]	Date Required:
Telephone: 613-727-0658	Email Address: [illegible]	

Matrix Type: [illegible]

Required Analyses

Paracel Order Number: 1433170

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	[illegible]	PAH	[illegible]	[illegible]	[illegible]
BH14-1-SS1	S		1	[illegible] 2014		X	X	X		
BH14-2-SS1	S		1			X	X			
BH14-2-SS3	S		1					X		
BH14-3-SS1	S		1			X	X			
BH14-3-SS2	S		1					X		
BH14-4-SS3	S		1			X	X			
BH14-4-SS4	S		1					X		
BH14-9-SS2	S		1			X	X			
BH14-9-SS3	S		1					X		
BH14-10-SS3	S		1	VOC		X	X	X		

Comments: [illegible]

Relinquished By (Sign): [signature]

Relinquished By (Print): [illegible]

Date/Time: [illegible] 2014

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Chain of Custody (Lab Use Only) Nº 19051

Page 2 of 9

Client Name: AMEC	Project Reference: [illegible]	TAT: [X] Regular [ ] 3 Day	
Contact Name: Brock Elliott	Quote #:	[ ] 2 Day [ ] 1 Day	
Address: 300-210 Colonnade Rd South, Ottawa	PO #: City of Ottawa Site	Date Required:	
Telephone: 613-727-0658	Email Address: Brock.Elliott@AMEC.com		

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1433170

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
[illegible] BH14-11-SS2	S		1	Aug 12 2014		X	X							250 mL		
[illegible] BH14-11-SS3	S		1					X								
[illegible] BH14-12-SS1	S		1			X	X									
[illegible] BH14-12-SS3	S		1					X								
[illegible] BH14-17-SS2	S		1			X	X									
[illegible] BH14-17-SS4	S		1					X								
[illegible] BH14-18-SS3	S		1			X	X									
[illegible] BH14-18-SS4	S		1					X								
[illegible] BH14-19-SS2	S		1			X	X		X	X	X	X				
[illegible] BH14-19-SS3	S		1					X								

Comments: [illegible]

Relinquished By (Sign): [illegible]

Relinquished By (Print): [illegible]

Date/Time: Aug 13 2014

Chain of Custody (Blank) - Rev 0.2 May 2013

A0004697_210-00210

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Chain of Custody (Lab Use Only)
No. 19052

Client Name: AMEC	Project Reference: TZ5100401	[X] Regular	[ ] 3 Day
Contact Name: [illegible]	Quote #	[ ] 2 Day	[ ] 1 Day
Address: 300-210 Colonnade Rd South, Ottawa	PO #: City of Ottawa SOA	Date Required:	
Telephone: 613-727-0658	Email Address: [illegible]@amec.com		

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1433170

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Notes
[illegible] BH14-20-SS1A	S		1	Aug [illegible] 2014		X	X				-350 mL
[illegible] BH14-20-SS1B	S		1	"				X			
[illegible] BH14-21-SS1	S		1			X	X				
[illegible] BH14-21-SS3	S		1					X			
[illegible] BH14-22-SS1	S		1			X	X	X			
[illegible] BH14-23-SS1	S		1			X	X				
[illegible] BH14-23-SS3	S		1					X			
[illegible] MW14-1-SS2	S		1			X	X				
[illegible] MW14-1-SS4	S		2						X	X	[illegible]
[illegible] MW14-3-SS2	S		1			X	X				-350 mL

Comments: Laraby Park

Relinquished By (Sign): [signature]

Relinquished By (Print): [illegible]

Date/Time: Aug 12, 2014

Received by Driver/Depot: [illegible] | Received at Lab: [illegible] | Verified By: [illegible]

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Chain of Custody (Lab Use Only)
No 13053

Page 4 of 4

Client Name: Amec	Project Reference: TY5...	TAT: [X] Regular	[ ] 3 Day
Contact Name: Brock Abbott	Quote #	[ ] 2 Day	[ ] 1 Day
Address: 300-210 Colonnade Rd South, Ottawa	PO#: City of Ottawa SOA	Date Required:	
Telephone: 613-727-0658	Email Address: Brock.Abbott@amec.com		

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1433170

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	Metals	PAH	PHC F1-F4	PHC F1	VOC							
MW14-2-SS2	S		1	Aug 12 2014				X						[illegible]			/
MW14-5-SS1	S		1	"		X	X							[illegible]			/
MW14-5-SS4	S		2					X	X	X				[illegible]			/
MW14-5 SS-5	S		1			X	X	X						[illegible]			/
DB MW14-2-SS1	S		1			X	X							[illegible]			/
DB MW14-2-SS3	S		2					X	X	X				[illegible]			/
DB MW14-4-SS1	S		1			X	X				} on hold						/
DB MW14-4-SS2	S		2					X	X	X	} per Jason						/
DAP-4	S		2						X	X				[illegible]			/
DAP-5	S		1			X	X							[illegible]			/
DAP-6	S		1					X									/

Comments: Drake Park

Relinquished By (Sign): [signature]

Relinquished By (Print): J. Schmidt

Date/Time: August 12, 2014

[illegible] MW14-5 SS4 [illegible] per Jason [illegible]

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Certificate of Analysis

AMEC Environment & Infrastructure (Ottawa)
300-210 Colonnade Rd. S
Ottawa, ON K2E 7L5
Attn: Brock Ibbott

Phone: (613) 727-0658
Fax: (613) 727-9465

Client PO: 45064625
Project: TZ5100901/ Laroche Park
Custody: 101713/4/5

Report Date: 22-Aug-2014
Order Date: 15-Aug-2014
Order #: 1433286

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

Paracel ID	Client ID
1433286-01	DBMW14-4-SS1
1433286-02	DBMW14-4-SS6
1433286-03	BH14-6-SS1
1433286-04	DBMW14-4 SU-4
1433286-05	BH14-10 SU-10
1433286-06	BH14-3 SU-3
1433286-07	BH14-9 SU-9
1433286-08	BH14-1 SU-1
1433286-09	BH14-5 SU-5
1433286-10	BH14-7 SU-7
1433286-11	BH14-11 SU-11
1433286-12	MW14-2 SU-2
1433286-13	BH14-13 SU-13
1433286-14	SU-1
1433286-15	SU-2
1433286-16	SU-3
1433286-17	SU-4
1433286-18	SU-5
1433286-19	BH14-19 SU-19
1433286-20	BH14-29 SU-29
1433286-21	BH14-28 SU-28
1433286-22	BH14-25 SU-25
1433286-23	MW14-4 SU-4
1433286-24	BH14-27 SU-27
1433286-25	BH14-26 SU-26
1433286-26	DUP-7

Approved By:

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

1433286-27	DUP-8
1433286-28	DUP-9

Certificate of Analysis

Report Date: 22-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:15-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	20-Aug-14	20-Aug-14
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	19-Aug-14	21-Aug-14
Mercury	EPA 7471B - CVAA, digestion	19-Aug-14	20-Aug-14
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	20-Aug-14	20-Aug-14
PHC F1	CWS Tier 1 - P&T GC-FID	15-Aug-14	19-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	19-Aug-14	20-Aug-14
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	15-Aug-14	19-Aug-14
Solids, %	Gravimetric, calculation	18-Aug-14	18-Aug-14
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	15-Aug-14	19-Aug-14

Certificate of Analysis

Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

	Client ID:	DBMW14-4-SS1	DBMW14-4-SS6	BH14-6-SS1	DBMW14-4 SU-4
	Sample Date:	13-Aug-14	13-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-01	1433286-02	1433286-03	1433286-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	83.5	93.2	95.5	81.6
Metals					
Antimony	1.0 ug/g dry	4.5	-	<1.0	<1.0
Arsenic	1.0 ug/g dry	7.4	-	3.6	3.6
Barium	1.0 ug/g dry	319	-	339	102
Beryllium	1.0 ug/g dry	<1.0	-	<1.0	<1.0
Boron	1.0 ug/g dry	8.2	-	4.9	6.2
Boron, available	0.5 ug/g dry	<0.5	-	<0.5	0.5
Cadmium	0.5 ug/g dry	0.6	-	<0.5	<0.5
Chromium	1.0 ug/g dry	18.1	-	15.3	21.1
Chromium (VI)	0.2 ug/g dry	<0.2	-	<0.2	<0.2
Cobalt	1.0 ug/g dry	5.8	-	4.3	5.2
Copper	1.0 ug/g dry	51.1	-	19.0	20.7
Lead	1.0 ug/g dry	327	-	84.9	55.6
Mercury	0.1 ug/g dry	0.5	-	0.2	0.1
Molybdenum	1.0 ug/g dry	1.1	-	<1.0	<1.0
Nickel	1.0 ug/g dry	13.9	-	9.3	13.6
Selenium	1.0 ug/g dry	<1.0	-	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	-	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	-	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	-	<1.0	<1.0
Vanadium	1.0 ug/g dry	23.9	-	20.3	25.2
Zinc	1.0 ug/g dry	290	-	49.7	87.8
Volatiles					
Acetone	0.50 ug/g dry	-	<0.50	-	-
Benzene	0.02 ug/g dry	-	<0.02	-	-
Bromodichloromethane	0.05 ug/g dry	-	<0.05	-	-
Bromoform	0.05 ug/g dry	-	<0.05	-	-
Bromomethane	0.05 ug/g dry	-	<0.05	-	-
Carbon Tetrachloride	0.05 ug/g dry	-	<0.05	-	-
Chlorobenzene	0.05 ug/g dry	-	<0.05	-	-
Chloroethane	0.05 ug/g dry	-	<0.05	-	-
Chloroform	0.05 ug/g dry	-	<0.05	-	-

Certificate of Analysis

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625

Report Date: 22-Aug-2014
Order Date:15-Aug-2014
Project Description: TZ5100901/ Laroche Park

Client ID:		DBMW14-4-SS1	DBMW14-4-SS6	BH14-6-SS1	DBMW14-4 SU-4
Sample Date:		13-Aug-14	13-Aug-14	14-Aug-14	14-Aug-14
Sample ID:		1433286-01	1433286-02	1433286-03	1433286-04
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	-	<0.20	-	-
Dibromochloromethane	0.05 ug/g dry	-	<0.05	-	-
Dichlorodifluoromethane	0.05 ug/g dry	-	<0.05	-	-
1,2-Dibromoethane	0.05 ug/g dry	-	<0.05	-	-
1,2-Dichlorobenzene	0.05 ug/g dry	-	<0.05	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	-	<0.05	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	-	<0.05	-	-
1,1-Dichloroethane	0.05 ug/g dry	-	<0.05	-	-
1,2-Dichloroethane	0.05 ug/g dry	-	<0.05	-	-
1,1-Dichloroethylene	0.05 ug/g dry	-	<0.05	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	-	<0.05	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	-	<0.05	-	-
1,2-Dichloroethylene, total	0.05 ug/g dry	-	<0.05	-	-
1,2-Dichloropropane	0.05 ug/g dry	-	<0.05	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	-	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	-	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	-	<0.05	-	-
Ethylbenzene	0.05 ug/g dry	-	<0.05	-	-
Hexane	0.05 ug/g dry	-	<0.05	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	-	<0.50	-	-
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	-	<2.00	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	-	<0.50	-	-
Methyl tert-butyl ether	0.05 ug/g dry	-	<0.05	-	-
Methylene Chloride	0.05 ug/g dry	-	<0.05	-	-
Styrene	0.05 ug/g dry	-	<0.05	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	-	<0.05	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	-	<0.05	-	-
Tetrachloroethylene	0.05 ug/g dry	-	<0.05	-	-
Toluene	0.05 ug/g dry	-	<0.05	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	-	<0.05	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	-	<0.05	-	-
Trichloroethylene	0.05 ug/g dry	-	<0.05	-	-
Trichlorofluoromethane	0.05 ug/g dry	-	<0.05	-	-
1,3,5-Trimethylbenzene	0.05 ug/g dry	-	<0.05	-	-

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Report Date: 22-Aug-2014
Order Date: 15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Client ID:		DBMW14-4-SS1	DBMW14-4-SS6	BH14-6-SS1	DBMW14-4 SU-4
Sample Date:		13-Aug-14	13-Aug-14	14-Aug-14	14-Aug-14
Sample ID:		1433286-01	1433286-02	1433286-03	1433286-04
	MDL/Units	Soil	Soil	Soil	Soil
Vinyl chloride	0.02 ug/g dry	-	<0.02	-	-
m,p-Xylenes	0.05 ug/g dry	-	<0.05	-	-
o-Xylene	0.05 ug/g dry	-	<0.05	-	-
Xylenes, total	0.05 ug/g dry	-	<0.05	-	-
4-Bromofluorobenzene	Surrogate	-	105%	-	-
Dibromofluoromethane	Surrogate	-	101%	-	-
Toluene-d8	Surrogate	-	60.2%	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	-	<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
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	0.21	-	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	4.10	-	0.08	0.15
Anthracene	0.02 ug/g dry	2.83	-	0.07	0.14
Benzo [a] anthracene	0.02 ug/g dry	4.81	-	0.22	0.28
Benzo [a] pyrene	0.02 ug/g dry	6.50	-	0.23	0.34
Benzo [b] fluoranthene	0.02 ug/g dry	7.85	-	0.33	0.50
Benzo [g,h,i] perylene	0.02 ug/g dry	4.20	-	<0.02	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	2.20	-	0.11	0.13
Chrysene	0.02 ug/g dry	4.49	-	0.25	0.29
Dibenzo [a,h] anthracene	0.02 ug/g dry	1.27	-	0.04	0.05
Fluoranthene	0.02 ug/g dry	8.50	-	0.34	0.39
Fluorene	0.02 ug/g dry	0.43	-	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	4.14	-	0.13	0.20
1-Methylnaphthalene	0.02 ug/g dry	0.07	-	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	0.08	-	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	0.15	-	<0.04	<0.04
Naphthalene	0.01 ug/g dry	0.26	-	0.02	0.01
Phenanthrene	0.02 ug/g dry	3.33	-	0.16	0.19
Pyrene	0.02 ug/g dry	8.22	-	0.31	0.32
2-Fluorobiphenyl	Surrogate	64.1%	-	62.8%	60.6%
Terphenyl-d14	Surrogate	64.6%	-	112%	96.8%

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Order #: 1433286

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Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-10 SU-10	BH14-3 SU-3	BH14-9 SU-9	BH14-1 SU-1
	Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-05	1433286-06	1433286-07	1433286-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	84.1	80.8	76.7	80.4
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	4.3
Barium	1.0 ug/g dry	53.0	40.1	78.5	149
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	4.0	2.7	5.8	9.6
Boron, available	0.5 ug/g dry	<0.5	<0.5	1.1	1.3
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	0.6
Chromium	1.0 ug/g dry	10.7	7.8	16.9	22.1
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	3.5	2.2	4.6	6.1
Copper	1.0 ug/g dry	11.5	9.3	15.2	27.6
Lead	1.0 ug/g dry	22.8	20.9	20.4	118
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	0.2
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	7.2	4.6	10.2	14.3
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	18.0	12.0	21.7	30.5
Zinc	1.0 ug/g dry	43.2	38.2	51.0	130
Hydrocarbons					
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
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.13
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.16
Anthracene	0.02 ug/g dry	<0.02	0.02	0.03	0.44
Benzo [a] anthracene	0.02 ug/g dry	0.04	0.05	0.07	0.98
Benzo [a] pyrene	0.02 ug/g dry	0.04	0.06	0.08	1.05

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Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625

Report Date: 22-Aug-2014

Order Date:15-Aug-2014

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-10 SU-10	BH14-3 SU-3	BH14-9 SU-9	BH14-1 SU-1
	Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-05	1433286-06	1433286-07	1433286-08
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	0.06	0.06	0.12	1.56
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.70
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	0.03	0.07	0.72
Chrysene	0.02 ug/g dry	0.04	0.06	0.08	1.05
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.16
Fluoranthene	0.02 ug/g dry	0.06	0.09	0.11	2.64
Fluorene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.15
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.03	0.05	0.04	0.57
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.05
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.09
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	0.14
Naphthalene	0.01 ug/g dry	<0.01	<0.01	<0.01	0.11
Phenanthrene	0.02 ug/g dry	0.04	0.05	0.05	1.62
Pyrene	0.02 ug/g dry	0.05	0.08	0.10	1.78
2-Fluorobiphenyl	Surrogate	66.6%	59.0%	58.3%	75.8%
Terphenyl-d14	Surrogate	59.5%	98.0%	109%	92.2%

Certificate of Analysis

Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-5 SU-5	BH14-7 SU-7	BH14-11 SU-11	MW14-2 SU-2
	Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-09	1433286-10	1433286-11	1433286-12
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	95.2	81.5	77.4	80.0
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	3.6	2.9	4.0
Barium	1.0 ug/g dry	53.0	1940	77.1	128
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	4.3	5.5	6.0	6.1
Boron, available	0.5 ug/g dry	<0.5	0.8	1.0	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	5.7	30.2	16.4	18.5
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	2.0	6.9	4.5	5.0
Copper	1.0 ug/g dry	4.4	30.8	16.2	25.1
Lead	1.0 ug/g dry	7.6	123	18.9	86.3
Mercury	0.1 ug/g dry	<0.1	0.1	<0.1	0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	4.4	17.7	10.2	12.6
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	8.3	34.6	19.9	22.0
Zinc	1.0 ug/g dry	7.5	110	53.1	156
Hydrocarbons					
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
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	0.03	<0.02	0.68
Acenaphthylene	0.02 ug/g dry	<0.02	0.43	0.03	0.33
Anthracene	0.02 ug/g dry	<0.02	0.25	0.03	1.30
Benzo [a] anthracene	0.02 ug/g dry	<0.02	0.73	0.07	4.60
Benzo [a] pyrene	0.02 ug/g dry	<0.02	0.84	0.09	4.44

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Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625

Report Date: 22-Aug-2014

Order Date:15-Aug-2014

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-5 SU-5	BH14-7 SU-7	BH14-11 SU-11	MW14-2 SU-2
	Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-09	1433286-10	1433286-11	1433286-12
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	1.39	0.09	4.93
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	0.70	0.04	2.12
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	0.38	0.05	2.56
Chrysene	0.02 ug/g dry	<0.02	0.85	0.08	4.94
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	0.20	<0.02	0.78
Fluoranthene	0.02 ug/g dry	<0.02	1.78	0.09	11.2
Fluorene	0.02 ug/g dry	<0.02	0.04	<0.02	0.57
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	0.72	0.04	2.72
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.08
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.10
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	0.18
Naphthalene	0.01 ug/g dry	<0.01	0.03	<0.01	0.19
Phenanthrene	0.02 ug/g dry	<0.02	0.39	0.03	5.92
Pyrene	0.02 ug/g dry	<0.02	1.55	0.09	11.0
2-Fluorobiphenyl	Surrogate	73.6%	71.1%	67.1%	91.4%
Terphenyl-d14	Surrogate	101%	112%	52.9%	93.3%

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Order #: 1433286

Certificate of Analysis

Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Client ID:		BH14-13 SU-13	SU-1	SU-2	SU-3
Sample Date:		14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
Sample ID:		1433286-13	1433286-14	1433286-15	1433286-16
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	82.2	79.8	79.7	69.8
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	2.7	<1.0	<1.0	2.7
Barium	1.0 ug/g dry	75.7	66.6	38.3	74.3
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	4.4	5.0	3.6	7.5
Boron, available	0.5 ug/g dry	<0.5	0.8	0.8	1.2
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	0.5
Chromium	1.0 ug/g dry	11.9	17.4	10.1	18.2
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	3.7	3.8	2.4	4.4
Copper	1.0 ug/g dry	17.8	12.3	8.8	15.0
Lead	1.0 ug/g dry	47.4	16.1	13.9	27.1
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	8.5	8.8	5.4	10.6
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	16.6	23.0	13.3	23.2
Zinc	1.0 ug/g dry	65.2	58.7	36.9	80.0
Hydrocarbons					
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
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	1.63	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	0.06	<0.02	<0.02	0.03
Anthracene	0.02 ug/g dry	3.11	0.02	0.02	0.04
Benzo [a] anthracene	0.02 ug/g dry	4.26	0.08	0.08	0.14
Benzo [a] pyrene	0.02 ug/g dry	3.76	0.08	0.12	0.14

Certificate of Analysis

Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-13 SU-13	SU-1	SU-2	SU-3
	Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-13	1433286-14	1433286-15	1433286-16
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	4.20	0.09	0.16	0.30
Benzo [g,h,i] perylene	0.02 ug/g dry	1.73	<0.02	<0.02	0.10
Benzo [k] fluoranthene	0.02 ug/g dry	1.74	0.05	0.05	0.10
Chrysene	0.02 ug/g dry	3.96	0.09	0.08	0.17
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.26	<0.02	<0.02	0.03
Fluoranthene	0.02 ug/g dry	10.9	0.13	0.12	0.26
Fluorene	0.02 ug/g dry	1.65	<0.02	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	1.78	0.06	0.08	0.13
1-Methylnaphthalene	0.02 ug/g dry	0.28	<0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	0.38	<0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	0.66	<0.04	<0.04	<0.04
Naphthalene	0.01 ug/g dry	0.31	<0.01	<0.01	<0.01
Phenanthrene	0.02 ug/g dry	14.9	0.06	0.04	0.16
Pyrene	0.02 ug/g dry	13.2	0.08	0.12	0.21
2-Fluorobiphenyl	Surrogate	86.4%	101%	75.2%	59.3%
Terphenyl-d14	Surrogate	59.2%	93.7%	90.4%	76.9%

Certificate of Analysis

Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)** Order Date:15-Aug-2014
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Client ID:		SU-4	SU-5	BH14-19 SU-19	BH14-29 SU-29
Sample Date:		14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
Sample ID:		1433286-17	1433286-18	1433286-19	1433286-20
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	84.5	76.5	79.5	81.6
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	3.5	3.6	<1.0	13.1
Barium	1.0 ug/g dry	32.9	307	25.3	86.8
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	4.8	6.6	2.1	5.1
Boron, available	0.5 ug/g dry	1.1	1.2	0.6	0.5
Cadmium	0.5 ug/g dry	<0.5	0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	6.6	15.3	4.9	15.3
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	2.9	4.5	1.4	2.9
Copper	1.0 ug/g dry	9.5	16.1	4.7	20.8
Lead	1.0 ug/g dry	20.1	46.4	6.2	89.5
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	0.1
Molybdenum	1.0 ug/g dry	1.5	1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	6.5	10.2	3.4	8.8
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	10.0	22.1	7.8	12.8
Zinc	1.0 ug/g dry	58.0	88.1	16.6	112
Hydrocarbons					
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
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	0.08
Anthracene	0.02 ug/g dry	0.02	0.05	<0.02	0.11
Benzo [a] anthracene	0.02 ug/g dry	0.07	0.17	0.10	0.19
Benzo [a] pyrene	0.02 ug/g dry	0.06	0.12	0.12	0.19

Certificate of Analysis

Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:15-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	SU-4	SU-5	BH14-19 SU-19	BH14-29 SU-29
	Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-17	1433286-18	1433286-19	1433286-20
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	0.10	0.16	0.19	0.32
Benzo [g,h,i] perylene	0.02 ug/g dry	0.06	0.05	0.09	0.08
Benzo [k] fluoranthene	0.02 ug/g dry	0.03	0.08	0.06	0.12
Chrysene	0.02 ug/g dry	0.09	0.17	0.11	0.23
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	0.02	0.03
Fluoranthene	0.02 ug/g dry	0.20	0.28	0.08	0.39
Fluorene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.07	0.09	0.09	0.12
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<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	<0.04	<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	0.07	0.14	0.03	0.19
Pyrene	0.02 ug/g dry	0.17	0.23	0.07	0.33
2-Fluorobiphenyl	Surrogate	75.2%	91.8%	54.1%	108%
Terphenyl-d14	Surrogate	110%	59.4%	99.9%	55.3%

Certificate of Analysis

Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-28 SU-28	BH14-25 SU-25	MW14-4 SU-4	BH14-27 SU-27
	Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-21	1433286-22	1433286-23	1433286-24
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	80.2	81.0	81.9	80.0
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	46.8	40.2	28.0	46.3
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	3.9	4.5	2.0	4.8
Boron, available	0.5 ug/g dry	0.5	0.9	<0.5	0.7
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	10.9	9.6	5.6	10.7
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	3.3	2.9	1.7	3.4
Copper	1.0 ug/g dry	8.7	7.8	5.3	9.7
Lead	1.0 ug/g dry	16.4	13.0	14.8	17.5
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	6.2	5.4	3.2	6.0
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	18.5	17.3	9.4	18.5
Zinc	1.0 ug/g dry	34.4	57.6	34.1	53.3
Hydrocarbons					
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
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	0.03	0.02
Anthracene	0.02 ug/g dry	<0.02	<0.02	0.03	0.04
Benzo [a] anthracene	0.02 ug/g dry	0.06	0.03	0.11	0.07
Benzo [a] pyrene	0.02 ug/g dry	0.06	0.04	0.10	0.06

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Report Date: 22-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:15-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-28 SU-28	BH14-25 SU-25	MW14-4 SU-4	BH14-27 SU-27
	Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-21	1433286-22	1433286-23	1433286-24
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	0.05	0.04	0.16	0.09
Benzo [g,h,i] perylene	0.02 ug/g dry	0.03	<0.02	0.05	0.03
Benzo [k] fluoranthene	0.02 ug/g dry	0.03	<0.02	0.03	0.05
Chrysene	0.02 ug/g dry	0.06	0.04	0.10	0.07
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	0.09	0.05	0.13	0.25
Fluorene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.05	0.06	0.06	0.03
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<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	<0.04	<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	0.03	<0.02	0.05	0.07
Pyrene	0.02 ug/g dry	0.14	0.03	0.12	0.21
2-Fluorobiphenyl	Surrogate	55.1%	59.7%	79.8%	67.3%
Terphenyl-d14	Surrogate	111%	117%	65.4%	51.3%

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Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625

Report Date: 22-Aug-2014
Order Date:15-Aug-2014
Project Description: TZ5100901/ Laroche Park

Client ID:	BH14-26 SU-26	DUP-7	DUP-8	DUP-9
Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
Sample ID:	1433286-25	1433286-26	1433286-27	1433286-28
MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

	MDL/Units	BH14-26 SU-26	DUP-7	DUP-8	DUP-9
% Solids	0.1 % by Wt.	81.7	82.8	78.6	80.6

Metals

	MDL/Units	BH14-26 SU-26	DUP-7	DUP-8	DUP-9
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	3.3	<1.0
Barium	1.0 ug/g dry	45.2	76.5	78.1	30.7
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	3.1	3.0	6.5	2.2
Boron, available	0.5 ug/g dry	<0.5	<0.5	1.1	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	8.5	9.5	16.6	6.0
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	2.7	2.7	4.8	1.7
Copper	1.0 ug/g dry	7.1	14.0	15.9	6.8
Lead	1.0 ug/g dry	8.4	52.1	45.4	16.8
Mercury	0.1 ug/g dry	<0.1	<0.1	0.2	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	5.4	6.4	10.6	3.5
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	11.7	12.5	23.0	9.7
Zinc	1.0 ug/g dry	26.3	53.7	84.2	28.4

Hydrocarbons

	MDL/Units	BH14-26 SU-26	DUP-7	DUP-8	DUP-9
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

Semi-Volatiles

	MDL/Units	BH14-26 SU-26	DUP-7	DUP-8	DUP-9
Acenaphthene	0.02 ug/g dry	<0.02	0.27	0.03	<0.02
Acenaphthylene	0.02 ug/g dry	<0.02	0.05	0.03	<0.02
Anthracene	0.02 ug/g dry	<0.02	0.63	0.09	0.03
Benzo [a] anthracene	0.02 ug/g dry	0.05	1.65	0.27	0.08
Benzo [a] pyrene	0.02 ug/g dry	0.04	1.56	0.33	0.09
Benzo [b] fluoranthene	0.02 ug/g dry	0.03	2.23	0.37	0.15

Certificate of Analysis

Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:15-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-26 SU-26	DUP-7	DUP-8	DUP-9
	Sample Date:	14-Aug-14	14-Aug-14	14-Aug-14	14-Aug-14
	Sample ID:	1433286-25	1433286-26	1433286-27	1433286-28
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	0.74	0.18	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	0.02	0.79	0.13	0.06
Chrysene	0.02 ug/g dry	0.05	1.64	0.30	0.09
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	0.19	0.05	<0.02
Fluoranthene	0.02 ug/g dry	0.11	4.03	0.58	0.27
Fluorene	0.02 ug/g dry	<0.02	0.28	0.04	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.02	0.78	0.18	0.05
1-Methylnaphthalene	0.02 ug/g dry	<0.02	0.04	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	0.05	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	0.09	<0.04	<0.04
Naphthalene	0.01 ug/g dry	<0.01	0.09	0.02	<0.01
Phenanthrene	0.02 ug/g dry	0.05	2.80	0.40	0.09
Pyrene	0.02 ug/g dry	0.10	3.36	0.47	0.20
2-Fluorobiphenyl	Surrogate	120%	76.8%	98.9%	90.2%
Terphenyl-d14	Surrogate	54.1%	122%	81.9%	104%

Certificate of Analysis

Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

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						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	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						
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	*0.836*		*ug/g*		*62.7*	*50-140*			
Surrogate: Terphenyl-d14	*0.797*		*ug/g*		*59.8*	*50-140*			
Volatiles									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						

Certificate of Analysis

Report Date: 22-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:15-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	*3.34*		*ug/g*		*104*	*50-140*			
Surrogate: Dibromofluoromethane	*4.17*		*ug/g*		*130*	*50-140*			
Surrogate: Toluene-d8	*2.79*		*ug/g*		*87.3*	*50-140*			

Certificate of Analysis

Report Date: 22-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:15-Aug-2014

Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
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	
Metals									
Antimony	4.93	1.0	ug/g dry	4.53			8.4	30	
Arsenic	8.17	1.0	ug/g dry	7.45			9.3	30	
Barium	321	10.0	ug/g dry	319			0.4	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	1.01	0.5	ug/g dry	0.80			23.7	35	
Boron	7.88	1.0	ug/g dry	8.18			3.8	30	
Cadmium	0.57	0.5	ug/g dry	0.62			8.9	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	18.8	1.0	ug/g dry	18.1			3.9	30	
Cobalt	5.98	1.0	ug/g dry	5.85			2.3	30	
Copper	52.6	1.0	ug/g dry	51.1			2.8	30	
Lead	333	10.0	ug/g dry	327			1.7	30	
Mercury	0.434	0.1	ug/g dry	0.454			4.5	35	
Molybdenum	1.12	1.0	ug/g dry	1.08			2.8	30	
Nickel	14.0	1.0	ug/g dry	13.9			0.6	30	
Selenium	ND	1.0	ug/g dry	ND				30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND			0.0	30	
Vanadium	25.1	1.0	ug/g dry	23.9			4.8	30	
Zinc	294	10.0	ug/g dry	290			1.3	30	
Physical Characteristics									
% Solids	70.6	0.1	% by Wt.	70.9			0.3	25	
Semi-Volatiles									
Acenaphthene	0.146	0.02	ug/g dry	0.213			37.2	40	
Acenaphthylene	2.88	0.02	ug/g dry	4.10			35.0	40	
Anthracene	2.68	0.02	ug/g dry	2.83			5.7	40	
Benzo [a] anthracene	4.15	0.02	ug/g dry	4.81			14.8	40	
Benzo [a] pyrene	5.67	0.02	ug/g dry	6.50			13.8	40	
Benzo [b] fluoranthene	8.71	0.02	ug/g dry	7.85			10.4	40	
Benzo [g,h,i] perylene	4.23	0.02	ug/g dry	4.20			0.6	40	
Benzo [k] fluoranthene	3.49	0.02	ug/g dry	2.20			45.4	40	QR-04
Chrysene	4.02	0.02	ug/g dry	4.49			11.1	40	
Dibenzo [a,h] anthracene	0.401	0.02	ug/g dry	1.27			104.0	40	QR-04
Fluoranthene	5.02	0.02	ug/g dry	8.50			51.5	40	QR-04
Fluorene	0.251	0.02	ug/g dry	0.427			51.9	40	QR-04
Indeno [1,2,3-cd] pyrene	3.99	0.02	ug/g dry	4.14			3.8	40	
1-Methylnaphthalene	0.086	0.02	ug/g dry	0.068			22.5	40	
2-Methylnaphthalene	0.101	0.02	ug/g dry	0.080			23.3	40	
Naphthalene	0.174	0.01	ug/g dry	0.261			40.3	40	QR-04
Phenanthrene	2.97	0.02	ug/g dry	3.33			11.3	40	
Pyrene	5.10	0.02	ug/g dry	8.22			46.8	40	QR-04
Surrogate: 2-Fluorobiphenyl	*1.12*		*ug/g dry*	*ND*	*70.3*	*50-140*			
Surrogate: Terphenyl-d14	*1.44*		*ug/g dry*	*ND*	*90.4*	*50-140*			

Certificate of Analysis

Report Date: 22-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:15-Aug-2014

Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	207	7	ug/g	ND	104	80-120			
F2 PHCs (C10-C16)	67	4	ug/g	ND	68.6	60-140			
F3 PHCs (C16-C34)	181	8	ug/g	ND	90.2	60-140			
F4 PHCs (C34-C50)	150	6	ug/g	ND	112	60-140			
Metals									
Antimony	314		ug/L	90.7	89.2	70-130			
Arsenic	407		ug/L	149	103	70-130			
Barium	1160		ug/L	936	89.4	70-130			
Beryllium	229		ug/L	2.76	90.6	70-130			
Boron, available	4.95	0.5	ug/g	0.80	83.0	70-122			
Boron	393		ug/L	164	91.8	70-130			
Cadmium	236		ug/L	12.4	89.6	70-130			
Chromium (VI)	4.8	0.2	ug/g	ND	97.0	70-130			
Chromium	580		ug/L	362	86.9	70-130			
Cobalt	322		ug/L	117	82.0	70-130			
Copper	1280		ug/L	1020	102	70-130			
Lead	549		ug/L	329	87.9	70-130			
Mercury	1.68	0.1	ug/g	0.454	95.2	72-128			
Molybdenum	242		ug/L	21.7	87.9	70-130			
Nickel	468		ug/L	278	76.1	70-130			
Selenium	240		ug/L	ND	95.9	70-130			
Silver	212		ug/L	5.14	82.7	70-130			
Thallium	192		ug/L	ND	76.8	70-130			
Uranium	212		ug/L	ND	84.8	70-130			
Vanadium	695		ug/L	478	87.1	70-130			
Zinc	898		ug/L	688	83.7	70-130			
Semi-Volatiles									
Acenaphthene	0.181	0.02	ug/g	ND	87.6	50-140			
Acenaphthylene	0.183	0.02	ug/g	ND	88.6	50-140			
Anthracene	0.172	0.02	ug/g	0.034	66.5	50-140			
Benzo [a] anthracene	0.267	0.02	ug/g	0.079	91.0	50-140			
Benzo [a] pyrene	0.264	0.02	ug/g	0.090	84.3	50-140			
Benzo [b] fluoranthene	0.270	0.02	ug/g	0.149	58.3	50-140			
Benzo [g,h,i] perylene	0.287	0.02	ug/g	ND	139	50-140			
Benzo [k] fluoranthene	0.185	0.02	ug/g	0.060	60.3	50-140			
Chrysene	0.293	0.02	ug/g	0.091	97.8	50-140			
Dibenzo [a,h] anthracene	0.228	0.02	ug/g	ND	110	50-140			
Fluoranthene	0.269	0.02	ug/g	0.267	0.894	50-140			QM-06
Fluorene	0.174	0.02	ug/g	ND	84.1	50-140			
Indeno [1,2,3-cd] pyrene	0.299	0.02	ug/g	0.048	121	50-140			
1-Methylnaphthalene	0.164	0.02	ug/g	ND	79.2	50-140			
2-Methylnaphthalene	0.170	0.02	ug/g	ND	82.1	50-140			
Naphthalene	0.144	0.01	ug/g	ND	69.8	50-140			
Phenanthrene	0.220	0.02	ug/g	0.086	64.8	50-140			
Pyrene	0.270	0.02	ug/g	0.195	35.9	50-140			QM-06
Surrogate: 2-Fluorobiphenyl	*1.39*		*ug/g*		*83.7*	*50-140*			
Volatiles									

Certificate of Analysis

Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:15-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	7.68	0.50	ug/g	ND	76.8	50-140			
Benzene	3.48	0.02	ug/g	ND	87.0	60-130			
Bromodichloromethane	3.14	0.05	ug/g	ND	78.6	60-130			
Bromoform	3.22	0.05	ug/g	ND	80.5	60-130			
Bromomethane	4.76	0.05	ug/g	ND	119	50-140			
Carbon Tetrachloride	3.12	0.05	ug/g	ND	77.9	60-130			
Chlorobenzene	3.80	0.05	ug/g	ND	95.1	60-130			
Chloroethane	3.50	0.05	ug/g	ND	87.5	50-140			
Chloroform	3.29	0.05	ug/g	ND	82.2	60-130			
Chloromethane	4.93	0.20	ug/g	ND	123	50-140			
Dibromochloromethane	2.79	0.05	ug/g	ND	69.9	60-130			
Dichlorodifluoromethane	3.72	0.05	ug/g	ND	92.9	50-140			
1,2-Dibromoethane	3.12	0.05	ug/g	ND	78.0	60-130			
1,2-Dichlorobenzene	3.95	0.05	ug/g	ND	98.7	60-130			
1,3-Dichlorobenzene	3.99	0.05	ug/g	ND	99.8	60-130			
1,4-Dichlorobenzene	3.76	0.05	ug/g	ND	93.9	60-130			
1,1-Dichloroethane	3.30	0.05	ug/g	ND	82.5	60-130			
1,2-Dichloroethane	3.13	0.05	ug/g	ND	78.2	60-130			
1,1-Dichloroethylene	3.38	0.05	ug/g	ND	84.5	60-130			
cis-1,2-Dichloroethylene	3.45	0.05	ug/g	ND	86.1	60-130			
trans-1,2-Dichloroethylene	3.16	0.05	ug/g	ND	79.0	60-130			
1,2-Dichloropropane	3.56	0.05	ug/g	ND	89.1	60-130			
cis-1,3-Dichloropropylene	4.46	0.05	ug/g	ND	111	60-130			
trans-1,3-Dichloropropylene	3.24	0.05	ug/g	ND	81.0	60-130			
Ethylbenzene	3.35	0.05	ug/g	ND	83.6	60-130			
Hexane	3.26	0.05	ug/g	ND	81.4	60-130			
Methyl Ethyl Ketone (2-Butanone)	7.36	0.50	ug/g	ND	73.6	50-140			
Methyl Butyl Ketone (2-Hexanone)	9.30	2.00	ug/g	ND	93.0	50-140			
Methyl Isobutyl Ketone	10.5	0.50	ug/g	ND	105	50-140			
Methyl tert-butyl ether	9.85	0.05	ug/g	ND	98.5	50-140			
Methylene Chloride	3.43	0.05	ug/g	ND	85.7	60-130			
Styrene	3.54	0.05	ug/g	ND	88.4	60-130			
1,1,1,2-Tetrachloroethane	3.43	0.05	ug/g	ND	85.8	60-130			
1,1,2,2-Tetrachloroethane	2.74	0.05	ug/g	ND	68.5	60-130			
Tetrachloroethylene	3.23	0.05	ug/g	ND	80.6	60-130			
Toluene	3.24	0.05	ug/g	ND	80.9	60-130			
1,1,1-Trichloroethane	3.28	0.05	ug/g	ND	82.0	60-130			
1,1,2-Trichloroethane	4.28	0.05	ug/g	ND	107	60-130			
Trichloroethylene	3.51	0.05	ug/g	ND	87.7	60-130			
Trichlorofluoromethane	3.02	0.05	ug/g	ND	75.5	50-140			
1,3,5-Trimethylbenzene	3.78	0.05	ug/g	ND	94.5	60-130			
Vinyl chloride	4.48	0.02	ug/g	ND	112	50-140			
m,p-Xylenes	6.35	0.05	ug/g	ND	79.4	60-130			
o-Xylene	3.22	0.05	ug/g	ND	80.6	60-130			

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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Chain of Custody (Lab Use Only)

Nº 101713

Page 1 of 3

Client Name: AMEC	Project Reference: TZ510401	TAT: ☒ Regular	[ ] 3 Day
Contact Name: Brook Ibbott	Quote #	[ ] 2 Day	[ ] 1 Day
Address: 300-210 Colonnade Rd South Ottawa	PO #: [illegible]	Date Required:	
Telephone: 613-727-0658	Email Address: Brook.Ibbott@amec.com		

Criteria: [illegible]

Matrix Type: [illegible]

Required Analyses

Paracel Order Number: 1433286

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Metals (Cu)	PHCs F1-F4	PAHs	PHCs F1-F4			
[illegible] DBMW14-4-SS1	S		1	Aug 15 2014									X		X		-95TM4-		✓
[illegible] DBMW14-4-SS6	S		2	Aug 15 2014			X							X			ASTM+ [illegible]		✓
[illegible] BH14-6-SS1	S		1	Aug 20 2014									X		X	X	-95TM4-		✓
[illegible] DBMW14-4 SA-4	S		1										X		X	X			✓
[illegible] BH-10 SA-10	S		1										X		X	X			✓
[illegible] BH-3 SA-3	S		1										X		X	X			✓
[illegible] BH-9 SA-9	S		1										X		X	X			✓
[illegible] BH-1 SA-1	S		1										X		X	X			✓
[illegible] BH-5 SA-5	S		1										X		X	X			✓
[illegible] BH-7 SA-7	S		1	↓ [illegible]									X		X	X			✓

Comments: Lansdowne Park

Method of Delivery: Paracel Courier

Relinquished By (Sign): [signature]	Received by Driver/Depot: [signature]	Received at Lab: [illegible]	Verified By: [illegible]
Relinquished By (Print): [illegible]	Date/Time: [illegible]	Date/Time: [illegible]	Date/Time: [illegible]
Date/Time: Aug 18, 2014	Temperature: [illegible]	Temperature: [illegible]	pH Verified [ ] By: [illegible]

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Chain of Custody (Lab Use Only)
Nº 101714

Page 2 of 3

Client Name: AMEC	Project Reference: TX51702.1		TAT: [X] Regular
Contact Name: Blake Ibbott	Quote #:		
Address: 300-210 Colonnade Rd South Ottawa	PO #: Wright Ottawa South		Date Required:
Telephone: 613-727-0658	Email Address: Blake.Ibbott@amec.com		

Parcel Order Number: 1433286

Required Analyses

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	PAH	Metals (incl.)	VOCs	
OH14-11 S4-11	S		1	Aug 19, 2014		X	X	X	
OH14-2 S4-2									
OH14-13 S4-13									
S4-1									
S4-2									
S4-3									
S4-4									
S4-5									
OH14-19 S4-19									
OH14-29 S4-29									

Comments: Inorganic Pak

Relinquished By (Sign):
Relinquished By (Print):
Date/Time: Aug 19, 2014

Received by Driver/Depot:
Date/Time: 19/08/14 9:55

Received at Lab:
Date/Time:
Temperature:

Verified By:
Date/Time:
pH Verified [ ] By:

Chain of Custody (Env) - Rev 0.6 May 2010

A0004697_238-00238

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Head Office
[illegible]

Chain of Custody
No. 101715

Page 3 of 3

Client Name: AMEC
Contact Name: Brook Abbott
Address: 300-210 Colonnade Rd South, Ottawa
Telephone: 613-727-0658
Project Reference: TP [illegible]
Email address: BrookAbbott@amec.com

Paracel Order Number: 1433286

Required Analyses

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time						
BH14-28 SS-28	S		1	Aug 7 2014		X	X	X		[illegible]	
BH14-25 SS-25	S		1			X	X	X			
MW14-9 SS-9	S		1								
BH14-27 SS-27	S		1								
BH14-26 SS-26	S		1								
OHP-7	S		1								
OHP-8	S		1								
OHP-9	S		1								

Comments: Lynda Park

Relinquished by: [illegible]
Date/Time: Aug 7, 2014

Chain of Custody (Env) - Rev 0.3 May 2012

A0004697_239-00239

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Certificate of Analysis

AMEC Environment & Infrastructure (Ottawa)
300-210 Colonnade Rd. S
Ottawa, ON K2E 7L5
Attn: Brock Ibbott

Phone: (613) 727-0658
Fax: (613) 727-9465

Client PO: 45064625
Project: TZ5100901/ Laroche Park
Custody: 19070/1

Report Date: 22-Aug-2014
Order Date: 15-Aug-2014
Order #: 1433313

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

Paracel ID	Client ID
1433313-01	MW14-4-SS3
1433313-02	MW14-4-SS4
1433313-03	BH14-25-SS1
1433313-04	BH14-25-SS6
1433313-05	BH14-26-SS3
1433313-06	BH14-26-SS6
1433313-07	BH14-27-SS2
1433313-08	BH14-27-SS4
1433313-09	BH14-28-SS2
1433313-10	BH14-29-SS1
1433313-11	BH14-29-SS2
1433313-12	DUP-10
1433313-13	DUP-11
1433313-14	DUP-12

Approved By: Mark Foto

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

Certificate of Analysis

Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:15-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	21-Aug-14	21-Aug-14
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	18-Aug-14	21-Aug-14
Mercury	EPA 7471B - CVAA, digestion	21-Aug-14	21-Aug-14
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	21-Aug-14	21-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	20-Aug-14	21-Aug-14
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	20-Aug-14	20-Aug-14
Solids, %	Gravimetric, calculation	18-Aug-14	18-Aug-14

Certificate of Analysis

Order #: 1433313

Client: **AMEC Environment & Infrastructure (Ottawa)**

Client PO: 45064625

Report Date: 22-Aug-2014

Order Date:15-Aug-2014

Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-4-SS3	MW14-4-SS4	BH14-25-SS1	BH14-25-SS6
	Sample Date:	15-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14
	Sample ID:	1433313-01	1433313-02	1433313-03	1433313-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	89.1	86.3	88.5	86.4
Metals					
Antimony	1.0 ug/g dry	<1.0	-	<1.0	-
Arsenic	1.0 ug/g dry	5.2	-	4.3	-
Barium	1.0 ug/g dry	150	-	134	-
Beryllium	1.0 ug/g dry	<1.0	-	<1.0	-
Boron	1.0 ug/g dry	10.2	-	5.7	-
Boron, available	0.5 ug/g dry	1.2	-	0.6	-
Cadmium	0.5 ug/g dry	<0.5	-	<0.5	-
Chromium	1.0 ug/g dry	17.8	-	16.1	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	<0.2	-
Cobalt	1.0 ug/g dry	6.4	-	5.7	-
Copper	1.0 ug/g dry	38.9	-	56.7	-
Lead	1.0 ug/g dry	92.5	-	88.1	-
Mercury	0.1 ug/g dry	0.2	-	0.2	-
Molybdenum	1.0 ug/g dry	1.0	-	<1.0	-
Nickel	1.0 ug/g dry	13.4	-	11.2	-
Selenium	1.0 ug/g dry	<1.0	-	<1.0	-
Silver	0.5 ug/g dry	<0.5	-	<0.5	-
Thallium	1.0 ug/g dry	<1.0	-	<1.0	-
Uranium	1.0 ug/g dry	<1.0	-	<1.0	-
Vanadium	1.0 ug/g dry	25.9	-	26.0	-
Zinc	1.0 ug/g dry	98.3	-	109	-
Hydrocarbons					
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
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	<0.02	-
Acenaphthylene	0.02 ug/g dry	0.06	-	0.03	-
Anthracene	0.02 ug/g dry	0.08	-	0.05	-
Benzo [a] anthracene	0.02 ug/g dry	0.17	-	0.13	-
Benzo [a] pyrene	0.02 ug/g dry	0.15	-	0.11	-

Certificate of Analysis

Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:15-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-4-SS3	MW14-4-SS4	BH14-25-SS1	BH14-25-SS6
	Sample Date:	15-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14
	Sample ID:	1433313-01	1433313-02	1433313-03	1433313-04
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	0.20	-	0.16	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.08	-	0.06	-
Chrysene	0.02 ug/g dry	0.17	-	0.13	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.03	-	0.02	-
Fluoranthene	0.02 ug/g dry	0.28	-	0.19	-
Fluorene	0.02 ug/g dry	0.04	-	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.11	-	0.08	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	<0.04	-
Naphthalene	0.01 ug/g dry	0.02	-	0.01	-
Phenanthrene	0.02 ug/g dry	0.18	-	0.15	-
Pyrene	0.02 ug/g dry	0.25	-	0.16	-
2-Fluorobiphenyl	Surrogate	63.9%	-	68.9%	-
Terphenyl-d14	Surrogate	53.9%	-	54.2%	-

Certificate of Analysis

Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-26-SS3	BH14-26-SS6	BH14-27-SS2	BH14-27-SS4
	Sample Date:	15-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14
	Sample ID:	1433313-05	1433313-06	1433313-07	1433313-08
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	74.4	74.9	81.4	66.4
Metals					
Antimony	1.0 ug/g dry	4.8	-	4.8	-
Arsenic	1.0 ug/g dry	15.3	-	11.2	-
Barium	1.0 ug/g dry	321	-	408	-
Beryllium	1.0 ug/g dry	<1.0	-	<1.0	-
Boron	1.0 ug/g dry	5.7	-	9.2	-
Boron, available	0.5 ug/g dry	<0.5	-	0.7	-
Cadmium	0.5 ug/g dry	<0.5	-	1.7	-
Chromium	1.0 ug/g dry	36.9	-	22.6	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	<0.2	-
Cobalt	1.0 ug/g dry	11.8	-	9.5	-
Copper	1.0 ug/g dry	58.8	-	43.4	-
Lead	1.0 ug/g dry	1080	-	487	-
Mercury	0.1 ug/g dry	0.2	-	0.2	-
Molybdenum	1.0 ug/g dry	4.6	-	2.3	-
Nickel	1.0 ug/g dry	29.0	-	18.9	-
Selenium	1.0 ug/g dry	<1.0	-	<1.0	-
Silver	0.5 ug/g dry	1.7	-	<0.5	-
Thallium	1.0 ug/g dry	<1.0	-	<1.0	-
Uranium	1.0 ug/g dry	<1.0	-	<1.0	-
Vanadium	1.0 ug/g dry	37.2	-	33.3	-
Zinc	1.0 ug/g dry	536	-	503	-
Hydrocarbons					
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
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	<0.02	-
Acenaphthylene	0.02 ug/g dry	<0.02	-	<0.02	-
Anthracene	0.02 ug/g dry	0.08	-	0.03	-
Benzo [a] anthracene	0.02 ug/g dry	0.09	-	0.08	-
Benzo [a] pyrene	0.02 ug/g dry	0.08	-	0.05	-

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Report Date: 22-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:15-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Client ID:		BH14-26-SS3	BH14-26-SS6	BH14-27-SS2	BH14-27-SS4
Sample Date:		15-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14
Sample ID:		1433313-05	1433313-06	1433313-07	1433313-08
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	0.10	-	0.08	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	<0.02	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.03	-	0.03	-
Chrysene	0.02 ug/g dry	0.09	-	0.07	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.02	-	<0.02	-
Fluoranthene	0.02 ug/g dry	0.20	-	0.18	-
Fluorene	0.02 ug/g dry	<0.02	-	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.07	-	0.03	-
1-Methylnaphthalene	0.02 ug/g dry	0.02	-	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	0.03	-	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	0.05	-	<0.04	-
Naphthalene	0.01 ug/g dry	0.07	-	<0.01	-
Phenanthrene	0.02 ug/g dry	0.16	-	0.07	-
Pyrene	0.02 ug/g dry	0.17	-	0.16	-
2-Fluorobiphenyl	Surrogate	71.1%	-	50.5%	-
Terphenyl-d14	Surrogate	56.4%	-	53.1%	-

Certificate of Analysis

Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Client ID:		BH14-28-SS2	BH14-29-SS1	BH14-29-SS2	DUP-10
Sample Date:		15-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14
Sample ID:		1433313-09	1433313-10	1433313-11	1433313-12
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	92.1	75.5	92.7	77.4
Metals					
Antimony	1.0 ug/g dry	<1.0	6.9	-	23.0
Arsenic	1.0 ug/g dry	2.4	24.6	-	15.7
Barium	1.0 ug/g dry	234	978	-	484
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Boron	1.0 ug/g dry	6.9	10.4	-	6.1
Boron, available	0.5 ug/g dry	<0.5	0.6	-	0.7
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	4.4
Chromium	1.0 ug/g dry	32.3	98.6	-	17.6
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	-	<0.2
Cobalt	1.0 ug/g dry	10.4	11.7	-	9.7
Copper	1.0 ug/g dry	44.2	123	-	119
Lead	1.0 ug/g dry	75.2	584	-	791
Mercury	0.1 ug/g dry	0.2	1.1	-	<0.1
Molybdenum	1.0 ug/g dry	<1.0	6.4	-	3.1
Nickel	1.0 ug/g dry	22.7	42.9	-	24.4
Selenium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Silver	0.5 ug/g dry	<0.5	0.5	-	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	-	<1.0
Vanadium	1.0 ug/g dry	46.4	36.9	-	31.4
Zinc	1.0 ug/g dry	110	1720	-	1090
Hydrocarbons					
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	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Acenaphthylene	0.02 ug/g dry	0.08	0.24	-	<0.02
Anthracene	0.02 ug/g dry	0.08	0.15	-	<0.02
Benzo [a] anthracene	0.02 ug/g dry	0.24	0.32	-	0.03
Benzo [a] pyrene	0.02 ug/g dry	0.23	0.32	-	0.03

PARACEL

Order #: 1433313

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Report Date: 22-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:15-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Client ID:		BH14-28-SS2	BH14-29-SS1	BH14-29-SS2	DUP-10
Sample Date:		15-Aug-14	15-Aug-14	15-Aug-14	15-Aug-14
Sample ID:		1433313-09	1433313-10	1433313-11	1433313-12
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [b] fluoranthene	0.02 ug/g dry	0.30	0.51	-	0.09
Benzo [g,h,i] perylene	0.02 ug/g dry	0.09	0.12	-	0.02
Benzo [k] fluoranthene	0.02 ug/g dry	0.10	0.27	-	0.04
Chrysene	0.02 ug/g dry	0.23	0.37	-	0.06
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.04	0.09	-	<0.02
Fluoranthene	0.02 ug/g dry	0.40	0.39	-	0.07
Fluorene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.17	0.32	-	0.03
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	-	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	-	<0.04
Naphthalene	0.01 ug/g dry	0.01	0.03	-	0.01
Phenanthrene	0.02 ug/g dry	0.15	0.14	-	0.05
Pyrene	0.02 ug/g dry	0.48	0.37	-	0.06
2-Fluorobiphenyl	Surrogate	54.2%	54.6%	-	53.9%
Terphenyl-d14	Surrogate	51.5%	52.6%	-	57.8%

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Report Date: 22-Aug-2014
Order Date:15-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	DUP-11	DUP-12	-	-
	Sample Date:	15-Aug-14	15-Aug-14	-	-
	Sample ID:	1433313-13	1433313-14	-	-
	MDL/Units	Soil	Soil	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	91.9	86.3	-	-
Metals					
Antimony	1.0 ug/g dry	2.9	-	-	-
Arsenic	1.0 ug/g dry	3.5	-	-	-
Barium	1.0 ug/g dry	190	-	-	-
Beryllium	1.0 ug/g dry	<1.0	-	-	-
Boron	1.0 ug/g dry	4.8	-	-	-
Boron, available	0.5 ug/g dry	<0.5	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	1.0 ug/g dry	24.6	-	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	-	-
Cobalt	1.0 ug/g dry	8.6	-	-	-
Copper	1.0 ug/g dry	38.6	-	-	-
Lead	1.0 ug/g dry	64.0	-	-	-
Mercury	0.1 ug/g dry	0.2	-	-	-
Molybdenum	1.0 ug/g dry	1.2	-	-	-
Nickel	1.0 ug/g dry	18.4	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.5 ug/g dry	<0.5	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	1.0 ug/g dry	39.7	-	-	-
Zinc	1.0 ug/g dry	99.4	-	-	-
Hydrocarbons					
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	-	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	-	-	-
Acenaphthylene	0.02 ug/g dry	0.10	-	-	-
Anthracene	0.02 ug/g dry	0.08	-	-	-
Benzo [a] anthracene	0.02 ug/g dry	0.27	-	-	-
Benzo [a] pyrene	0.02 ug/g dry	0.27	-	-	-

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Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:15-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	DUP-11	DUP-12	-	-
	Sample Date:	15-Aug-14	15-Aug-14	-	-
	Sample ID:	1433313-13	1433313-14	-	-
	MDL/Units	Soil	Soil	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.30	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	-	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.15	-	-	-
Chrysene	0.02 ug/g dry	0.21	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.04	-	-	-
Fluoranthene	0.02 ug/g dry	0.38	-	-	-
Fluorene	0.02 ug/g dry	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.16	-	-	-
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	0.12	-	-	-
Pyrene	0.02 ug/g dry	0.49	-	-	-
2-Fluorobiphenyl	Surrogate	53.9%	-	-	-
Terphenyl-d14	Surrogate	54.2%	-	-	-

Certificate of Analysis

Report Date: 22-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date: 15-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	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						
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	*0.924*		*ug/g*		*69.3*	*50-140*			
Surrogate: Terphenyl-d14	*0.776*		*ug/g*		*58.2*	*50-140*			

Certificate of Analysis

Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:15-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
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	
Metals									
Antimony	2.37	1.0	ug/g dry	ND			0.0	30	
Arsenic	4.63	1.0	ug/g dry	5.24			12.4	30	
Barium	146	1.0	ug/g dry	150			2.6	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	0.54	0.5	ug/g dry	0.64			16.9	35	
Boron	9.00	1.0	ug/g dry	10.2			12.8	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	16.7	1.0	ug/g dry	17.8			6.4	30	
Cobalt	6.31	1.0	ug/g dry	6.38			1.0	30	
Copper	38.8	1.0	ug/g dry	38.9			0.4	30	
Lead	90.9	1.0	ug/g dry	92.5			1.8	30	
Mercury	0.172	0.1	ug/g dry	0.187			8.4	35	
Molybdenum	1.16	1.0	ug/g dry	1.02			13.0	30	
Nickel	13.2	1.0	ug/g dry	13.4			1.3	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	1.22	1.0	ug/g dry	ND			0.0	30	
Vanadium	25.0	1.0	ug/g dry	25.9			3.4	30	
Zinc	103	1.0	ug/g dry	98.3			4.9	30	
Physical Characteristics									
% Solids	70.6	0.1	% by Wt.	70.9			0.3	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	ND				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	
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	ND				40	
Surrogate: 2-Fluorobiphenyl	*1.36*		*ug/g dry*	*ND*	*71.0*	*50-140*			
Surrogate: Terphenyl-d14	*1.01*		*ug/g dry*	*ND*	*52.5*	*50-140*			

Certificate of Analysis

Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:15-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	79	4	ug/g	ND	69.5	60-140			
F3 PHCs (C16-C34)	183	8	ug/g	ND	77.5	60-140			
F4 PHCs (C34-C50)	160	6	ug/g	ND	102	60-140			
Metals									
Antimony	306		ug/L	ND	122	70-130			
Arsenic	359		ug/L	105	102	70-130			
Barium	259		ug/L	ND	103	70-130			
Beryllium	260		ug/L	1.82	103	70-130			
Boron, available	4.59	0.5	ug/g	ND	91.8	70-122			
Boron	448		ug/L	205	97.6	70-130			
Cadmium	259		ug/L	6.78	101	70-130			
Chromium (VI)	4.8	0.2	ug/g	ND	97.0	70-130			
Chromium	534		ug/L	356	71.3	70-130			
Cobalt	332		ug/L	128	81.8	70-130			
Copper	1050		ug/L	779	110	70-130			
Lead	228		ug/L	ND	91.0	70-130			
Mercury	1.60	0.1	ug/g	0.187	94.3	72-128			
Molybdenum	255		ug/L	20.4	93.9	70-130			
Nickel	473		ug/L	267	82.1	70-130			
Selenium	259		ug/L	15.1	97.8	70-130			
Silver	234		ug/L	3.33	92.3	70-130			
Thallium	215		ug/L	ND	86.0	70-130			
Uranium	228		ug/L	ND	91.4	70-130			
Vanadium	715		ug/L	518	78.7	70-130			
Zinc	233		ug/L	ND	93.4	70-130			
Semi-Volatiles									
Acenaphthene	0.226	0.02	ug/g	ND	94.4	50-140			
Acenaphthylene	0.215	0.02	ug/g	ND	89.6	50-140			
Anthracene	0.217	0.02	ug/g	ND	90.4	50-140			
Benzo [a] anthracene	0.214	0.02	ug/g	ND	89.5	50-140			
Benzo [a] pyrene	0.187	0.02	ug/g	ND	77.9	50-140			
Benzo [b] fluoranthene	0.192	0.02	ug/g	ND	80.2	50-140			
Benzo [g,h,i] perylene	0.146	0.02	ug/g	ND	61.0	50-140			
Benzo [k] fluoranthene	0.181	0.02	ug/g	ND	75.7	50-140			
Chrysene	0.207	0.02	ug/g	ND	86.5	50-140			
Dibenzo [a,h] anthracene	0.175	0.02	ug/g	ND	72.8	50-140			
Fluoranthene	0.278	0.02	ug/g	ND	116	50-140			
Fluorene	0.221	0.02	ug/g	ND	92.0	50-140			
Indeno [1,2,3-cd] pyrene	0.193	0.02	ug/g	ND	80.7	50-140			
1-Methylnaphthalene	0.133	0.02	ug/g	ND	55.6	50-140			
2-Methylnaphthalene	0.146	0.02	ug/g	ND	60.7	50-140			
Naphthalene	0.182	0.01	ug/g	ND	76.1	50-140			
Phenanthrene	0.218	0.02	ug/g	ND	90.9	50-140			
Pyrene	0.287	0.02	ug/g	ND	120	50-140			
Surrogate: 2-Fluorobiphenyl	*1.31*		*ug/g*		*68.4*	*50-140*			

Certificate of Analysis

Report Date: 22-Aug-2014
Client: **AMEC Environment & Infrastructure (Ottawa)** Order Date:15-Aug-2014
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

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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Page 1 of 2

Client Name: AMEC	Project Reference: T2 Smoral
Contact Name: Brock Ibbitt	Quote #
Address: 300-210 Colonnade Rd South	PO #: Carling Ottawa 524
Telephone: 613-727-0658	Email Address: Brock.Ibbitt@amec.com

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day

Date Required: ______

Matrix Type: [illegible]

Paracel Order Number: 1433313

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	PAH	[illegible]	PHC F1-F4								
[illegible] 016 MW14-24-SS3	S		1	Aug 13 2014		X	X									
[illegible] 017 MW14-24-SS4								X								
[illegible] 018 BH14-25-SS1						X	X									
[illegible] 019 BH14-25-SS6								X								
[illegible] 020 BH14-26-SS3						X	X									
[illegible] 021 BH14-26-SS6								X								
[illegible] 022 BH14-27-SS2						X	X									
[illegible] 023 BH14-27-SS4								X								
[illegible] 024 BH14-29-SS2						X	X	X								
[illegible] 025 BH14-29-SS1	Var		Var	Var		X	X									

Comments: Frozen Pak

Relinquished By (Sign): [illegible]

Relinquished By (Print): [illegible]

Date/Time: Aug 13, 2014

Received by Driver/Depot: [illegible]

Received at Lab: [illegible]

Verified By: [illegible]

Chain of Custody (Blank) - Rev 0.2 Nov 2013

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Chain of Custody (Lab Use Only)
Nº 19071

Page 2 of 2

Client Name: AMEC	Project Reference: TY3410901
Contact Name: Brooke Ibbotson	Quote #
Address: 300-210 Colonnade Rd. South	PO #: Capital Ottawa South
Telephone:	Email Address: Brooke.Ibbotson@amec.com

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number: 1433813

Required Analyses

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time	PAH	PHC F1-F4	Metals								
1	8DA026 BH14-7A-SS2	S		1	Aug 13 2014				X						- 8DA026		
2	8DA027 DuP-10						X	X									
3	8DA028 DuP-11						X	X	X								
4	8DA029 DuP-12								X								
5																	
6																	
7																	
8																	
9																	
10																	

Comments: Nicole Park

Relinquished By (Sign):
Relinquished By (Print): Jennifer
Date/Time: Aug 14 2014

Received by Driver/Depot:
Received at Lab:
Verified By:
Date/Time:

A0004697_255-00255

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Certificate of Analysis

AMEC Environment & Infrastructure (Ottawa)
300-210 Colonnade Rd. S
Ottawa, ON K2E 7L5
Attn: Brock Ibbott

Phone: (613) 727-0658
Fax: (613) 727-9465

Client PO: 45064625
Project: TZ5100901/ Laroche Park
Custody: 18486

Report Date: 3-Sep-2014
Order Date: 25-Aug-2014
Order #: 1435017

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

Paracel ID	Client ID
1435017-01	TCLP

Approved By:

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

PARACEL

Order #: 1435017

Certificate of Analysis

Report Date: 03-Sep-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:25-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 558 - Cyanide	MOE E3015- Auto Colour	3-Sep-14	3-Sep-14
REG 558 - Fluoride	EPA 340.2 - ISE	29-Aug-14	29-Aug-14
REG 558 - Mercury by CVAA	EPA 7470A - Cold Vapour AA	28-Aug-14	28-Aug-14
REG 558 - Metals, ICP-OES	EPA 6010: ICP-MS, digestion	3-Sep-14	3-Sep-14
REG 558 - NO3/NO2	EPA 300.1 - IC	3-Sep-14	3-Sep-14
REG 558 - PAHs	EPA 625 - GC-MS	28-Aug-14	28-Aug-14
Solids, %	Gravimetric, calculation	28-Aug-14	28-Aug-14
TCLP Extraction , Metals/SVOCs	EPA 1311 TCLP Extraction Procedure	27-Aug-14	28-Aug-14

Certificate of Analysis

Report Date: 03-Sep-2014
Order Date:25-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Client ID:		TCLP	-	-	-
Sample Date:		21-Aug-14	-	-	-
Sample ID:		1435017-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	86.7	-	-	-
EPA 1311 - TCLP Leachate Inorganics					
Arsenic	0.05 mg/L	<0.05	-	-	-
Barium	0.05 mg/L	1.42	-	-	-
Boron	0.05 mg/L	0.09	-	-	-
Cadmium	0.01 mg/L	<0.01	-	-	-
Chromium	0.05 mg/L	<0.05	-	-	-
Lead	0.05 mg/L	0.30	-	-	-
Mercury	0.005 mg/L	<0.005	-	-	-
Selenium	0.05 mg/L	<0.05	-	-	-
Silver	0.05 mg/L	<0.05	-	-	-
Uranium	0.05 mg/L	<0.05	-	-	-
Fluoride	0.05 mg/L	0.25	-	-	-
Nitrate as N	1 mg/L	<1	-	-	-
Nitrite as N	1 mg/L	<1	-	-	-
Cyanide, free	0.02 mg/L	<0.02	-	-	-
Initial pH	0.05 pH Units dry	8.72	-	-	-
Final pH	0.05 pH Units dry	5.47	-	-	-
EPA 1311 - TCLP Leachate Organics					
Benzo [a] pyrene	0.0001 mg/L	<0.0001	-	-	-
Terphenyl-d14	Surrogate	56.9%	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Arsenic	ND	0.05	mg/L						
Barium	ND	0.05	mg/L						
Boron	ND	0.05	mg/L						
Cadmium	ND	0.01	mg/L						
Chromium	ND	0.05	mg/L						
Lead	ND	0.05	mg/L						
Mercury	ND	0.005	mg/L						
Selenium	ND	0.05	mg/L						
Silver	ND	0.05	mg/L						
Uranium	ND	0.05	mg/L						
Fluoride	ND	0.05	mg/L						
Nitrate as N	ND	1	mg/L						
Nitrite as N	ND	1	mg/L						
Cyanide. free	ND	0.02	mg/L						
EPA 1311 - TCLP Leachate Organics									
Benzo [a] pyrene	ND	0.0001	mg/L						
Surrogate: Terphenyl-d14	*0.178*		*mg/L*		*88.9*	*37.1-155.6*			

Certificate of Analysis

Report Date: 03-Sep-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:25-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Arsenic	ND	0.05	mg/L	ND			0.0	29	
Barium	2.19	0.05	mg/L	2.38			8.2	34	
Boron	ND	0.05	mg/L	ND			0.0	33	
Cadmium	ND	0.01	mg/L	ND			0.0	33	
Chromium	ND	0.05	mg/L	ND			0.0	32	
Lead	ND	0.05	mg/L	ND			0.0	32	
Mercury	ND	0.005	mg/L	ND			0.0	20	
Selenium	ND	0.05	mg/L	ND			0.0	28	
Silver	ND	0.05	mg/L	ND			0.0	28	
Uranium	ND	0.05	mg/L	ND			0.0	27	
Fluoride	0.79	0.05	mg/L	0.79			0.0	20	
Nitrate as N	ND	1	mg/L	ND				20	
Nitrite as N	ND	1	mg/L	ND				20	
Cyanide, free	ND	0.02	mg/L	ND				20	
Physical Characteristics									
% Solids	81.4	0.1	% by Wt.	81.6			0.3	25	

Certificate of Analysis

Report Date: 03-Sep-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:25-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Arsenic	295		ug/L	ND	118	83-119			
Barium	268		ug/L	ND	107	83-116			
Boron	274		ug/L	ND	110	71-128			
Cadmium	287		ug/L	ND	115	78-119			
Chromium	260		ug/L	ND	104	80-124			
Lead	250		ug/L	ND	100	77-126			
Mercury	0.0286	0.005	mg/L	ND	95.4	78-134			
Selenium	309		ug/L	ND	124	81-125			
Silver	282		ug/L	ND	113	70-128			
Uranium	253		ug/L	ND	101	70-131			
Fluoride	1.26	0.05	mg/L	0.79	93.5	70-130			
Nitrate as N	0.9		mg/L	ND	93.1	81-112			
Nitrite as N	0.9		mg/L	ND	94.3	76-107			
Cyanide, free	0.027	0.02	mg/L	ND	91.2	60-136			
EPA 1311 - TCLP Leachate Organics									
Benzo [a] pyrene	0.0377	0.0001	mg/L	ND	75.5	39-123			
Surrogate: Terphenyl-d14	*0.154*		*mg/L*		*77.2*	*37.1-155.6*			

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.

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Client Name: AMEC	Project Reference: TEG10001
Contact Name: Brooke Ibbott	Quote #
Address: 300-210 Colonnade Rd South Ottawa	PO #
Telephone: 613-727-0658	Email Address: brooke.ibbott@amec.com

Matrix Types: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1435017

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Date	Time												
1	TCLP BOAC54	S		2	Aug 13/14		X											
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Comments: Leachate Pack

Relinquished By (Sign):

Relinquished By (Print): Brooke Ibbott

Date/Time: Aug 13, 2014

Received by Driver/Depot: | Received at Lab: | Verified By:

Date/Time: | Date/Time: | Date/Time:

Temperature: | Temperature: | pH Verified By:

Chain of Custody (Blank) - Rev 0.2 May 2013

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Certificate of Analysis

AMEC Environment & Infrastructure (Ottawa)
300-210 Colonnade Rd. S
Ottawa, ON K2E 7L5
Attn: Brock Ibbott

Phone: (613) 727-0658
Fax: (613) 727-9465

Client PO: 45064625
Project: TZ5100901/ Laroche Park
Custody: 102812

Report Date: 5-Sep-2014
Order Date: 27-Aug-2014
Revised Report **Order #: 1435231**

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

Paracel ID	Client ID
1435231-01	DBMW14-2
1435231-02	DBMW14-4
1435231-03	DBMW14-5
1435231-04	BMW14-5
1435231-05	MW14-1
1435231-06	MW14-2
1435231-07	MW14-3
1435231-08	MW14-4
1435231-09	MW14-5
1435231-10	Dup-1
1435231-11	Trip Blank

Approved By:

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

PARACEL

Order #: 1435231

Certificate of Analysis

Report Date: 05-Sep-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:27-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent	MOE E3056 - colourimetric	2-Sep-14	2-Sep-14
Mercury	EPA 245.1 - Cold Vapour AA	29-Aug-14	29-Aug-14
Metals, ICP-MS	EPA 200.8 - ICP-MS	4-Sep-14	4-Sep-14
PHC F1	CWS Tier 1 - P&T GC-FID	29-Aug-14	30-Aug-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	28-Aug-14	29-Aug-14
REG 153 - VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	29-Aug-14	30-Aug-14
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	29-Aug-14	29-Aug-14

Certificate of Analysis

Report Date: 05-Sep-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:27-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Client ID:		DBMW14-2	DBMW14-4	DBMW14-5	BMW14-5
Sample Date:		27-Aug-14	27-Aug-14	27-Aug-14	27-Aug-14
Sample ID:		1435231-01	1435231-02	1435231-03	1435231-04
	MDL/Units	Water	Water	Water	Water
Volatiles					
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	12.8
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	6.0	1.8	11.1	0.7
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	3.4	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	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
Ethylene dibromide (dibromoethan	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

Certificate of Analysis

Report Date: 05-Sep-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date:27-Aug-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Client ID:		DBMW14-2	DBMW14-4	DBMW14-5	BMW14-5
Sample Date:		27-Aug-14	27-Aug-14	27-Aug-14	27-Aug-14
Sample ID:		1435231-01	1435231-02	1435231-03	1435231-04
	MDL/Units	Water	Water	Water	Water
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	0.9	0.7	0.9	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	1.2	<0.5	1.2	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	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	1.5
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	1.5
4-Bromofluorobenzene	Surrogate	115%	116%	119%	125%
Dibromofluoromethane	Surrogate	119%	85.0%	102%	93.3%
Toluene-d8	Surrogate	90.8%	92.2%	91.8%	93.3%

Certificate of Analysis

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625

Report Date: 05-Sep-2014
Order Date: 27-Aug-2014
Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-1	MW14-2	MW14-3	MW14-4
	Sample Date:	27-Aug-14	27-Aug-14	27-Aug-14	27-Aug-14
	Sample ID:	1435231-05	1435231-06	1435231-07	1435231-08
	MDL/Units	Water	Water	Water	Water
Metals					
Mercury	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Antimony	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Arsenic	1 ug/L	1	4	<1	3
Barium	1 ug/L	306	115	121	168
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Boron	10 ug/L	115	46	182	208
Cadmium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Chromium	1 ug/L	<1	<1	<1	<1
Chromium (VI)	10 ug/L	<10	<10	<10	<10
Cobalt	0.5 ug/L	0.9	1.5	1.2	1.6
Copper	0.5 ug/L	0.8	<0.5	2.3	<0.5
Lead	0.1 ug/L	<0.1	<0.1	0.5	<0.1
Molybdenum	0.5 ug/L	0.7	4.0	2.2	3.9
Nickel	1 ug/L	5	5	9	6
Selenium	1 ug/L	<1	<1	8	1
Silver	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Sodium	200 ug/L	51800	2040	16200	32200
Thallium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Uranium	0.1 ug/L	0.2	0.4	2.5	3.9
Vanadium	0.5 ug/L	10.9	6.6	10.9	8.3
Zinc	5 ug/L	13	19	19	10
Volatiles					
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0

Certificate of Analysis

Report Date: 05-Sep-2014
Order Date: 27-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-1	MW14-2	MW14-3	MW14-4
	Sample Date:	27-Aug-14	27-Aug-14	27-Aug-14	27-Aug-14
	Sample ID:	1435231-05	1435231-06	1435231-07	1435231-08
	MDL/Units	Water	Water	Water	Water
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	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
Ethylene dibromide (dibromoethan	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	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
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	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
4-Bromofluorobenzene	Surrogate	119%	121%	118%	117%

Certificate of Analysis

Report Date: 05-Sep-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:27-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-1	MW14-2	MW14-3	MW14-4
	Sample Date:	27-Aug-14	27-Aug-14	27-Aug-14	27-Aug-14
	Sample ID:	1435231-05	1435231-06	1435231-07	1435231-08
	MDL/Units	Water	Water	Water	Water
Dibromofluoromethane	Surrogate	88.4%	95.9%	106%	117%
Toluene-d8	Surrogate	93.3%	93.0%	91.0%	90.8%
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	<100	<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	<200	<200	<200	<200
Semi-Volatiles					
Acenaphthene	0.05 ug/L	0.39	<0.05	<0.05	0.17
Acenaphthylene	0.05 ug/L	0.08	<0.05	<0.05	<0.05
Anthracene	0.01 ug/L	0.53	<0.01	<0.01	0.08
Benzo [a] anthracene	0.01 ug/L	3.40	0.05	<0.01	0.23
Benzo [a] pyrene	0.01 ug/L	2.85	<0.01	<0.01	0.16
Benzo [b] fluoranthene	0.05 ug/L	5.46	<0.05	<0.05	0.25
Benzo [g,h,i] perylene	0.05 ug/L	1.58	<0.05	<0.05	0.12
Benzo [k] fluoranthene	0.05 ug/L	2.37	<0.05	<0.05	0.14
Chrysene	0.05 ug/L	4.44	<0.05	<0.05	0.26
Dibenzo [a,h] anthracene	0.05 ug/L	0.40	<0.05	<0.05	<0.05
Fluoranthene	0.01 ug/L	6.38	0.05	<0.01	0.45
Fluorene	0.05 ug/L	0.38	<0.05	<0.05	0.10
Indeno [1,2,3-cd] pyrene	0.05 ug/L	1.70	<0.05	<0.05	0.10
1-Methylnaphthalene	0.05 ug/L	0.06	<0.05	<0.05	<0.05
2-Methylnaphthalene	0.05 ug/L	0.08	<0.05	<0.05	<0.05
Methylnaphthalene (1&2)	0.10 ug/L	0.14	<0.10	<0.10	<0.10
Naphthalene	0.05 ug/L	0.19	0.08	<0.05	0.12
Phenanthrene	0.05 ug/L	3.84	0.07	<0.05	0.25
Pyrene	0.01 ug/L	5.76	0.04	<0.01	0.39
2-Fluorobiphenyl	Surrogate	66.1%	74.3%	72.1%	70.3%
Terphenyl-d14	Surrogate	53.9%	68.4%	68.9%	62.2%

PARACEL

Certificate of Analysis

Order #: 1435231

Report Date: 05-Sep-2014
Order Date: 27-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-5	Dup-1	Trip Blank	-
	Sample Date:	27-Aug-14	27-Aug-14	22-Aug-14	-
	Sample ID:	1435231-09	1435231-10	1435231-11	-
	MDL/Units	Water	Water	Water	-
Metals					
Mercury	0.1 ug/L	<0.1	<0.1	-	-
Antimony	0.5 ug/L	<0.5	<0.5	-	-
Arsenic	1 ug/L	<1	3	-	-
Barium	1 ug/L	231	170	-	-
Beryllium	0.5 ug/L	<0.5	<0.5	-	-
Boron	10 ug/L	106	229	-	-
Cadmium	0.1 ug/L	<0.1	<0.1	-	-
Chromium	1 ug/L	<1	<1	-	-
Chromium (VI)	10 ug/L	<10	<10	-	-
Cobalt	0.5 ug/L	1.9	1.6	-	-
Copper	0.5 ug/L	3.2	<0.5	-	-
Lead	0.1 ug/L	<0.1	<0.1	-	-
Molybdenum	0.5 ug/L	4.3	3.9	-	-
Nickel	1 ug/L	9	7	-	-
Selenium	1 ug/L	1	1	-	-
Silver	0.1 ug/L	<0.1	<0.1	-	-
Sodium	200 ug/L	868000	31800	-	-
Thallium	0.1 ug/L	<0.1	<0.1	-	-
Uranium	0.1 ug/L	1.3	3.9	-	-
Vanadium	0.5 ug/L	9.6	11.1	-	-
Zinc	5 ug/L	9	8	-	-
Volatiles					
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Acetone	5.0 ug/L	<5.0	<5.0	<5.0 [1]	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2 [1]	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0 [1]	-

Certificate of Analysis

Report Date: 05-Sep-2014
Order Date:27-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-5	Dup-1	Trip Blank	-
	Sample Date:	27-Aug-14	27-Aug-14	22-Aug-14	-
	Sample ID:	1435231-09	1435231-10	1435231-11	-
	MDL/Units	Water	Water	Water	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
cis-1,2-Dichloroethylene	0.5 ug/L	58.9	<0.5	<0.5 [1]	-
trans-1,2-Dichloroethylene	0.5 ug/L	22.9	<0.5	<0.5 [1]	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Ethylene dibromide (dibromoethan	0.2 ug/L	<0.2	<0.2	<0.2 [1]	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0 [1]	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0 [1]	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0 [1]	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0 [1]	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0 [1]	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Trichloroethylene	0.5 ug/L	164	<0.5	<0.5 [1]	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0 [1]	-
Vinyl chloride	0.5 ug/L	4.7	<0.5	<0.5 [1]	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5 [1]	-
4-Bromofluorobenzene	Surrogate	123%	124%	117% [1]	-

Certificate of Analysis

Report Date: 05-Sep-2014
Order Date:27-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	MW14-5	Dup-1	Trip Blank	-
	Sample Date:	27-Aug-14	27-Aug-14	22-Aug-14	-
	Sample ID:	1435231-09	1435231-10	1435231-11	-
	MDL/Units	Water	Water	Water	-
Dibromofluoromethane	Surrogate	94.5%	93.2%	116% [1]	-
Toluene-d8	Surrogate	95.4%	92.3%	89.8% [1]	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25 [1]	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	-	-
F1 + F2 PHCs	125 ug/L	<125	<125	-	-
F3 + F4 PHCs	200 ug/L	<200	<200	-	-
Semi-Volatiles					
Acenaphthene	0.05 ug/L	<0.05	0.19	-	-
Acenaphthylene	0.05 ug/L	<0.05	<0.05	-	-
Anthracene	0.01 ug/L	<0.01	0.03	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	0.09	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	0.06	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	0.11	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	0.07	-	-
Chrysene	0.05 ug/L	<0.05	0.09	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	-	-
Fluoranthene	0.01 ug/L	<0.01	0.17	-	-
Fluorene	0.05 ug/L	<0.05	0.08	-	-
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	<0.05	0.15	-	-
Phenanthrene	0.05 ug/L	<0.05	0.10	-	-
Pyrene	0.01 ug/L	<0.01	0.13	-	-
2-Fluorobiphenyl	Surrogate	70.4%	79.5%	-	-
Terphenyl-d14	Surrogate	66.4%	77.2%	-	-

Certificate of Analysis

Report Date: 05-Sep-2014
Order Date:27-Aug-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

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						
Metals									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	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						
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	*15.6*		*ug/L*		*77.8*	*50-140*			
Surrogate: Terphenyl-d14	*18.0*		*ug/L*		*89.8*	*50-140*			
Volatiles									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chlorobenzene	ND	0.5	ug/L						
Chloroform	ND	0.5	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Ethylene dibromide (dibromoethane,	ND	0.2	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
Vinyl chloride	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: 4-Bromofluorobenzene	*37.2*		*ug/L*		*116*	*50-140*			
Surrogate: Dibromofluoromethane	*37.0*		*ug/L*		*116*	*50-140*			
Surrogate: Toluene-d8	*29.5*		*ug/L*		*92.3*	*50-140*			

Certificate of Analysis

Report Date: 05-Sep-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:27-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

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	
Metals									
Mercury	ND	0.1	ug/L	ND			0.0	20	
Antimony	ND	0.5	ug/L	0.81			0.0	20	
Arsenic	1.1	1	ug/L	1.2			4.5	20	
Barium	23.4	1	ug/L	24.2			3.1	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	29	10	ug/L	27			8.1	20	
Cadmium	ND	0.1	ug/L	ND			0.0	20	
Chromium (VI)	ND	10	ug/L	ND				20	
Chromium	9.3	1	ug/L	9.7			4.4	20	
Cobalt	ND	0.5	ug/L	ND			0.0	20	
Copper	0.79	0.5	ug/L	0.81			2.5	20	
Lead	ND	0.1	ug/L	ND			0.0	20	
Molybdenum	1.72	0.5	ug/L	1.37			22.6	20	QR-01
Nickel	1.5	1	ug/L	1.4			5.1	20	
Selenium	2.0	1	ug/L	2.2			8.2	20	
Silver	ND	0.1	ug/L	ND			0.0	20	
Sodium	17900	200	ug/L	16900			5.6	20	
Thallium	ND	0.1	ug/L	ND			0.0	20	
Uranium	ND	0.1	ug/L	ND			0.0	20	
Vanadium	2.97	0.5	ug/L	3.05			2.7	20	
Zinc	8	5	ug/L	8			4.4	20	
Volatiles									
Acetone	ND	5.0	ug/L	ND				30	
Benzene	ND	0.5	ug/L	ND				30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	ND	0.5	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Ethylene dibromide (dibromoethane,	ND	0.2	ug/L	ND				30	
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	ND	5.0	ug/L	ND				30	
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	ND	0.5	ug/L	ND				30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
Vinyl chloride	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: 4-Bromofluorobenzene	*39.2*		*ug/L*	*ND*	*123*	*50-140*			
Surrogate: Dibromofluoromethane	*30.2*		*ug/L*	*ND*	*94.4*	*50-140*			
Surrogate: Toluene-d8	*29.3*		*ug/L*	*ND*	*91.5*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	2020	25	ug/L	ND	101	68-117			
F2 PHCs (C10-C16)	2030	100	ug/L	ND	113	60-140			
F3 PHCs (C16-C34)	4120	100	ug/L	ND	111	60-140			
F4 PHCs (C34-C50)	2610	100	ug/L	ND	105	60-140			
Metals									
Mercury	2.86	0.1	ug/L	ND	95.3	78-137			
Antimony	50.6		ug/L	0.81	99.7	80-120			
Arsenic	58.3		ug/L	1.2	114	80-120			
Barium	75.5		ug/L	24.2	103	80-120			
Beryllium	57.8		ug/L	ND	116	80-120			
Boron	86		ug/L	27	119	80-120			
Cadmium	53.5		ug/L	ND	107	80-120			
Chromium (VI)	179	10	ug/L	ND	89.5	70-130			
Chromium	64.5		ug/L	9.7	110	80-120			
Cobalt	56.3		ug/L	ND	113	80-120			
Copper	56.4		ug/L	0.81	111	80-120			
Lead	50.2		ug/L	ND	100	80-120			
Molybdenum	54.1		ug/L	1.37	105	80-120			
Nickel	57.6		ug/L	1.4	112	80-120			
Selenium	56.5		ug/L	ND	113	80-120			
Silver	50.7		ug/L	0.04	101	80-120			
Sodium	1050		ug/L	ND	105	80-120			
Thallium	49.6		ug/L	ND	99.3	80-120			
Uranium	51.3		ug/L	ND	103	80-120			
Vanadium	62.9		ug/L	3.05	120	80-120			
Zinc	61		ug/L	8	107	80-120			
Semi-Volatiles									
Acenaphthene	4.86	0.05	ug/L	ND	97.2	50-140			
Acenaphthylene	4.24	0.05	ug/L	ND	84.7	50-140			
Anthracene	5.50	0.01	ug/L	ND	110	50-140			
Benzo [a] anthracene	4.24	0.01	ug/L	ND	84.8	50-140			
Benzo [a] pyrene	3.57	0.01	ug/L	ND	71.4	50-140			
Benzo [b] fluoranthene	3.49	0.05	ug/L	ND	69.9	50-140			
Benzo [g,h,i] perylene	4.45	0.05	ug/L	ND	89.1	50-140			
Benzo [k] fluoranthene	4.09	0.05	ug/L	ND	81.8	50-140			
Chrysene	5.28	0.05	ug/L	ND	106	50-140			
Dibenzo [a,h] anthracene	4.13	0.05	ug/L	ND	82.6	50-140			
Fluoranthene	4.75	0.01	ug/L	ND	95.0	50-140			
Fluorene	4.00	0.05	ug/L	ND	80.0	50-140			
Indeno [1,2,3-cd] pyrene	4.12	0.05	ug/L	ND	82.5	50-140			
1-Methylnaphthalene	4.46	0.05	ug/L	ND	89.3	50-140			
2-Methylnaphthalene	4.70	0.05	ug/L	ND	94.0	50-140			
Naphthalene	4.31	0.05	ug/L	ND	86.2	50-140			
Phenanthrene	4.26	0.05	ug/L	ND	85.1	50-140			
Pyrene	4.94	0.01	ug/L	ND	98.9	50-140			
Surrogate: 2-Fluorobiphenyl	*19.3*		*ug/L*		*96.3*	*50-140*			
Volatiles									

Certificate of Analysis

Report Date: 05-Sep-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**

Order Date:27-Aug-2014

Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	132	5.0	ug/L	ND	132	50-140			
Benzene	36.7	0.5	ug/L	ND	91.8	60-130			
Bromodichloromethane	48.3	0.5	ug/L	ND	121	60-130			
Bromoform	48.7	0.5	ug/L	ND	122	60-130			
Bromomethane	28.5	0.5	ug/L	ND	71.2	50-140			
Carbon Tetrachloride	51.4	0.2	ug/L	ND	129	60-130			
Chlorobenzene	31.5	0.5	ug/L	ND	78.8	60-130			
Chloroform	45.4	0.5	ug/L	ND	114	60-130			
Dibromochloromethane	42.5	0.5	ug/L	ND	106	60-130			
Dichlorodifluoromethane	33.1	1.0	ug/L	ND	82.8	50-140			
1,2-Dichlorobenzene	36.5	0.5	ug/L	ND	91.4	60-130			
1,3-Dichlorobenzene	36.8	0.5	ug/L	ND	92.0	60-130			
1,4-Dichlorobenzene	37.0	0.5	ug/L	ND	92.6	60-130			
1,1-Dichloroethane	39.3	0.5	ug/L	ND	98.2	60-130			
1,2-Dichloroethane	44.5	0.5	ug/L	ND	111	60-130			
1,1-Dichloroethylene	40.7	0.5	ug/L	ND	102	60-130			
cis-1,2-Dichloroethylene	39.1	0.5	ug/L	ND	97.7	60-130			
trans-1,2-Dichloroethylene	38.9	0.5	ug/L	ND	97.2	60-130			
1,2-Dichloropropane	33.8	0.5	ug/L	ND	84.6	60-130			
cis-1,3-Dichloropropylene	36.6	0.5	ug/L	ND	91.6	60-130			
trans-1,3-Dichloropropylene	36.6	0.5	ug/L	ND	91.5	60-130			
Ethylbenzene	31.3	0.5	ug/L	ND	78.2	60-130			
Ethylene dibromide (dibromoethane,	32.8	0.2	ug/L	ND	82.1	60-130			
Hexane	32.9	1.0	ug/L	ND	82.3	60-130			
Methyl Ethyl Ketone (2-Butanone)	82.7	5.0	ug/L	ND	82.7	50-140			
Methyl Isobutyl Ketone	62.9	5.0	ug/L	ND	62.9	50-140			
Methyl tert-butyl ether	85.2	2.0	ug/L	ND	85.2	50-140			
Methylene Chloride	46.7	5.0	ug/L	ND	117	60-130			
Styrene	33.7	0.5	ug/L	ND	84.2	60-130			
1,1,1,2-Tetrachloroethane	42.6	0.5	ug/L	ND	106	60-130			
1,1,2,2-Tetrachloroethane	29.9	0.5	ug/L	ND	74.7	60-130			
Tetrachloroethylene	44.7	0.5	ug/L	ND	112	60-130			
Toluene	31.0	0.5	ug/L	ND	77.5	60-130			
1,1,1-Trichloroethane	46.6	0.5	ug/L	ND	116	60-130			
1,1,2-Trichloroethane	38.8	0.5	ug/L	ND	97.0	60-130			
Trichloroethylene	41.5	0.5	ug/L	ND	104	60-130			
Trichlorofluoromethane	49.6	1.0	ug/L	ND	124	60-130			
Vinyl chloride	30.0	0.5	ug/L	ND	74.9	50-140			
m,p-Xylenes	67.5	0.5	ug/L	ND	84.4	60-130			
o-Xylene	34.5	0.5	ug/L	ND	86.2	60-130			

Certificate of Analysis

Report Date: 05-Sep-2014
Client: **AMEC Environment & Infrastructure (Ottawa)** Order Date:27-Aug-2014
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Qualifier Notes:

Sample Qualifiers :

1 : Trip blank hold time based on preparation date for this QA sample and the associated analytical requirements. Hold time exceedances do not preclude the validity of the Trip Blank data.

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 additional VOC parameters.

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.

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Chain of Custody

№ 102812

Pg 1 of 1

Client Name: Amec	Project Name: Lansdowne Park
Contact Name: Brock Ibbott	Quote: City of Ottawa
Address: 300-210 Colonnade Rd. South, Ottawa, ON K2E 7L5	PO: TZ5100[illegible]01
Telephone: 613-727-0658	Email Address: brock.ibbott@amec.com

Paracel Order Number: 143523

	Sample ID/Location Name		Matrix	Air Volume	# of Containers	Date	Time													
1	DBMWH-2	BDA055	GW		2	8/27/14			X											
2	DBMWH-4	BDA056			2				X											
3	DBMWH-5	BDA057			2				X											
4	BMWH-5	BDA058			2				X											
5	MWH-1	BDA089			7					X	X	X	X			X				
6	MWH-2	BDA090			7					X	X	X	X			X				
7	MWH-3	BDA091			7					X	X	X	X			X				
8	MWH-4	BDA092			7					X	X	X	X			X				
9	MWH-5	BDA093			7					X	X	X	X			X				
10	DUP-1	BDA094	✓		7	✓				X	X	X	X			X				

Comments: Trip Blank BDA095 1 Aug 22 X

Relinquished By (Print): Brian Clark

Date/Time: 8/27/14 3:15 pm

Chain of Custody (Env) - Rev 0.3 May 2012

A0004697_281-00281

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Certificate of Analysis

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Ottawa, ON K2E 7L5
Attn: Brock Ibbott

Phone: (613) 727-0658
Fax: (613) 727-9465

Client PO: 45064625
Project: TZ5100901/ Laroche Park
Custody: 99771

Report Date: 17-Nov-2014
Order Date: 11-Nov-2014
Order #: 1446092

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

Paracel ID	Client ID
1446092-01	SU-6
1446092-02	DBMW14-2 SU2
1446092-03	BH14-2 SU-2
1446092-04	BH14-20 SU20
1446092-05	BH14-22 SU22
1446092-06	BH14-23 SU23
1446092-07	DUP-1

Approved By: Mark Foto

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

Certificate of Analysis

Report Date: 17-Nov-2014
Order Date:11-Nov-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	12-Nov-14	13-Nov-14
Mercury	EPA 7471B - CVAA, digestion	12-Nov-14	12-Nov-14
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	12-Nov-14	12-Nov-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	13-Nov-14	13-Nov-14
REG 153: PAHs by GC-MS	EPA 8270 - GC-MS, extraction	11-Nov-14	12-Nov-14
Solids, %	Gravimetric, calculation	13-Nov-14	13-Nov-14

PARACEL

Order #: 1446092

Certificate of Analysis

Report Date: 17-Nov-2014
Order Date:11-Nov-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625

Project Description: TZ5100901/ Laroche Park

	Client ID:	SU-6	DBMW14-2 SU2	BH14-2 SU-2	BH14-20 SU20
	Sample Date:	11-Nov-14	11-Nov-14	11-Nov-14	11-Nov-14
	Sample ID:	1446092-01	1446092-02	1446092-03	1446092-04
	MDL/Units	Soil	Soil	Soil	Soil
Physical Characteristics					
% Solids	0.1 % by Wt.	79.5	80.4	77.9	71.7
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Barium	1.0 ug/g dry	122	84.6	135	88.2
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	8.8	5.8	7.0	6.1
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	15.6	13.3	11.1	19.6
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	4.5	4.2	3.7	4.9
Copper	1.0 ug/g dry	16.5	15.1	17.0	15.9
Lead	1.0 ug/g dry	46.5	37.8	44.5	17.8
Mercury	0.1 ug/g dry	<0.1	<0.1	0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	1.0
Nickel	1.0 ug/g dry	10.1	8.7	9.4	11.0
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	22.5	24.2	14.3	26.1
Zinc	1.0 ug/g dry	150	75.6	172	62.9
Hydrocarbons					
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	29	13	29	<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	0.05	0.03	0.03	<0.02
Anthracene	0.02 ug/g dry	0.04	0.04	0.05	0.02
Benzo [a] anthracene	0.02 ug/g dry	0.11	0.10	0.12	0.05
Benzo [a] pyrene	0.02 ug/g dry	0.12	0.10	0.13	0.07
Benzo [b] fluoranthene	0.02 ug/g dry	0.34	0.18	0.23	0.14

Certificate of Analysis

Report Date: 17-Nov-2014
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Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	SU-6	DBMW14-2 SU2	BH14-2 SU-2	BH14-20 SU20
	Sample Date:	11-Nov-14	11-Nov-14	11-Nov-14	11-Nov-14
	Sample ID:	1446092-01	1446092-02	1446092-03	1446092-04
	MDL/Units	Soil	Soil	Soil	Soil
Benzo [g,h,i] perylene	0.02 ug/g dry	0.11	0.05	0.10	0.05
Benzo [k] fluoranthene	0.02 ug/g dry	0.25	0.07	0.09	0.05
Chrysene	0.02 ug/g dry	0.12	0.11	0.15	0.07
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	0.27	0.22	0.24	0.09
Fluorene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.09	0.05	0.09	0.06
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<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	<0.04	<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	0.11	0.14	0.11	0.03
Pyrene	0.02 ug/g dry	0.25	0.17	0.20	0.08
2-Fluorobiphenyl	Surrogate	129%	116%	115%	111%
Terphenyl-d14	Surrogate	72.3%	77.9%	76.6%	70.9%

Certificate of Analysis

Report Date: 17-Nov-2014
Order Date: 11-Nov-2014

Client: **AMEC Environment & Infrastructure (Ottawa)**
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	MDL/Units	BH14-22 SU22	BH14-23 SU23	DUP-1	-
Client ID:		BH14-22 SU22	BH14-23 SU23	DUP-1	-
Sample Date:		11-Nov-14	11-Nov-14	11-Nov-14	-
Sample ID:		1446092-05	1446092-06	1446092-07	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	76.1	83.9	82.3	-
Metals					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Arsenic	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Barium	1.0 ug/g dry	69.0	82.3	92.5	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Boron	1.0 ug/g dry	4.5	4.4	4.8	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Chromium	1.0 ug/g dry	14.2	14.2	16.0	-
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	-
Cobalt	1.0 ug/g dry	4.0	4.1	4.4	-
Copper	1.0 ug/g dry	11.4	8.4	9.1	-
Lead	1.0 ug/g dry	34.7	12.9	14.1	-
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Nickel	1.0 ug/g dry	8.2	8.7	9.4	-
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	-
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	-
Vanadium	1.0 ug/g dry	21.7	21.3	23.9	-
Zinc	1.0 ug/g dry	50.5	50.2	53.2	-
Hydrocarbons					
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	9	13	15	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	-
Semi-Volatiles					
Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Benzo [a] anthracene	0.02 ug/g dry	0.05	0.03	0.03	-
Benzo [a] pyrene	0.02 ug/g dry	0.06	0.03	0.04	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.10	0.06	0.07	-

Certificate of Analysis

Report Date: 17-Nov-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date: 11-Nov-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

	Client ID:	BH14-22 SU22	BH14-23 SU23	DUP-1	-
	Sample Date:	11-Nov-14	11-Nov-14	11-Nov-14	-
	Sample ID:	1446092-05	1446092-06	1446092-07	-
	MDL/Units	Soil	Soil	Soil	-
Benzo [g,h,i] perylene	0.02 ug/g dry	0.05	0.03	0.03	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.04	0.02	0.03	-
Chrysene	0.02 ug/g dry	0.06	0.04	0.04	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Fluoranthene	0.02 ug/g dry	0.08	0.06	0.06	-
Fluorene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.04	0.02	0.02	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	-
Naphthalene	0.01 ug/g dry	<0.01	<0.01	<0.01	-
Phenanthrene	0.02 ug/g dry	0.03	<0.02	<0.02	-
Pyrene	0.02 ug/g dry	0.07	0.05	0.05	-
2-Fluorobiphenyl	Surrogate	105%	128%	112%	-
Terphenyl-d14	Surrogate	73.1%	86.0%	74.2%	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	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						
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	*1.56*		*ug/g*		*117*	*50-140*			
Surrogate: Terphenyl-d14	*1.24*		*ug/g*		*93.1*	*50-140*			

Certificate of Analysis

Report Date: 17-Nov-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date: 11-Nov-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
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	
Metals									
Antimony	1.18	1.0	ug/g dry	ND			0.0	30	
Arsenic	5.23	1.0	ug/g dry	5.02			4.1	30	
Barium	111	1.0	ug/g dry	114			2.7	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron	4.33	1.0	ug/g dry	4.49			3.6	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	14.0	1.0	ug/g dry	13.8			1.1	30	
Cobalt	5.70	1.0	ug/g dry	5.84			2.5	30	
Copper	28.5	1.0	ug/g dry	28.8			1.2	30	
Lead	21.1	1.0	ug/g dry	20.0			5.6	30	
Mercury	0.219	0.1	ug/g dry	0.238			8.2	35	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	11.1	1.0	ug/g dry	11.3			1.0	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND			0.0	30	
Vanadium	25.9	1.0	ug/g dry	26.1			0.7	30	
Zinc	55.1	1.0	ug/g dry	54.8			0.6	30	
Physical Characteristics									
% Solids	92.6	0.1	% by Wt.	92.9			0.3	25	
Semi-Volatiles									
Acenaphthene	ND	0.02	ug/g dry	ND				40	
Acenaphthylene	ND	0.02	ug/g dry	ND				40	
Anthracene	ND	0.02	ug/g dry	ND				40	
Benzo [a] anthracene	0.033	0.02	ug/g dry	0.030			9.6	40	
Benzo [a] pyrene	0.036	0.02	ug/g dry	0.035			1.4	40	
Benzo [b] fluoranthene	0.072	0.02	ug/g dry	0.067			7.6	40	
Benzo [g,h,i] perylene	0.020	0.02	ug/g dry	0.032			43.2	40	QR-01
Benzo [k] fluoranthene	0.029	0.02	ug/g dry	0.027			8.6	40	
Chrysene	0.042	0.02	ug/g dry	0.037			12.5	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND				40	
Fluoranthene	0.072	0.02	ug/g dry	0.061			16.4	40	
Fluorene	ND	0.02	ug/g dry	ND				40	
Indeno [1,2,3-cd] pyrene	0.025	0.02	ug/g dry	0.023			7.2	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	0.063	0.02	ug/g dry	0.054			16.5	40	
Surrogate: 2-Fluorobiphenyl	*2.11*		*ug/g dry*	*ND*	*130*	*50-140*			
Surrogate: Terphenyl-d14	*1.38*		*ug/g dry*	*ND*	*85.5*	*50-140*			

Certificate of Analysis

Report Date: 17-Nov-2014
Client: **AMEC Environment & Infrastructure (Ottawa)**
Order Date: 11-Nov-2014
Client PO: 45064625
Project Description: TZ5100901/ Laroche Park

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	102	4	ug/g	ND	105	60-140			
F3 PHCs (C16-C34)	255	8	ug/g	ND	128	60-140			
F4 PHCs (C34-C50)	166	6	ug/g	ND	125	60-140			
Metals									
Antimony	275		ug/L	ND	110	70-130			
Arsenic	350		ug/L	100	100	70-130			
Barium	2510		ug/L	2280	92.2	70-130			
Beryllium	234		ug/L	0.21	93.6	70-130			
Boron	327		ug/L	89.9	94.7	70-130			
Cadmium	233		ug/L	7.37	90.3	70-130			
Chromium (VI)	4.5	0.2	ug/g	ND	90.5	70-130			
Chromium	505		ug/L	277	91.3	70-130			
Cobalt	334		ug/L	117	86.8	70-130			
Copper	808		ug/L	576	92.7	70-130			
Lead	616		ug/L	399	86.7	70-130			
Mercury	1.56	0.1	ug/g	0.238	88.4	72-128			
Molybdenum	236		ug/L	7.45	91.6	70-130			
Nickel	449		ug/L	225	89.6	70-130			
Selenium	197		ug/L	ND	79.9	70-130			
Silver	224		ug/L	0.30	89.4	70-130			
Thallium	185		ug/L	3.56	72.7	70-130			
Uranium	206		ug/L	ND	82.6	70-130			
Vanadium	752		ug/L	522	92.1	70-130			
Zinc	1330		ug/L	1100	91.8	70-130			
Semi-Volatiles									
Acenaphthene	0.185	0.02	ug/g	ND	91.3	50-140			
Acenaphthylene	0.173	0.02	ug/g	ND	85.4	50-140			
Anthracene	0.171	0.02	ug/g	ND	84.5	50-140			
Benzo [a] anthracene	0.219	0.02	ug/g	0.030	93.3	50-140			
Benzo [a] pyrene	0.199	0.02	ug/g	0.035	80.8	50-140			
Benzo [b] fluoranthene	0.257	0.02	ug/g	0.067	93.8	50-140			
Benzo [g,h,i] perylene	0.200	0.02	ug/g	0.032	83.2	50-140			
Benzo [k] fluoranthene	0.227	0.02	ug/g	0.027	99.0	50-140			
Chrysene	0.213	0.02	ug/g	0.037	86.6	50-140			
Dibenzo [a,h] anthracene	0.179	0.02	ug/g	ND	88.6	50-140			
Fluoranthene	0.243	0.02	ug/g	0.061	89.9	50-140			
Fluorene	0.164	0.02	ug/g	ND	80.9	50-140			
Indeno [1,2,3-cd] pyrene	0.208	0.02	ug/g	0.023	91.4	50-140			
1-Methylnaphthalene	0.239	0.02	ug/g	ND	118	50-140			
2-Methylnaphthalene	0.237	0.02	ug/g	ND	117	50-140			
Naphthalene	0.181	0.01	ug/g	ND	89.3	50-140			
Phenanthrene	0.197	0.02	ug/g	ND	97.1	50-140			
Pyrene	0.234	0.02	ug/g	0.054	88.9	50-140			
Surrogate: 2-Fluorobiphenyl	*1.88*		*ug/g*		*116*	*50-140*			

Certificate of Analysis

Report Date: 17-Nov-2014
Client: **AMEC Environment & Infrastructure (Ottawa)** Order Date:11-Nov-2014
Client PO: 45064625 Project Description: TZ5100901/ Laroche Park

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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Chain of Custody (Lab Use Only)
№ 99771
Page 1 of 1

Client Name: A-PC	Project Reference: LAROCHE PARK
Contact Name: BROWN TABOTT	Quote #: CITY OF OTTAWA SOA
Address: 300-210 Colonnade Rd South, Ottawa ON K2E 7L6	PO #: 72510040
Telephone: 613-727-0658	Email Address: [illegible]

TAT: [X] Regular [ ] 3 Day [ ] 2 Day [ ] 1 Day
Date Required:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 1446092

#	Sample ID/Location Name		Matrix	Air Volume	# of Containers	Date	Time	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	SU-6	BDA922	S	/	2	11/11/14				X	X	X	X		X
2	DBMW14-2 SU2	BDA923	S	/	2	11/11/14				X	X	X	X		X
3	BH14-2 SU-2	BDA924	S	/	2	11/11/14				X	X	X	X		X
4	BH14-20 SU20	BDA925	S	/	2	11/11/14				X	X	X	X		X
5	BH14-22 SU22	BDA92[illegible]	S	/	2	11/11/14				X	X	X	X		X
6	BH14-23 SU23	BDA927	S	/	2	11/11/14				X	X	X	X		X
7	DUP-1	BDA928	S	/	2	11/11/14				X	X	X	X		X
8															
9															
10															

Comments:

Method of Delivery:

Relinquished By (Sign): [signature]	Received by Driver/Depot:	Received at Lab: [signature]	Verified By:
Relinquished By (Print): BROWN TABOTT	Date/Time:	Date/Time: NOV 11 [illegible]	Date/Time: [illegible]
Date/Time: 11/11/14 9:45 am	Temperature:	Temperature: [illegible]	pH Verified: [illegible]

Chain of Custody (Env) - Rev 0.1 Mar 2013

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APPENDIX C

LIMITATIONS

Limitations

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
   (a) The Standard Terms and Conditions which form a part of our Professional Services Contract;
   (b) The Scope of Services;
   (c) Time and Budgetary limitations as described in our Contract; and,
   (d) The Limitations stated herein.
2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.
3. The conclusions presented in this report were based, in part, on visual observations of the site and attendant structures. Our conclusions cannot and are not extended to include those portions of the site or structures which were not reasonably available, in AMEC's opinion, for direct observation.
4. The environmental conditions at the site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the site with any applicable local, provincial or federal by-laws, orders-in-council, legislative enactments and regulations was not performed.
5. The site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on site and may be revealed by different of other testing not provided for in our contract.
7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, AMEC must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
8. The utilization of AMEC's services during the implementation of any remedial measures will allow AMEC to observe compliance with the conclusions and recommendations contained in the report. AMEC's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or in part, or any reliance thereon, or decisions made based on any information of conclusions in the report, is the sole responsibility of such third party. AMEC accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.
10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of AMEC.
11. Provided that the report is still reliable, and less than 12 months old, AMEC will issue a third-party reliance letter to parties client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on AMEC's report, by such reliance agree to be bound by our proposal and AMEC's standard reliance letter. AMEC's standard reliance letter indicates that in no event shall AMEC be liable for any damages, howsoever arising, relating to third-party reliance on AMEC's report. No reliance by any party is permitted without such agreement.