ENVIRONMENTAL SOIL INVESTIGATION
PROPOSED DEVELOPMENT
2940, 2946 & 2948 BASELINE ROAD
OTTAWA, ONTARIO

Prepared for:

3223701 Canada Inc. (Brigil Platinum)

By:

SPL CONSULTANTS LIMITED

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Project: 1599-710
June 2013

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1. INTRODUCTION

SPL Consultants Limited (SPL) was retained by Mr. Michel Gagnon, P.Eng., of 3223701 Canada Inc. (Brigil Platinum) to conduct to an Environmental Soil Investigation (ESI) at the above noted property. The terms of reference for the project are as outlined in our proposal number P-13.03.070 dated March 22, 2013 and accepted by Mr. Gagnon on April 16, 2013. This assessment has been requested and performed as part of a geotechnical investigation prior to the proposed redevelopment of the subject site. This report should not be considered as a Phase Two Environmental Site Assessment (ESA) under Ontario Regulation (O.Reg.) 153/04, as amended. It is the understanding of SPL that a Phase Two ESA will be completed to support a Record of Site Condition (RSC) in the future. This report does not contain recommendations related to geotechnical issues; the latter have been addressed in a geotechnical report submitted under a separate cover.

1.1 SITE DESCRIPTION & ACTIVITIES

The site under assessment is a quasi-rectangular parcel of land (comprised of two properties: 2940 and 2946 & 2948 Baseline Road) with a total area of approximately 24.5 hectares (6.1 acres) located on the south side of Baseline Road at the intersection of Sandcastle Drive, in the City of Ottawa, Ontario. The property is located in an area of mixed residential, commercial and industrial development and is zoned as Business Park Industrial Zone (2940 Baseline) and General Mixed Use Zone (2946 & 2948 Baseline).

The property of 2940 Baseline Road is currently occupied by an electronic waste recycling company. The property of 2946 & 2948 Baseline Road is currently occupied by a commercial and office building.

The proposed redevelopment of the subject property will involve the demolition of the structures located on the 2940 Baseline property in order to construct a high rise development composed of three (3) residential towers connected at grade by a commercial/retail area with an underground parking.

A site location plan is provided in **Drawing 1**.

1.2 PREVIOUS INVESTIGATIONS

A summary of the previous reports provided to SPL as part of this investigation are provided below:

Phase II Environmental Site Assessment, 2940 Baseline Road, Ottawa, Ontario. Prepared for Craig Construction Equipment Limited, prepared by Oliver, Mangione, McCalla & Associates (OMM), dated March 9, 2000.

A Phase II Environmental Site Assessment (ESA) was conducted following the identification of the following issues during a Phase I ESA:

- Potential of petroleum hydrocarbon impact to the soil and/or overburden groundwater regimes due to the former existence of on-site underground storage tanks and pump island;
- Potential of asbestos-containing materials (insulated pipes); and,
- Quality of the on-site bedrock well water.

The investigation included the advancement of three (3) boreholes (BH-1 to 3) drilled down to a depth of 4.42 meters below ground surface. No groundwater monitoring well was installed but a groundwater sample was collected from borehole BH-3. Selected soil samples, including the groundwater sample from BH-3 and a groundwater sample collected from the potable water well located inside the building, were analysed for a selection of the following parameters: BTEX (benzene, toluene, ethylbenzene and xylenes), TPH (total petroleum hydrocarbons) (gas/diesel), TPH (heavy oil), metals, hardness, pH, conductivity, fluoride, nitrate, sulphate and chloride.

The results of the soil and groundwater samples were compared to the Table A (potable groundwater condition) of the Ontario Ministry of the Environment (MOE) Guideline for Use at Contaminated Sites in Ontario (Revised February 1997). The results of the potable groundwater sample were compared to the Ontario Drinking Water Objectives.

The following conclusions were concluded by OMM:

- Based on the results of this investigation, the underlying soil and overburden groundwater regimes in the vicinity of the former pump island and underground storage tanks have been adversely impacted with petroleum hydrocarbons which exceed provincial remediation criteria. In addition, due to the location of the impacted soil, there is potential for soil and/or groundwater contamination on the adjacent property to the east. The full extent of the on-site and off-site impacted soil and groundwater is undefined;
- A groundwater sample collected from the on-site bedrock well meets the recommended provincial criteria for the parameters tested;
- Asbestos-containing materials have been identified in the water pipe insulation and cement elbows. Several areas of the insulation were noted to be in poor condition and the cut ends of the pipe wrap were noted to be exposed.

Phase I Environmental Site Assessment Update, 2940 Baseline Road, Ottawa, Ontario. Prepared for R.M. Gardiner Construction Company, prepared by Trow Associates Inc., dated August, 2009.

Trow Associates Inc. (Trow) were retained to complete a Phase I ESA update for the property. The Phase I ESA update was to be used as a termination baseline condition audit by comparing the current environmental conditions to those previously documented by Trow in 2000.

The following conclusions and recommendations were drawn as a result of the completion of the Phase I ESA:

- The site is occupied by a commercial building complete with a mixed commercial/residential land use within the City of Ottawa;
- The building is currently vacant and consists of garages, warehouses, and office space. It was previously occupied by an equipment rental company. A small addition, to the east, is currently occupied by an office;
- Based on provided information, underground storage tank (UST) and aboveground storage tanks (ASTs) and fuel pump islands were formerly located on the site. In addition, waste oil and liquid

drums were historically stored outside of the building. The previous assessments determined that soil and groundwater impact is present on the site, predominantly in association with a former UST to the southeast of the building. Based on the document review, the soil and groundwater impact has not been fully delineated;

- Based on the review of the air-photos and the site review, the general housekeeping practices appear to have been poor. Abandoned drums, ASTs, batteries and various types of mechanical equipment were observed on sand and gravel cover on the property with no evidence of spill containment systems;
- Staining was commonly identified on the property (i.e. within the building, the Quonset hut, and the exterior);
- Large soil mounds were identified along the southern and eastern portions of the property.

Based on the findings of this assessment, Trow summarized the following final areas of potential environmental concern (APEC) to be investigated:

APEC 1. Historical petroleum hydrocarbon impact southeast of the building. Reported 1800 to 2000 tonnes of impacted soil, but not fully delineated. Also, staining in interior of garage at former AST (southeast). Contaminants of concern (COC) are petroleum hydrocarbons and BTEX. Recommendation: Install two interior monitoring wells and three exterior monitoring wells near the property limits. Assess soil and groundwater.

APEC 2. Former pump island and former UST/ASTs near Quonset Hut. Limited assessment conducted and wells destroyed. COC are petroleum hydrocarbons and BTEX. Recommendation: Install three monitoring wells in the area to assess soil and groundwater.

APEC 3. General storage of drums, waste materials, equipment combined, batteries with identified staining on property. COC are petroleum hydrocarbons, volatile organic compounds (VOCs), metals. Recommendation: Excavate 10 to 15 test pits throughout the property to assess surficial soil conditions on the property. Sample monitoring wells installed as per APEC 2 for metals.

APEC 4. Based on the age of the building and visual observations, several potential designated substances are suspected. COC are special attention substances. Recommendation: Prior to any renovation and/or demolition, a designated substance survey should be completed.

Environmental Site Remediation Program, Industrial Property, 2940 Baseline Road, Ottawa, Ontario, prepared for R.M. Gardiner Construction Company Ltd., prepared by Paterson Group Inc., dated December 23, 2009 – Report incomplete, figures were missing from the copy provided.

Paterson Group Inc. (Paterson) reviewed the available site plans, test hole logs, and analytical test results from the following previous studies, which were not provided to SPL for review:

- Phase I ESA, 2940 Baseline Road, Nepean, Ontario, prepared for Craig Construction Equipment Ltd., prepared by Oliver, Mangione, McCalla & Associates (OMM), dated January 2000;
- Site Layout, 2940 Baseline Road, Nepean, Ontario, prepared by Trow Associates, dated July 2009;
- Summary of Environmental Site Assessment Activities and Estimated Remedial Costs, 2940 Baseline Road, Nepean, Ontario, prepared by Watters Environmental Group Inc. (Watters), dated November 2007;
- The previous Watters report included the review of a Phase I ESA prepared for the site by OMM as well a review of a Phase I ESA update for the site prepared by Watters.

The investigation included the advancement of eleven boreholes while nine were instrumented with a groundwater monitoring well. In addition, five near surface soil samples were collected to address concerns associated with fill material and surficial staining. Selected soil and groundwater samples were submitted for laboratory analysis of heavy metals, VOCs including BTEX, petroleum hydrocarbons and/or polycyclic aromatic hydrocarbons (PAHs).

The results of the soil and groundwater samples were compared to the Table 2 of the document entitled Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, prepared by the MOE, March 9, 2004. The Table 2 Industrial/Commercial/Community Property Use standards for coarse grained soil were considered applicable based on the historical and future intended industrial/commercial use of the site and because the site is currently equipped with a potable groundwater well.

Soil samples from three of the boreholes and one of the near surface soil samples were found to exceed the MOE soil standards. Each of the groundwater samples was found to be in compliance with the MOE standards.

A test pit was excavated on-site in the area of known contaminated soil in order to collect a sample for waste classification for disposal of the contaminated soil at a landfill. Seven additional test pits were excavated on-site in areas of potential environmental concerns identified during the review of previous reports.

The following was concluded by Paterson:

The contaminated soil in the area of the former UST and drum storage area was excavated and was disposed of at an appropriate landfill site (WSI in Navan, Ontario). Approximately 4,339 metric tonnes of soil were taken to the WSI Navan landfill. The site then backfilled with engineered backfill and compacted in 0.3 meter lifts using a sheepsfoot roller.

Soil samples were taken from the base and walls of the excavation in regular sampling intervals. A total of twenty-six soil samples were submitted for laboratory analysis of a combination of BTEX, PHCs, VOCs and/or PAHs. Twenty final confirmation of remediation soil samples were collected from the remediated area and were submitted for laboratory analysis. Three additional soil samples from the test pits are considered to be final. The final soil test results are in compliance with the selected MOE Table 2 standards for industrial/commercial/community property use.

Groundwater samples were recovered from two monitoring wells installed in the remediated area prior to backfilling. The groundwater test results are in compliance with the selected MOE Table 2 standards.

Paterson's reported opinion was that the contaminated soil identified during the previous site investigations has been remediated.

Phase I Environmental Site Assessment, Commercial Property, 2946-2948 Baseline Road, Ottawa, Ontario, prepared for Brigil Platinum, prepared by Paterson Group Inc., dated December 1, 2010.

Paterson was retained to complete a Phase I ESA for the property.

The following conclusions and recommendations were drawn as a result of the completion of the Phase I ESA:

- The historical research indicated that the subject site was vacant prior to being developed with the existing commercial building prior to 1978. The site has been occupied by commercial tenants since construction. The area east of the site has been used as an equipment rental facility since the 1960's until recently. A small scale sand pit operation appeared to be present on the south portion of the site and the adjacent property to the east in the 1960's;
- Following the historical review, a site visit was conducted. The subject site is occupied by Bouclair, Quickie Convenience, Fat Albert's Restaurant, Appletree Medical and dentists, who use the building for retail or commercial office space. The neighbouring properties to the north, west and south of the site are used for residential purposes. Vacant equipment rental facility is located to the east of the subject site. However, given the remedial and exploratory work that was conducted at this property by Paterson, this site is not anticipated to pose a risk to the subject land;
- Based on the findings of this assessment, it is Paterson's opinion that a Phase II ESA will not be required for the property at this time;
- Asbestos may be present within the vinyl floor tiles, suspended ceiling tiles and the drywall joint compound throughout site building. These materials were generally in good condition. The encapsulation, handling or removal of asbestos containing material should be carried out by a contractor specialized for these works;
- Lead-based paints may be present on original painted surfaces; and,
- A designated substance survey (DSS) of the site building will be required prior to demolition in accordance with the Occupational Health and Safety Act. If the building is not going to be demolished, an Asbestos Survey of the building should be conducted as per O. Reg. 278/05.

Phase I Environmental Site Assessment, 2946-2948 Baseline Road, Ottawa, Ontario, prepared for 6967230 Canada Inc., prepared by Exp Services Inc., dated January 17, 2013.

Exp Services Inc. (exp) was retained to complete a Phase I ESA for the commercial property.

The following conclusions and recommendations were drawn as a result of the completion of the Phase I ESA:

- Based on the results of the Phase I ESA completed at 2946-2948 Baseline Road, Ottawa, Ontario, exp has identified no areas of potential environmental concern due to on or off-site operations. No further environmental work is recommended at this time.
- However, as a best management practice, based date of construction of the site building and the limited scope of the previous asbestos containing material sampling program, exp recommends that prior to any renovations or demolition, a Designated Substance Survey (DSS) of the building be completed as per section 10 of the Ontario Health and Safety Act, O.Reg. 278/05.

2. SCOPE OF WORK/METHODOLOGY

The objective of the ESI was to, as part of a joint geotechnical investigation, evaluate the environmental condition of the soil and also to install groundwater monitoring wells to be used as part of a future Phase Two ESA at the site. The tasks carried out are summarized below:

i. requested public and private utility providers to locate and mark the locations of the underground services at the subject site;

ii. drilled ten (10) boreholes (BH13-1 to 10) to depths ranging from 1.4 m to 19.8 m below existing grade on the subject site;

iii. installed monitoring wells in four (4) of the boreholes (BH13-2, BH13-3, BH13-5 and BH13-7);

iv. obtained soil samples at frequent depth intervals from eight (8) of the ten (10) boreholes (BH13-1 to 8);

v. conducted chemical analyses on representative soil samples;

vi. compared the results of the chemical analyses of soil to Tables 2 and 3 residential/parkland/institutional (RPI) property use Standards released in April, 2011;

vii. prepared a report summarizing the results of the investigation.

3. FIELD INVESTIGATION

3.1 UTILITY LOCATES

Locates for subsurface utilities were obtained from the public and private utility companies for the boreholes prior to drilling. Borehole locations were also scanned by a private utility locator using cable locating equipment.

3.2 BOREHOLES

Between May 1 and 7, 2013, a total of ten (10) boreholes were advanced (BH13-1 to BH13-10), under the direct supervision of SPL personnel, using a truck-mounted drill rig supplied and operated by George Downing Estates Drilling of Hawkesbury, Ontario. Soil samples were obtained using a standard split-spoon sampler. Monitoring wells were installed in four (4) of the boreholes (BH13-2, BH13-3, BH13-5, and BH13-7). Borehole locations were chosen based on the requirements of the joint geotechnical investigation as well based on the review of available previous environmental investigations on-site. The locations of the boreholes advanced during this investigation are shown on **Drawing 2**.

3.3 SOIL SAMPLING

All soil samples from the boreholes were collected and handled in accordance with generally accepted sampling and handling procedures used by the environmental consulting industry and in accordance with O. Reg. 153/04 as amended. All sample containers, preservative, and labels were supplied by the laboratory providing sample analysis.

During drilling, the split spoon sampler was brushed clean of soil, washed in municipal water containing phosphate free detergent, rinsed in municipal water and then rinsed with distilled water between each sampling event in order to reduce the potential for cross contamination.

In addition to this, new disposable gloves were used during each sampling event to remove the soil from the sampler and to transfer the samples into plastic bags, glass jars and/or vials filled with methanol to further minimize the potential for cross-contamination.

In accordance with SPL sampling protocols, soil samples from the boreholes selected for potential chemical analysis of volatile organic parameters were field-preserved in methanol. Approximately 5 grams of soil was collected using a designated sampler system and placed into a pre-weighed laboratory supplied vial of methanol. As well, a portion of the soil sample was placed directly into laboratory supplied glass jars. The methanol sample vial and glass sample jars were kept cold (<10°C) during field storage and transportation to the environmental analytical laboratory (ALS Environmental Laboratories).

Detailed descriptions of the subsurface conditions at the borehole locations are presented in the borehole logs included in **Appendix A** and are discussed in **Section 4.1**. In general, the soil stratigraphy encountered on the subject property consisted of asphalt covered surfaces (parking areas) overlying fill beneath which a silty clay layer was observed overlying a till layer followed by limestone bedrock.

3.3 FIELD SCREENING MEASUREMENTS

Soil samples were examined in the field for lithology as well as for aesthetic evidence of impacts (i.e. debris, staining and odours).

Headspace monitoring was performed on the samples as a preliminary screening for petroleum hydrocarbons (PHCs) or VOCs in order to select soil samples for laboratory analysis. Headspace combustible vapour measurements were taken inside the plastic bags using an Eagle RKI™ Portable Combustible Gas Detector (Part Number: 71-0028RK). The Eagle RKI™ can detect combustible gases from 0 to 100% of the lower explosive limit (LEL). The detector has a precision of three significant figures and an accuracy of ±5%. The detector is calibrated with two-point field calibration of zero and standard reference gases. Calibration is completed periodically to assure proper sensor response following the calibration procedure outlined in the Eagle Series Instruction Manual.

Headspace combustible vapour measurements were made using the device in methane elimination mode. A summary of the headspace combustible vapour measurements is provided in **Table 3**.

3.4 GROUNDWATER MONITORING WELL INSTALLATION

The monitoring wells installed during this investigation were constructed using Schedule 40 polyvinyl chloride (PVC) pipe including a screen section with a factory machined slot width of 0.25 mm and completed with a PVC riser pipe. All the pipe and screen sections were wrapped in plastic that was removed just prior to installation to minimize the potential for contamination. The base of the monitoring well was covered with a PVC cap to prevent the influx of sediment. Clean silica sand supplied in bags from a supplier, was placed in the annular space between the pipe and the sides of the borehole to obtain relatively sediment free water. A bentonite seal was added to the annular space above the sand pack to reduce the infiltration of surface water into the borehole annulus.

Development and sampling of the monitoring wells was not completed as part of this investigation. Water levels were measured on May 14, 2013 and are discussed in **Section 4.2**.

4. SUBSURFACE CONDITIONS

4.1 SOIL CONDITIONS

Detailed descriptions of the subsurface conditions at the borehole locations are presented in the respective borehole logs in **Appendix A. Figure 3** presents a cross-section of the subsurface conditions across selected borehole locations. The following is a general description of the findings.

Four (4) out of ten (10) boreholes encountered a pavement structure consisting of about 50 to 125 mm asphalt overlying granular fill material. Fill material was found in all boreholes, extending from existing ground surface or under the pavement structure down to depths ranging from 0.6 to 3.0 m. The fill material is predominantly sand and gravel. Underlying the fill material is native soil consisting of silty clay. These soils extend to depths of 12.7 to 16.7 m below the existing ground surface. Underlying the silty clay is a thin layer of silt, sand and gravel till encountered at depths of 12.2 to 15.7 m below the

existing ground surface. Boreholes BH13-1 to BH13-6 were drilled until auger refusal on limestone bedrock was encountered. Bedrock was encountered at depths ranging between 12.7 m and 16.7 m below surface elevation.

No aesthetic evidence of impacts was observed throughout the course of soil sampling activities as part of this study. Grain size analysis were performed on a certain number of soil samples as part of the geotechnical investigation and confirmed that the majority of the soils encountered on the subject property are considered to be coarse textured.

4.2 GROUNDWATER CONDITIONS

Groundwater levels were recorded in all four (4) monitoring wells that were installed as part of this investigation. Three (3) of the monitoring wells (BH13-3, BH13-5 and BH13-7) were installed in the overburden, where the "shallow" groundwater table varied between depths of 1.45 to 2.70 m below ground surface (mbgs). The fourth monitoring well (BH13-2) was installed in bedrock, where the "deep" groundwater table was measured at 4.56 mbgs. A summary of groundwater elevations recorded at the site is provided in **Table 1.**

Based on the groundwater levels observed during this investigation, the "shallow" groundwater flow direction is expected to be in a northwestern direction. Groundwater levels may be influenced by subsurface utility trenching or perched water in the former excavations conducted onsite. Groundwater flow direction can only be confirmed with longer term monitoring.

As mentioned previously, the development and sampling of the newly installed groundwater monitoring wells was not completed as part of this investigation.

5. CHEMICAL ANALYSES

5.1 RATIONALE FOR STANDARDS SELECTION

The results of the soil chemical analyses were evaluated using the Standards contained in the MOE document "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*" (the Standards). These Standards were issued in April 2011 by the MOE and are effective as of July 1, 2011. The Standards were used to evaluate soil quality based on the samples collected and tested, to determine whether soil quality complied with MOE Standards and to determine whether additional investigations are required or warranted.

The property is proposed to be redeveloped for a residential and commercial use. Presently, the 2940 Baseline building is serviced by a potable groundwater well while the 2946-2948 Baseline building is serviced by the City of Ottawa potable water distribution system. The majority of the soils encountered on the subject property are considered to be coarse textured, as discussed in **Section 4.1**. Based on these considerations, the 2011 Table 2 and Table 3 Standards for residential/parkland/institutional (RPI) property uses and coarse textured soil conditions were used to evaluate the environmental quality of the soil at the subject property.

The use of Tables 2 and 3 Standards for the property are considered appropriate based on the following:

- The site is not located within 30 m of a water body;
- The property is not located adjacent to a provincial park or adjacent to an area of natural significance or a wetland area and based on this, it is not anticipated to provide a habitat of endangered or threatened species identified by the Ministry of Natural Resources;
- Potable water for the site (2940 Baseline) is derived from groundwater;
- The property is not an area reserved or set apart as a provincial park or conservation reserve under the Provincial Parks and Conservation Reserves Act, 2006;
- The property is not an area of natural and scientific interest (life science or earth science) identified by the Ministry of Natural Resources as having provincial significance;
- The property is not a wetland identified by the Ministry of Natural Resources as having provincial significance;
- The property is not an area designated by the municipality in its official plan as environmentally significant, however expressed, including designations of areas as environmentally sensitive, as being of environmental concern and as being ecologically significant;
- The property is not an area identified by the Ministry of Natural Resources as significant habitat of a threatened or endangered species;
- The property is not an area designated as an Escarpment Natural Area under the Niagara Escarpment Plan.
- The property is not an area which is habitat of a species that is classified under section 7 of the Endangered Species Act, 2007 as a threatened or endangered species;
- The property is not a property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridge's Moraine Conservation Plan under the Oak Ridge's Moraine Conservation Act, 2001 applies;
- The property is not an area set apart as a wilderness area under the Wilderness Areas Act;
- Bedrock was not encountered within 2 m of the ground surface;
- The pH of the soil samples analysed during this investigation indicated that all pH values were within the acceptable range of 5 to 9.

Note that the Table 2 and Table 3 RPI soil Standards for each individual analyzed parameters are identical, except for the case of ethyl benzene.

5.2 RATIONALE FOR SAMPLE SELECTION

Soil chemical analysis completed during this investigation consisted of soil samples analyzed for PHCs (fractions F1 to F4) and BTEX, metals and inorganic parameters, and PAHs. The selection of soil samples was based on visual and olfactory observations, head space readings and professional judgment.

A summary of the soil samples analyzed as part of this investigation is provided in **Table 2**.

5.3 RESULTS OF SOIL ANALYSES

The chemical analyses were conducted by ALS Environmental Laboratories located in Ottawa, Ontario. ALS is a member of the Canadian Association for Laboratory Accreditation (CALA) and meets the requirements of Section 47 of O.Reg. 153/04 certifying that the analytical laboratory be accredited in accordance with the International Standard ISO/IEC 17025 and with standards developed by the Standards Council of Canada. The Certificate of Analysis is included in **Appendix B**.

5.3.1 Results of Soil Analyses

A summary of the soil samples analyzed during this investigation are provided in **Tables 4, 5 and 6** and are discussed below.

The results of analysis for all six (6) soil samples submitted for analysis of PHCs (fractions 1 to 4), BTEX, metals and inorganics, and PAHs met both the MOE Table 2 and Table 3 RPI Standards, except for sample BH13-4 SS1 which presented an exceedance for PHCs (fractions 3 and 4) for both MOE Tables 2 and 3 RPI Standards**.**

5.3.4 Quality Assurance and Quality Control

The results of metal analysis of the blind duplicate (QAQC1) of soil sample BH13-8 SS1 indicated an acceptable correlation between the original sample and the duplicate sample.

6. CONCLUSIONS AND RECOMMENDATIONS

The following is a summary of the findings of the ESI:

1. Four (4) out of ten (10) boreholes encountered a pavement structure consisting of about 50 to 125 mm asphalt overlying granular fill material. Fill material was found in all boreholes, extending from existing ground surface or under the pavement structure down to depths ranging from 0.6 to 3.0 m. The fill material is predominantly sand and gravel. Underlying the fill material is native soil consisting of silty clay. These soils extend to depths of 12.7 to 16.7 m below the existing ground surface. Underlying the silty clay is a thin layer of silt, sand and gravel till encountered at depths of 12.2 to 15.7 m below the existing ground surface. Boreholes BH13-1 to BH13-6 were drilled until auger refusal on limestone bedrock was encountered. Bedrock was encountered at depths ranging between 12.7 m and 16.7 m below surface elevation.

2. No aesthetic evidence of impacts was observed throughout the course of soil sampling activities as part of this study.

3. Groundwater levels were recorded in all four (4) monitoring wells that were installed as part of this investigation. Three (3) of the monitoring wells (BH13-3, BH13-5 and BH13-7) were installed in the overburden, where the “shallow” groundwater table varied between depths of 1.45 to 2.70 m below ground surface (mbgs). The fourth monitoring well (BH13-2) was installed in bedrock, where the “deep” groundwater table was measured at 4.56 mbgs. Based on the groundwater levels observed during this investigation, the “shallow” groundwater flow direction is expected to be in a northwestern direction. Groundwater levels may be influenced by subsurface utility trenching or perched water in the former excavations conducted onsite. Groundwater flow direction can only be confirmed with longer term monitoring.

4. The development and sampling of the newly installed groundwater monitoring wells was not completed as part of this investigation.

5. The results of analysis for all six (6) soil samples submitted for analysis of PHCs (fractions 1 to 4), BTEX, metals and inorganics, and PAHs met both the MOE Table 2 and Table 3 RPI Standards, except for sample BH13-4 SS1 which presented an exceedance for PHCs (fractions 3 and 4) for both MOE Tables 2 and 3 RPI Standards.

Based on the findings of this investigation, SPL recommends the following:

i. Since the subject commercial/industrial property will be redeveloped for a residential/commercial use, the filing of a RSC will be required as per O.Reg. 153/04, as amended. The previous environmental studies produced for the subject property do not meet the current requirements of O.Reg. 153/04, as amended, for filing a RSC. Phase One and Phase Two ESAs conducted as per O.Reg. 153/04, as amended, and remediation of any soil or groundwater impacts will be required to file a RSC. These studies should include the review of all previous environmental studies produced for the subject property and should also include the review of past analytical results to the actual applicable Standards, as applicable. The PHCs impacts found as part of this study should also be delineated as part of the Phase Two ESA;

ii. Since the structures located on the 2940 Baseline property are to be demolished as part of the redevelopment project and that previous reports identified the presence or potential presence of asbestos-containing materials, a designated substance survey (DSS) should be completed as per section 10 of the Ontario Health and Safety Act, O.Reg. 278/05 before any demolition work is initiated;

iii. Soil cuttings and instrument washing wastewater generated as part of this study and the joint geotechnical investigation have been stored on-site in steel drums and will require to be properly disposed of as per O. Reg. 558;

iv. All existing groundwater monitoring wells present on-site that are no longer required or are damaged should be decommissioned as per O.Reg. 903;

v. The potable water well located inside the 2940 Baseline main building should be decommissioned, in accordance with O.Reg. 903, as part of the building demolition work;

vi. The results of laboratory analysis from this current ESI indicate that PHCs (fractions 3 and 4) impacted soil is present on the subject site in the fill material at borehole location BH13-4. Removal of all impacted soil will be required in order for the on-site soil to meet MOE Table 2 and Table 3 RPI Standards;

vii. Off-site disposal of impacted soil will require a toxicity characteristic leachate procedure (TCLP) analysis in accordance with O.Reg. 558, to determine waste classification of the soil. Excavated soil with chemical impacts greater than the 2011 MOE Table 2 and 3 RPI Standards or mixed/aesthetically impacted soil, if found, will require disposal as a waste.

7. LIMITATIONS

The findings of the boreholes are believed to be representative of the area of investigation and are based on facts and information determined by SPL during the execution of this project. Soil and/or groundwater conditions at locations other than the boreholes may vary from conditions encountered at the drilling locations. The findings in this report are limited to the environmental conditions on the site at the time of the investigation.

This report was prepared for the account of 3223701 Canada Inc. (Brigil Platinum). The material in this report reflects SPL's judgment in light of the information available to it at the time of preparation. Any use, which a Third Party not noted above makes of this report, or any reliance on decisions to be made based on it, are the responsibility of such Third Parties. SPL Consultants Limited accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

8. QUALIFICATIONS OF THE CONSULTANT

This report was conducted under the supervision of Daniel Charette who is considered a Qualified Person ("QP") with the MOE as defined under O.Reg. 153/04. Daniel has reviewed and confirmed the findings and conclusions of this report.

The company SPL Consultants Limited (SPL) was incorporated in Ontario in April 2009. Principals of the company include the original founders of Shaheen & Peaker Limited, which had 180 employees. The principals and the team members bring many years of experience in geotechnical, pavement and environmental fields.

Daniel Charette is a Senior Environmental Engineer with SPL Consultants. Daniel has a Bachelor's Degree in Civil Engineering and is a recognized Professional Engineer in Ontario and in Québec. Daniel has conducted Phase One Environmental Site Assessments (ESA), Phase Two Environmental Soil and Groundwater Investigations (ESGI) and Environmental Remediations since 2000 at various sites across Ontario and Québec. Daniel is a "QP" with the MOE as defined under O.Reg. 153/04.

Chris Hendry is the Ottawa Branch Manager at SPL. Chris has a Master's degree in Geotechnical Engineering from the University of Alberta.

SPL CONSULTANTS LIMITED

Daniel Charette, P.Eng., ing.
Senior Environmental Engineer

Chris Hendry, M.Eng., P.Eng.
Ottawa Branch Manager

TABLES

Table 1:
Monitoring Well Installation & Water Levels

Monitoring Well	Screened Interval Location	Ground Surface Elevation (masl)	Monitoring Well Depth (mbgs)	14-May-13	
				Depth to Groundwater (mbgs)	Groundwater Elevation (masl)
BH13-2	Bedrock	77.70	16.30	4.56	73.14
BH13-3	Overburden	78.40	6.05	1.45	76.95
BH13-5	Overburden	79.75	6.00	1.57	78.18
BH13-7	Overburden	77.70	7.52	2.70	75.00

For Table Notes see **Notes for Soil Summary Tables,** included at the end of this Section

Table 2:
Summary of Soil Samples Submitted for Chemical Analysis

Location/ Borehole	Sample No.	Date	Depth (m)	Chemical Analyses					Rationale
					M & I	PHCs	BTEX	PAHs	
BH13-2	SS7	03-May-13	4.6-5.2		✓	✓	✓	✓	Representative of native material below water table in area of former remediation excavation
BH13-3	SS1	01-May-13	0.0-0.6		✓	✓	✓	✓	Representative of fill material
BH13-4	SS1	06-May-13	0.0-0.6		✓	✓	✓	✓	Representative of fill material
BH13-5	SS1	06-May-13	0.0-0.6		✓	✓	✓	✓	Representative of fill material
BH13-6	SS1A	02-May-13	0.0-0.3		✓	✓	✓	✓	Representative of fill material
BH13-8	SS1	02-May-13	0.0-0.6		✓	✓	✓	✓	Representative of fill material
BH13-8	QAQC1	02-May-13	0.0-0.6	✓					Blind duplicate soil sample of BH13-8 SS1

For Table Notes see **Notes for Soil Summary Tables,** included at the end of this Section

Table 3: Summary of Headspace Readings Using RKI Eagle Portable Combustible Gas Detector

Borehole No.	Sample No.	Headspace Reading (ppm)	Borehole No.	Sample No.	Headspace Reading (ppm)
BH13-1	SS1	20	BH13-2	SS1	0
	SS2	20		SS2	15
	SS3	30		SS3	25
	SS4	25		SS4	10
	SS5	15		SS5	0
	SS6	15		SS6	0
	SS7	45		SS7	20
	SS8	30		SS8	20
	SS9	25		SS9	15
	SS10	35		SS10A	Limited Sample
	SS11	25		SS10B	15
	-	-		SS11	35
	-	-		SS12	Limited Sample
BH13-3	SS1	15	BH13-4	SS1	0
	SS2	10		SS2	45
	SS3	0		SS3	45
	SS4	20		SS4	50
	SS5	5		SS5	40
	SS6	15		SS6	25
	SS7	15		SS7	45
	SS8	25		SS8	40
	SS9A	Limited Sample		SS9	45
	SS9B	15		SS10	45
	SS10	15		SS11	60
	SS11	20		SS12	40
	SS12	15		-	-
	SS13	25		-	-
BH13-5	SS1	5	BH13-6	SS1A	30
	SS2	30		SS1B	Limited Sample
	SS3	25		SS2	20
	SS4	35		SS3	Limited Sample
	SS5	40		SS4	45
	SS6	25		SS5	35
	SS7	Limited Sample		SS6	30
	SS8	55		SS7	45
	SS9	50		SS8	40
	SS10	30		SS9	35
	SS11A	Limited Sample		SS10	35
	SS11B	30		SS11	45
	SS12	25		SS12A	30
	SS13	Limited Sample		SS12B	Limited Sample

Table 3: Summary of Headspace Readings Using RKI Eagle Portable Combustible Gas Detector

Borehole No.	Sample No.	Headspace Reading (ppm)	Borehole No.	Sample No.	Headspace Reading (ppm)
BH13-7	SS1	Limited Sample	BH13-8	SS1	35
	SS2	Limited Sample		SS2A	30
	SS3	30		SS2B	30
	SS4	30		SS3	15
	SS5	20		-	-
	SS6	45		-	-
	SS7	40		-	-
	SS8	35		-	-
	SS9	35		-	-

Table 4:
Summary of Metals and Inorganics in Soil

Parameter	2011 MOE Table 2 RPI	2011 MOE Table 3 RPI	BH13-2 SS7	BH13-3 SS1	BH13-4 SS1	BH13-5 SS1	BH13-6 SS1A	BH13-8 SS1
Date of Collection			03-May-13	01-May-13	06-May-13	06-May-13	02-May-13	02-May-13
Date of Analysis			13-May-13	13-May-13	13-May-13	13-May-13	13-May-13	13-May-13
Sampling Depth (m)			4.6-5.2	0.0-0.6	0.0-0.6	0.0-0.6	0.0-0.3	0.0-0.6
Analytical Report Reference No.			L1298752-1	L1298752-2	L1298752-3	L1298752-4	L1298752-5	L1298752-6
Antimony (Sb)	7.5	7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	18	18	1.1	1.9	2.5	2.3	<1.0	2.7
Barium (Ba)	390	390	200	243	281	244	83.3	142
Beryllium (Be)	4	4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron (B)	120	120	5.3	17.3	24.3	11.4	6.4	12.6
Boron (B), Hot Water Ext.	1.5	1.5	0.21	0.21	0.24	0.26	0.16	0.19
Cadmium (Cd)	1.2	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Calcium (Ca)	NL	NL	24.5	39.9	39.5	40.9	35.7	39.1
Chromium (Cr)	160	160	38.3	17.4	17.3	30.2	9.4	16.8
Chromium, Hexavalent	8	8	<0.20	0.50	0.34	1.08	0.31	0.41
Cobalt (Co)	22	22	10.4	5.4	6.9	8.5	3.8	5.6
Conductivity	0.7	0.7	0.338	0.324	0.303	0.365	0.133	0.180
Copper (Cu)	140	140	20.3	14.8	17.4	19.9	9.3	24.2
Cyanide, Weak Acid Diss	0.051	0.051	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Lead (Pb)	120	120	3.9	46.9	20.8	26.9	7.7	28.3
Magnesium (Mg)	NL	NL	12.1	6.5	5.7	10.2	1.9	1.8
Mercury (Hg)	0.27	0.27	<0.010	0.015	0.016	0.014	<0.010	0.017
Molybdenum (Mo)	6.9	6.9	<1.0	1.5	<1.0	1.2	<1.0	1.9
Nickel (Ni)	100	100	21.4	11.6	14.5	17.0	6.6	14.7
pH	-	-	8.00	7.88	7.75	7.66	7.77	7.60
SAR	5	5	0.29	0.31	0.23	0.54	<0.10	0.11
Selenium (Se)	2.4	2.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	20	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	1	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	23	23	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	86	86	55.4	17.5	18.4	38.6	19.9	18.0
Zinc (Zn)	340	340	57.3	38.9	49.5	52.1	22.5	92.9

For Table Notes see
Notes for Soil Summary Tables,
included at the end of this Section

Table 4:
Summary of Metals and Inorganics in Soil

Parameter	2011 MOE Table 2 RPI	2011 MOE Table 3 RPI	QAQC1
Date of Collection			Field Duplicate of BH13-8 SS1
Date of Analysis			
Sampling Depth (m)			
Analytical Report Reference No.			L1298752-7
Antimony (Sb)	7.5	7.5	<1.0
Arsenic (As)	18	18	2.1
Barium (Ba)	390	390	107
Beryllium (Be)	4	4	<0.50
Boron (B)	120	120	8.9
Boron (B), Hot Water Ext.	1.5	1.5	-
Cadmium (Cd)	1.2	1.2	<0.50
Calcium (Ca)	NL	NL	-
Chromium (Cr)	160	160	13.7
Chromium, Hexavalent	8	8	-
Cobalt (Co)	22	22	4.4
Conductivity	0.7	0.7	-
Copper (Cu)	140	140	18.4
Cyanide, Weak Acid Diss	0.051	0.051	-
Lead (Pb)	120	120	20.4
Magnesium (Mg)	NL	NL	-
Mercury (Hg)	0.27	0.27	-
Molybdenum (Mo)	6.9	6.9	1.2
Nickel (Ni)	100	100	10.5
pH	-	-	-
SAR	5	5	-
Selenium (Se)	2.4	2.4	<1.0
Silver (Ag)	20	20	<0.20
Thallium (Tl)	1	1	<0.50
Uranium (U)	23	23	<1.0
Vanadium (V)	86	86	13.8
Zinc (Zn)	340	340	69.1

For Table Notes see
Notes for Soil Summary Tables,
included at the end of this Section

Table 5:
Summary of PHCs and BTEX in Soil

Parameter	2011 MOE Table 2 RPI	2011 MOE Table 3 RPI	BH13-2 SS7	BH13-3 SS1	BH13-4 SS1	BH13-5 SS1	BH13-6 SS1A	BH13-8 SS1
Date of Collection			03-May-13	01-May-13	06-May-13	06-May-13	02-May-13	02-May-13
Date of Analysis			13-May-13	13-May-13	13-May-13	13-May-13	13-May-13	13-May-13
Sampling Depth (m)			4.6-5.2	0.0-0.6	0.0-0.6	0.0-0.6	0.0-0.3	0.0-0.6
Analytical Report Reference No.			L1298752-1	L1298752-2	L1298752-3	L1298752-4	L1298752-5	L1298752-6
F1 (C6-C10)	55	55	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	55	55	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	98	98	<10	<10	<10	<10	<10	<10
F2-Naphth	98	98	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	300	300	<50	<50	**401**	288	<50	113
F3-PAH	300	300	<50	<50	**401**	288	<50	113
F4 (C34-C50)	2800	2800	<50	<50	1090	455	<50	190
Chrom. to baseline at nC50	NA	NA	YES	YES	NO	NO	YES	YES
F4G-SG (GHH-Silica)	2800	2800	-	-	**2850**	1400	-	-
Benzene	0.21	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethyl Benzene	1.1	2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	2.3	2.3	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	NL	NL	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	NL	NL	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	3.1	3.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

For Table Notes see
Notes for Soil Summary Tables,
included at the end of this Section

Table 6:
Summary of PAHs in Soil

Parameter	2011 MOE Table 2 RPI	2011 MOE Table 3 RPI	BH13-2 SS7	BH13-3 SS1	BH13-4 SS1	BH13-5 SS1	BH13-6 SS1A	BH13-8 SS1
Date of Collection			03-May-13	01-May-13	06-May-13	06-May-13	02-May-13	02-May-13
Date of Analysis			13-May-13	13-May-13	13-May-13	13-May-13	13-May-13	13-May-13
Sampling Depth (m)			4.6-5.2	0.0-0.6	0.0-0.6	0.0-0.6	0.0-0.3	0.0-0.6
Analytical Report Reference No.			L1298752-1	L1298752-2	L1298752-3	L1298752-4	L1298752-5	L1298752-6
Acenaphthene	7.9	7.9	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	0.15	0.15	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	0.67	0.67	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)anthracene	0.5	0.5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	0.3	0.3	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(b)fluoranthene	0.78	0.78	<0.050	<0.050	<0.050	<0.050	<0.050	0.058
Benzo(g,h,i)perylene	6.6	6.6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	0.78	0.78	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	7	7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenzo(ah)anthracene	0.1	0.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	0.69	0.69	<0.050	<0.050	<0.050	<0.050	<0.050	0.065
Fluorene	62	62	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.38	0.38	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1+2-Methylnaphthalenes	0.99	0.99	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
1-Methylnaphthalene	0.99	0.99	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
2-Methylnaphthalene			<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Naphthalene	0.6	0.6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	6.2	6.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Pyrene	78	78	<0.050	<0.050	<0.050	<0.050	<0.050	0.053

For Table Notes see
Notes for Soil Summary Tables,
included at the end of this Section

Notes for Soil Summary Tables

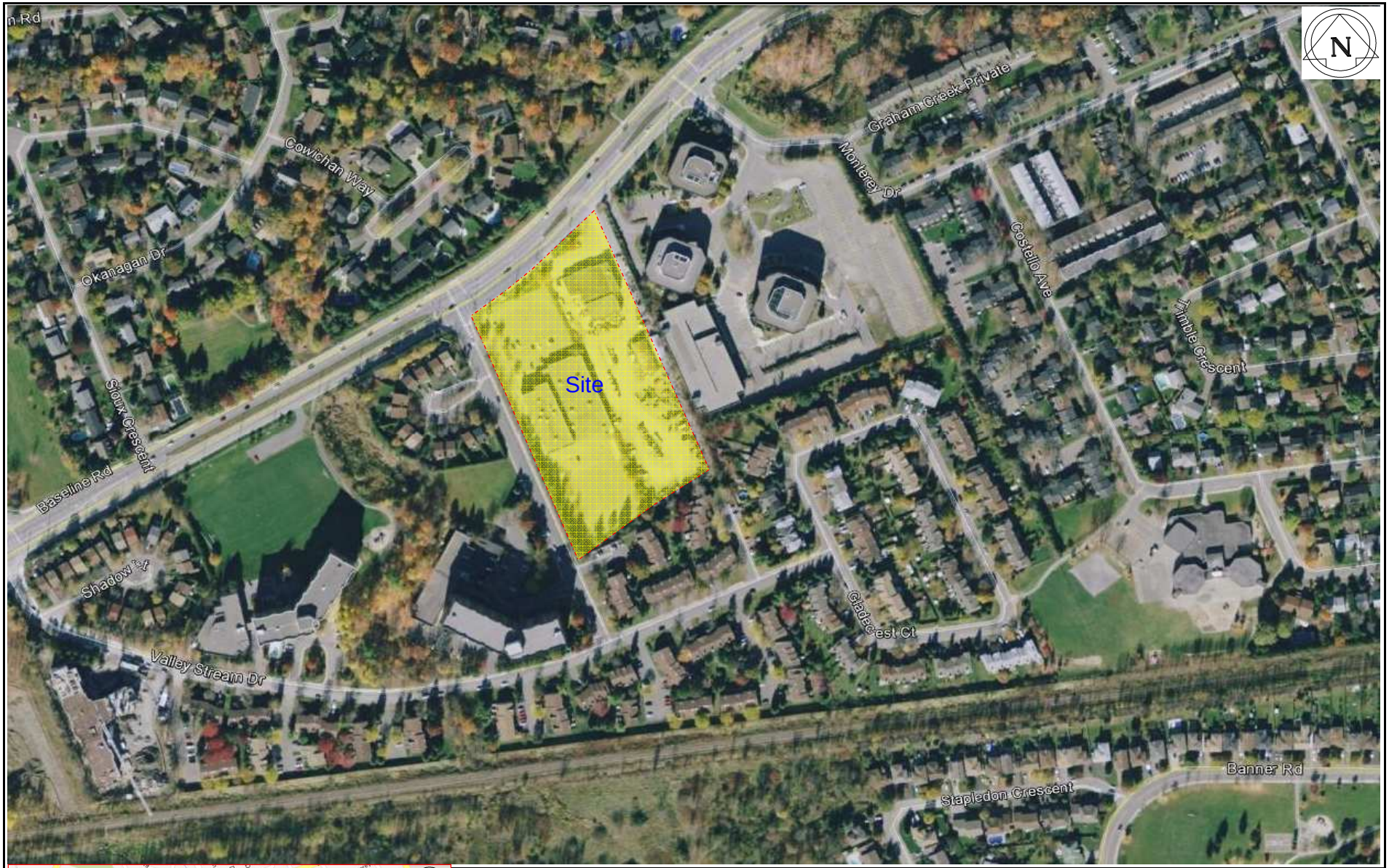
1. mbgs = Meters below ground surface
2. masl = Meters above sea level
3. Ground surface elevations (masl) were interpolated from a site survey plan provided by 3223701 Canada Inc. (Brigil Platinum)

4. Units for all soil analyses are in µg/g (ppm) unless otherwise indicated
5. Table 2 RPI = Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for a Residential/Parkland/Institutional Property Use with Coarse Textured Soils as contained in Table 2 of the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", published by the MOE on April 15, 2011

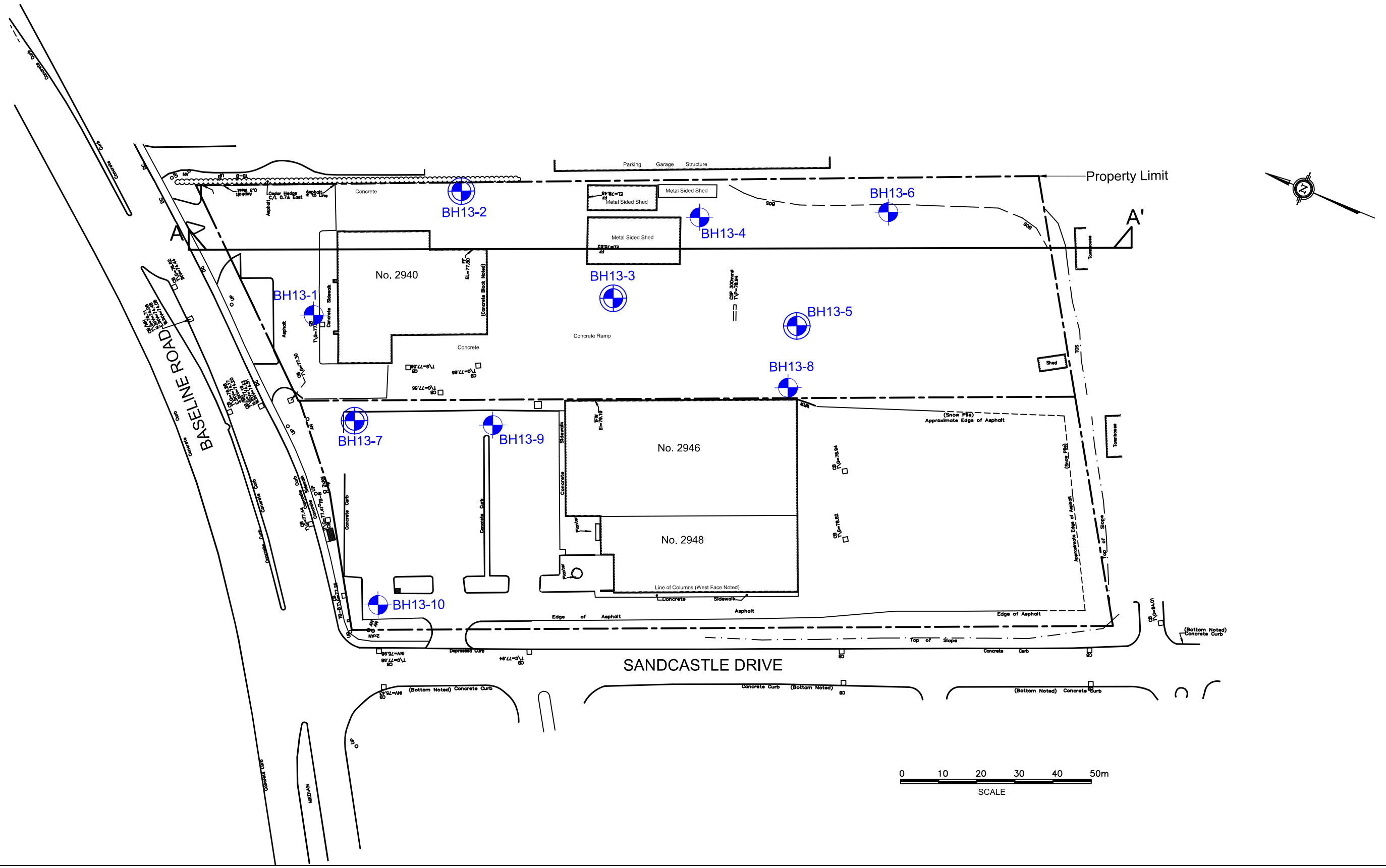
6. Table 3 RPI = Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition for a Residential/Parkland/Institutional Property Use with Coarse Textured Soils as contained in Table 3 of the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", published by the MOE on April 15, 2011

7. For soil analytical results: **bold** = Concentration exceeds the 2011 MOE Table 2 RPI Standards
8. For soil analytical results: **bold** = Concentration exceeds the 2011 MOE Table 3 RPI Standards
9. NL = Parameter Not Listed
10. NA = Not Applicable

DRAWINGS



Client:	3223701 Canada Inc. (Brigil Platinum)			Project No: 1599-710	Drawing No: 1
Drawn:	TJ	Approved:	CH	Title:	SITE LOCATION PLAN
Date:	May. 21, 2013	Scale:	N.T.S	Project:	Geotechnical & Environmental Soil Investigations – Proposed Development – 2940, 2946 & 2948 Baseline Road, Ottawa, ON
Original Size:	Letter	Rev:	N/A	SPL Consultants Limited Geotechnical Environmental Materials Hydrogeology	



LEGEND

- Property Limit
- Approximate Borehole Location (May 2013)
- Approximate Borehole Location with Monitoring Well (May 2013)
- Cross-Section Line

Source of Original Survey:
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
Job No. 11141-10 Brigil PtLt35 C3 (RF) NP T2 F1

Client:	3223701 Canada Inc. (Brigil Platinum)			Project No.: 1599-710	Drawing No.: 2
Drawn:	ZMO	Approved:	CH	Title:	Borehole and Monitoring Well Location Plan
Date:	May 21, 2013	Scale:	1:1000	Project:	Geotechnical & Environmental Soil Investigations - Proposed Development - 2940, 2946 & 2948 Baseline Road, Ottawa, ON
Original Size:	Tabloid	Rev:	N/A		SPL Consultants Limited Geotechnical • Environmental • Materials • Hydrogeology • Ecology

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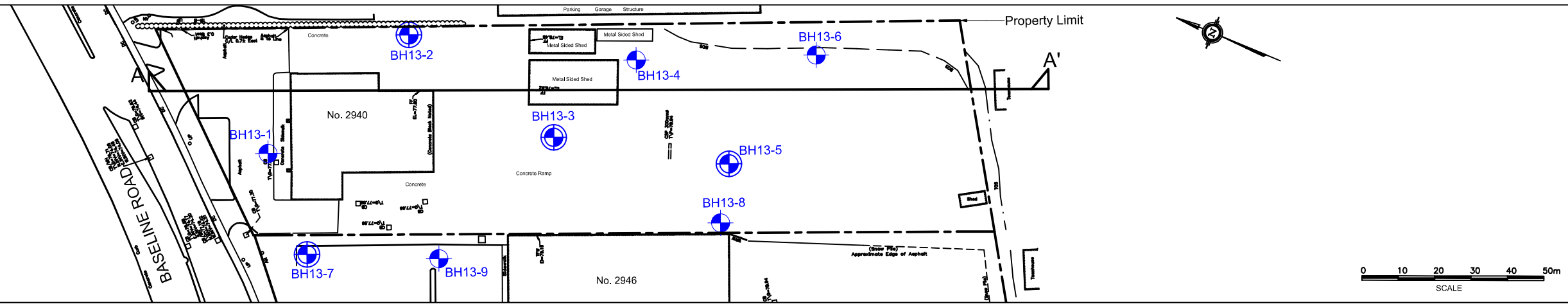

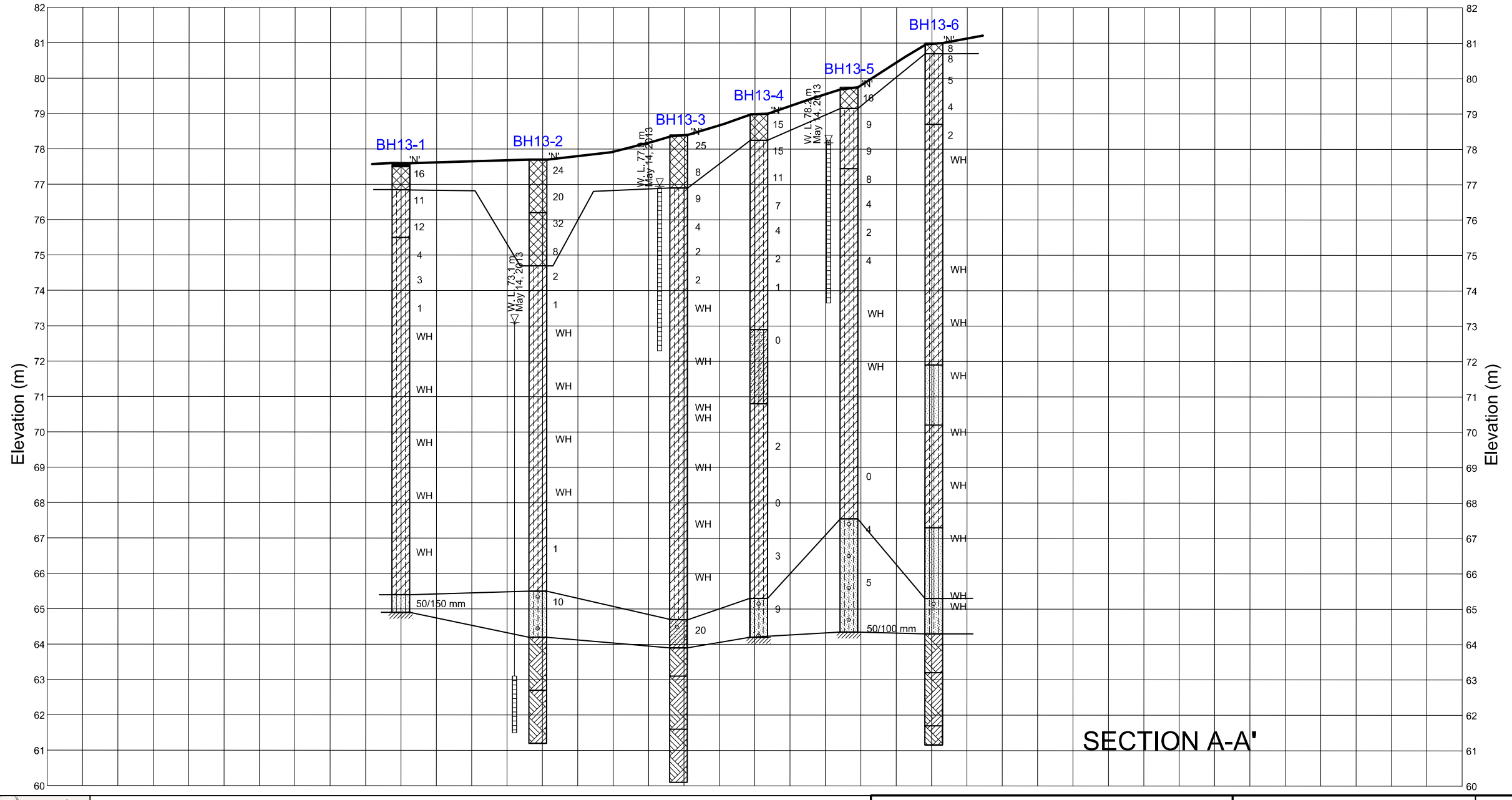

LEGEND

- Asphalt
- Fill
- Silty Clay
- Sandy Silt
- Silty Sand Till
- Bedrock
- Sandy Gravel Till
- Clayey Silt and Sand
- Auger Refusal

Client:	3223701 Canada Inc. (Brigil Platinum)	Project No.: 1599-710	Drawing No.: 3
Drawn: ZMO	Approved: CH	Title:	Cross-Section A-A'
Date: May 27, 2013	Scale: As Shown	Project:	Geotechnical & Environmental Soil Investigations - Proposed Development - 2940, 2946 & 2948 Baseline Road, Ottawa, ON
Original Size: Tabloid	Rev: N/A		

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APPENDIX A
BOREHOLE LOGS

SPL Consultants Limited
Geotechnical Environmental Materials Hydrogeology

LOG OF BOREHOLE BH13-1

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/07/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE

ELEV (m) / DEPTH	DESCRIPTION
77.6	
77.5 / 0.1	**Asphalt:** 90 mm
	Sandy Gravel: trace silt, brown, damp, compact (Fill)
76.9 / 0.8	**Silty Clay:** brown, damp, stiff to very stiff
75.5 / 2.1	**Silty Clay:** grey, moist, stiff
	- Silty Sand seam: 50 mm
	- wet below 7.6 m

SAMPLES

NUMBER	TYPE	"N" BLOWS / 0.3 m	Field vane (Sensitivity)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
1	SS	16		52 38 (10)
	NR	11		
2	SS	12		
3	SS	4		
4	SS	3		
5	SS	1		
6	SS	WH		
	VANE		14	
	VANE		8	
7	SS	WH		
	VANE		7	
	VANE		6	
8	SS	WH		
	VANE		4	
	VANE		Su>100kPa	
9	SS	WH		
	VANE		8	

ELEVATION: 77, 76, 75, 74, 73, 72, 71, 70, 69, 68

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED; + FIELD VANE & Sensitivity; ● QUICK TRIAXIAL; × LAB VANE — 25 50 75 100 125
PLASTIC LIMIT W_P — NATURAL MOISTURE CONTENT W — LIQUID LIMIT W_L; WATER CONTENT (%) 25 50 75
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (KN/m³)
GROUND WATER CONDITIONS

Continued Next Page

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH13-1

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/07/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (25 50 75 100 125)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (25 50 75)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Silty Clay: grey, moist, stiff(Continued)			VANE				+ 9				
	- some sand below 10.7 m		10	SS	WH		67		○			0 18 (82)
65.4							66					
12.2	**Sandy Silt:** some clay, grey, wet, very dense		11	SS	50/ 150 mm				○			
64.9							65					
12.7	**END OF BOREHOLE** Notes: 1) Auger refusal at 12.7 m.											

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▼ ▼

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

LOG OF BOREHOLE BH13-10

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/07/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 25 50 75 100 125	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 25 50 75	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
77.5											
77.4 0.0	**Asphalt:**100 mm										
0.1	**Gravelly Sand:**some silt, brown, damp (Fill)		1	AS	15		77				30 54 16
76.1											
1.4	**END OF BOREHOLE**										

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▽ ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH13-2

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers/Coring
Diameter: 203mm
Date: May/03/2013

REF. NO.: 1599-710
ENCL NO.:

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	ELEVATION
77.7					
0.0	**Gravel:** some sand, some silt, brown, moist, compact (Fill)	1	SS	24	Sand
		2	SS	20	
76.2					
1.5	**Sand and Gravel:** some silt, brown, moist, compact (Fill)	3	SS	32	
	- loose and becoming wet below 2.3 m	4	SS	8	
74.7					
3.0	**Silty Clay:** grey, wet, stiff	5	SS	2	
		6	SS	1	
	- wet below 4.6 m	7	SS	WH	W. L. 73.1 m May 14, 2013
			VANE		
			VANE		
		8	SS	WH	
			VANE		
			VANE		Bentonite
		9	SS	WH	
			VANE		
			VANE		
	- 150mm sand seam at 9.1 m	10	SS	WH	
			VANE		

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 25 50 75 100 125

PLASTIC LIMIT W_P | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W_L

WATER CONTENT (%): 25 50 75

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (KN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	52	36		(13)
	40	46		(14)

Continued Next Page

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▽ ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ε=3% Strain at Failure

LOG OF BOREHOLE BH13-2

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers/Coring
Diameter: 203mm
Date: May/03/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (25 50 75 100 125)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (25 50 75)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Silty Clay: grey, wet, stiff(Continued) - stiff below 10.1 m			VANE				+ 10				
			11	SS	1		67		○			
65.5							66					
12.2	**Silty Sand:** some clay, grey, wet, loose (Till)		12	SS	10		65					
64.2	- Auger refusal at 13.5 m. Switch to coring											
13.5	Limestone with shale partings, fresh, grey, very strong TCR = 100% SCR = 78% RQD = 77%		RC 1	RC			64				27.2	UCS=167MPa
62.7							Sand 63					
15.0	Limestone with shale partings, fresh, grey, very strong TCR = 97% SCR = 97% RQD = 88%		RC 2	RC			Screen 62				26.8	UCS=162MPa
61.2							Slough					
16.5	**END OF BOREHOLE** Notes: 1) Auger refusal at 13.5 m. 2) Coring ended at 16.5 m. 3) 50mm dia. monitoring well was installed in the borehole upon completion 4) Depth of Water Date Depth --- 14/05/2013 4.6m BGS											

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▽ ▼

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH13-3

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers/Coring
Diameter: 203mm
Date: May/01/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	"N" BLOWS 0.3 m	ELEVATION
78.4					
0.0	**Sand and Gravel:** brown/grey, moist, compact(Fill)	1	SS	25	Sand
		2	SS	8	Bentonite
76.9					Sand
1.5	**Silty Clay:** brown, moist, stiff	3	SS	9	W. L. 77.0 m May 14, 2013
		4	SS	4	
		5	SS	2	
	- grey below 3.7 m	6	SS	2	Screen
	- becoming wet at 4.6 m	7	SS	WH	
			VANE		
			VANE		
		8	SS	WH	
			VANE		
			VANE		
		9A	SS	WH	
		9B	SS	WH	
			VANE		
			VANE		
	- 9.1 m to 9.3 m sandy seam	10	SS	WH	
	- very stiff below 10 m		VANE		

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE: 25 50 75 100 125
PLASTIC LIMIT W_P | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W_L
WATER CONTENT (%): 25 50 75
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (KN/m³)
REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▽▼ ▽▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

LOG OF BOREHOLE BH13-3

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers/Coring
Diameter: 203mm
Date: May/01/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (25 50 75 100 125)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (25 50 75)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Silty Clay: brown, moist, stiff(Continued)			VANE				Su>100kPa				
							68					
			11	SS	WH							
				VANE			67	Su>100kPa				
				VANE				Su>100kPa				
			12	SS	WH		66					
				VANE				Su>100kPa				
				VANE				Su>100kPa				
64.7							65					
13.7	**Sandy Gravel:** trace silt, grey, wet, compact (Till)		13	SS	20							66 32 (2)
	- at 14.5 m bedrock encounted. Switch to coring						64					
63.9												
14.5	Limestone with shale partings, fresh, grey, very strong TCR = 100% SCR = 97% RQD = 83%		RC 1	RC								
63.1							63					
15.3	Limestone with shale partings, fresh, grey, very strong TCR = 97% SCR = 97% RQD = 82%		RC 2	RC							26.2	UCS=143MPa
61.6							62					
16.8	Limestone with shale partings, fresh, grey, very strong TCR = 100% SCR = 87% RQD = 77%		RC 3	RC			61				26.8	UCS=126MPa
60.1												
18.3	**END OF BOREHOLE** Notes: 1) Auger refusal at 14.5 m. 2) Coring ended at 18.3 m. 3) 50mm dia. monitoring well was installed in a new borehole completed beside original borehole. 4) Depth of Water Date Depth --- 14/05/2013 1.45m BGS											

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▼ ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity ○ ε_f=3% Strain at Failure

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

LOG OF BOREHOLE BH13-4

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/06/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
79.0								
0.0	**Sand and Gravel:** brown, damp, compact (Fill)		1	SS	15			
78.3							78	
0.8	**Silty Clay:** brown, moist, stiff		2	SS	15			
			3	SS	11		77	
			4	SS	7			
			5	SS	4		76	
	- grey below 3.8 m		6	SS	2		75	
			7	SS	1		74	
				VANE				
				VANE				
72.9							73	
6.1	**Clayey Silt and Sand:** grey, wet		8	SS	0			1 46 33 25
			A	TW			72	
70.8							71	
8.2	**Silty Clay:** grey, wet, very loose		9	SS	2		70	
				VANE				

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE: 25 50 75 100 125
PLASTIC LIMIT W_P | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W_L
WATER CONTENT (%): 25 50 75
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (KN/m³)

Continued Next Page

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▽ ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

LOG OF BOREHOLE BH13-4

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/06/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 25 50 75 100 125	PLASTIC LIMIT W_P / NATURAL MOISTURE CONTENT W / LIQUID LIMIT W_L / WATER CONTENT (%) 25 50 75	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Silty Clay: grey, wet, very loose(Continued)			VANE							
			10	SS	0		68				
							67				
			11	SS	3						
							66				
65.3											
13.7	**Sand:** trace silt, trace gravel, grey, wet, loose (Till)		12	SS	9		65				3 87 (10)
64.2											
14.8	**END OF BOREHOLE** Notes: 1) Auger refusal at 14.8 m.										

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▼ ▼

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH13-5

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/06/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	"N" BLOWS 0.3 m	ELEVATION
79.8					
0.0 / 79.2	**Sand and Gravel:** trace silt, trace clay, brown, damp, compact (Fill)	1	SS	16	Sand
0.6	**Silty Clay:** brown, damp, stiff	2	SS	9	Bentonite
		3	SS	9	Sand
77.5					W. L. 78.2 m May 14, 2013
2.3	**Silty Clay:** brown, moist, stiff	4	SS	8	
	- grey below 3.0 m	5	SS	4	
	- becoming wet at 3.8m	6	SS	2	Screen
		7	SS	4	
			VANE		
			VANE		
		8	SS	WH	
			VANE		
			VANE		
		9	SS	WH	
	- very stiff below 8.2 m		VANE		
			VANE		
		A	TW		

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (25 50 75 100 125)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT W_P | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W_L
WATER CONTENT (%) (25 50 75)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (KN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
0	24	51	25

Su>100kPa

Continued Next Page

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▼ ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH13-5

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/06/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 25 50 75 100 125	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 25 50 75	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Silty Clay: brown, moist, stiff(Continued)										
	- sand lens		10	SS	0		69		○		
				VANE				Su>100kPa			
				VANE			68	Su>100kPa			
67.6											
12.2	**Silty Sand:** trace clay, trace gravel, grey, wet, loose (Till)		11	SS	4				○		
							67				
			12	SS	5		66				3 56 (40)
							65				
64.4			13	SS	50/ 100 mm				○		
15.4	**END OF BOREHOLE** Notes: 1) Auger refusal at 15.4 m. 2) 50mm dia. monitoring well installed in a new borehole completed beside original borehole. 3) Depth of Water Date Depth --- 14/05/2013 1.57 m BGS										

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▼ ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH13-6

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/02/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
81.0							
0.0 / 80.7	**Sand and Gravel:** trace silt, brown, moist, loose (Fill)		1A	SS	8		
0.3	**Silty Clay:** grey, moist, stiff		1B	SS	8		
			2	SS	5		80
	- becoming wet		3	SS	4		79
78.7							
2.3	**Silty Clay:** grey, wet, firm to stiff		4	SS	2		78
			5	SS	WH		
				VANE			77
				VANE			
			A	TW			76
				VANE			
				VANE			
			6	SS	WH		75
				VANE			
				VANE			74
			7	SS	WH		73
	- becoming stiff			VANE			
				VANE			
71.9							
9.1	**Sandy Silt:** some clay, grey, wet, very loose		8	SS	WH		72
				VANE			

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE
25 50 75 100 125

PLASTIC LIMIT W_P | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W_L
WATER CONTENT (%)
25 50 75

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (KN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)	GR	SA	SI	CL
	47	42		(11)

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GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▽ ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH13-6

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/02/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (25 50 75 100 125)	PLASTIC LIMIT W_P / NATURAL MOISTURE CONTENT W / LIQUID LIMIT W_L / WATER CONTENT (%) (25 50 75)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Sandy Silt: some clay, grey, wet, very loose(Continued)			VANE								
70.2												
10.8	**Silty Clay:** grey, wet, stiff		9	SS	WH		70					
				VANE				+				
				VANE				+				
							69					
			10	SS	WH							
	- very stiff below 12.8 m			VANE				+ Su>100kPa				
				VANE			68	+ Su>100kPa				
67.3												
13.7	**Sandy Silt:** some clay, grey, wet, very loose		11	SS	WH		67					
							66					
65.3			12A	SS	WH							3 78 (20)
15.7	**Silty Sand:** trace gravel, grey, wet, stiff (Till)		12B	SS	WH		65					
	- Bedrock encountered at 16.7 m. Switched to rock coring											
64.3												
16.7	Limestone with shale partings, fresh, grey, very strong TCR = 100% SCR = 98% RQD = 98%		RC1	CORE			64					UCS=145MPa
63.2										27.5		
17.8	Limestone with shale partings, fresh, grey, very strong TCR = 100% SCR = 100% RQD = 93%		RC2	CORE			63					
61.7							62					
19.3	Limestone with shale partings, fresh, grey, very strong TCR = 100% SCR = 100%		RC3	CORE						27.1		UCS=164MPa
19.8												

Continued Next Page

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▼ ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH13-6

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/02/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (25 50 75 100 125)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (25 50 75)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m							
	RQD = 91% **END OF BOREHOLE** Notes: 1) Auger refusal at 16.7 m. 2) End of borehole 19.8 m.											

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▽ ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH13-7

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/07/2013

REF. NO.: 1599-710
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
77.7							
77.6 / 0.0	**Asphalt:**125 mm						Sand
77.5 / 0.1	**Sandy Silt:**some clay, brown, damp, loose (Fill)		1	SS	9		
			2	SS	9		Bentonite
76.2							Sand
1.5	**Silty Clay:**trace sand, brown, moist, stiff		3	SS	10		76
			4	SS	4		75
			5	SS	2		74
	- grey below 3.7 m		6	SS	1		
	- wet below 4.5 m		7	SS	WH		Screen 73
				VANE			
				VANE			72
			8	SS	WH		
				VANE			71
				VANE			
			9	SS	WH		70
69.5							Sand
8.2	**END OF BOREHOLE**						

Notes:
1) 50mm dia. monitoring well installed upon completion of borehole.
2) Depth of Water

Date	Depth
14/05/2013	2.7 m BGS

W. L. 75.0 m
May 14, 2013

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
25 50 75 100 125

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
25 50 75

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (KN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▽ ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

LOG OF BOREHOLE BH13-8

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: Feb/05/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 25 50 75 100 125	PLASTIC LIMIT W_P / NATURAL MOISTURE CONTENT W / LIQUID LIMIT W_L WATER CONTENT (%) 25 50 75	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
79.7											
0.0	**Sand and Gravel:** some silt, trace clay, grey, damp, firm (Fill)		1	SS	7				○		43 44 (13)
79.0			2A	SS	7		79			○	
0.8	**Silty Clay:** trace gravel, grey, moist, firm		2B	SS	7						
	- 32.5 mm gravel lens		3	SS	8					○	
77.9							78				
1.8	**END OF BOREHOLE**										

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▼ ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

LOG OF BOREHOLE BH13-9

PROJECT: Geotechnical & Environmental Soil Investigations
CLIENT: 3223701 Canada Inc. (Brigil Platinum)
PROJECT LOCATION: 2940-2948 Baseline Road, Ottawa, ON
DATUM: Geodetic
BH LOCATION: See Borehole Location Plan

DRILLING DATA
Method: Hollow Stem Augers
Diameter: 203mm
Date: May/07/2013

REF. NO.: 1599-710
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (25 50 75 100 125)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (25 50 75)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (KN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
78.6											
78.5 / 0.1	**Asphalt:** 50 mm										
	Sand: some gravel, some organics, brown, damp (Fill)		1	AS			78		○		18 66 (16)
77.6 / 1.1	**Sand and Gravel:** brown, damp (Fill)		2	AS					○		
77.1 / 1.5	**END OF BOREHOLE**										

GROUNDWATER ELEVATIONS
Shallow/ Single Installation ▽ ▼ Deep/Dual Installation ▽ ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG-OTTAWA 1599-710 - MAY29-2013.GPJ SPL.GDT 29/5/13

APPENDIX B
CERTIFICATE OF ANALYSES

SPL CONSULTANTS LIMITED (Ottawa)
ATTN: Daniel Charette
146 Colonnade Road S
Units 17 & 18
Nepean ON K2E 7Y1

Date Received: 08-MAY-13
Report Date: 15-MAY-13 14:15 (MT)
Version: FINAL

Client Phone: 613-228-0065

Certificate of Analysis

Lab Work Order #: L1298752

Project P.O. #:	NOT SUBMITTED
Job Reference:	1599-710
C of C Numbers:	128939
Legal Site Desc:	

Bryan Mark
Account Manager

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-1 BH13-2 SS7									
Sampled By: B. Ritchie/K. Linton on 03-MAY-13									
Matrix: soil									
Physical Tests									
Conductivity	0.338		0.0040	mS/cm	13-MAY-13	1.4	1.4	0.7	0.7
% Moisture	27.9		0.10	%	09-MAY-13				
pH	8.00		0.10	pH units	10-MAY-13				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	13-MAY-13	0.051	0.051	0.051	0.051
Saturated Paste Extractables									
SAR	0.29		0.10	SAR	13-MAY-13	12	12	5	5
Calcium (Ca)	24.5		1.0	mg/L	13-MAY-13				
Magnesium (Mg)	12.1		1.0	mg/L	13-MAY-13				
Sodium (Na)	6.9		1.0	mg/L	13-MAY-13				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	13-MAY-13	40	50	7.5	7.5
Arsenic (As)	1.1		1.0	ug/g	13-MAY-13	18	18	18	18
Barium (Ba)	200		1.0	ug/g	13-MAY-13	670	670	390	390
Beryllium (Be)	<0.50		0.50	ug/g	13-MAY-13	8	10	4	5
Boron (B)	5.3		5.0	ug/g	13-MAY-13	120	120	120	120
Boron (B), Hot Water Ext.	0.21		0.10	ug/g	13-MAY-13	2	2	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	13-MAY-13	1.9	1.9	1.2	1.2
Chromium (Cr)	38.3		1.0	ug/g	13-MAY-13	160	160	160	160
Cobalt (Co)	10.4		1.0	ug/g	13-MAY-13	80	100	22	22
Copper (Cu)	20.3		1.0	ug/g	13-MAY-13	230	300	140	180
Lead (Pb)	3.9		1.0	ug/g	13-MAY-13	120	120	120	120
Mercury (Hg)	<0.010		0.010	ug/g	13-MAY-13	3.9	20	0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	13-MAY-13	40	40	6.9	6.9
Nickel (Ni)	21.4		1.0	ug/g	13-MAY-13	270	340	100	130
Selenium (Se)	<1.0		1.0	ug/g	13-MAY-13	5.5	5.5	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	13-MAY-13	40	50	20	25
Thallium (Tl)	<0.50		0.50	ug/g	13-MAY-13	3.3	3.3	1	1
Uranium (U)	<1.0		1.0	ug/g	13-MAY-13	33	33	23	23
Vanadium (V)	55.4		1.0	ug/g	13-MAY-13	86	86	86	86
Zinc (Zn)	57.3		5.0	ug/g	13-MAY-13	340	340	340	340
Speciated Metals									
Chromium, Hexavalent	<0.20		0.20	ug/g	10-MAY-13	8	10	8	10
Volatile Organic Compounds									
Benzene	<0.020		0.020	ug/g	13-MAY-13	0.32	0.4	0.21	0.17
Ethyl Benzene	<0.050		0.050	ug/g	13-MAY-13	1.1	1.6	1.1	1.6
Toluene	<0.20		0.20	ug/g	13-MAY-13	6.4	9	2.3	6
o-Xylene	<0.020		0.020	ug/g	13-MAY-13				
m+p-Xylenes	<0.030		0.030	ug/g	13-MAY-13				
Xylenes (Total)	<0.050		0.050	ug/g	14-MAY-13	26	30	3.1	25
Surrogate: 4-Bromofluorobenzene	88.3		70-130	%	13-MAY-13				
Surrogate: 1,4-Difluorobenzene	99.7		70-130	%	13-MAY-13				
Hydrocarbons									

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T2-RPI-ICC-C/F-SOIL

#1: T2-Soil-Ind/Com/Commu Property Use (Coarse)

#2: T2-Soil-Ind/Com/Commu Property Use (Fine)

#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-1 BH13-2 SS7									
Sampled By: B. Ritchie/K. Linton on 03-MAY-13									
Matrix: soil									
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	13-MAY-13	55	65	55	65
F1-BTEX	<5.0		5.0	ug/g	14-MAY-13	55	65	55	65
F2 (C10-C16)	<10		10	ug/g	14-MAY-13	230	250	98	150
F2-Naphth	<10		10	ug/g	14-MAY-13				
F3 (C16-C34)	<50		50	ug/g	14-MAY-13	1700	2500	300	1300
F3-PAH	<50		50	ug/g	14-MAY-13				
F4 (C34-C50)	<50		50	ug/g	14-MAY-13	3300	6600	2800	5600
Total Hydrocarbons (C6-C50)	<50		50	ug/g	14-MAY-13				
Chrom. to baseline at nC50	YES			No Unit	14-MAY-13				
Surrogate: 2-Bromobenzotrifluoride	84.7		60-140	%	14-MAY-13				
Surrogate: 3,4-Dichlorotoluene	109.8		60-140	%	13-MAY-13				
Surrogate: Octacosane	109.7		60-140	%	14-MAY-13				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	13-MAY-13	21	29	7.9	29
Acenaphthylene	<0.050		0.050	ug/g	13-MAY-13	0.15	0.17	0.15	0.17
Anthracene	<0.050		0.050	ug/g	13-MAY-13	0.67	0.74	0.67	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.5	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	13-MAY-13	0.3	0.3	0.3	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.78	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	6.6	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.78	0.78
Chrysene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	7	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	13-MAY-13	0.1	0.1	0.1	0.1
Fluoranthene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	0.69	0.69
Fluorene	<0.050		0.050	ug/g	13-MAY-13	62	69	62	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	13-MAY-13	0.76	0.95	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	13-MAY-13	30	42	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	13-MAY-13	30	42	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	13-MAY-13	30	42	0.99	3.4
Naphthalene	<0.050		0.050	ug/g	13-MAY-13	9.6	28	0.6	0.75
Phenanthrene	<0.050		0.050	ug/g	13-MAY-13	12	16	6.2	7.8
Pyrene	<0.050		0.050	ug/g	13-MAY-13	96	96	78	78
Surrogate: 2-Fluorobiphenyl	101.6		50-140	%	13-MAY-13				
Surrogate: p-Terphenyl d14	104.5		50-140	%	13-MAY-13				
L1298752-2 BH13-3 SS1									
Sampled By: B. Ritchie/K. Linton on 01-MAY-13									
Matrix: soil						#1	#2	#3	#4
Physical Tests									
Conductivity	0.324		0.0040	mS/cm	10-MAY-13	1.4	1.4	0.7	0.7
% Moisture	5.74		0.10	%	09-MAY-13				
pH	7.88		0.10	pH units	10-MAY-13				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	13-MAY-13	0.051	0.051	0.051	0.051

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T2-RPI-ICC-C/F-SOIL

#1: T2-Soil-Ind/Com/Commu Property Use (Coarse)

#2: T2-Soil-Ind/Com/Commu Property Use (Fine)

#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-2 BH13-3 SS1									
Sampled By: B. Ritchie/K. Linton on 01-MAY-13									
Matrix: soil									
Saturated Paste Extractables									
SAR	0.31		0.10	SAR	10-MAY-13	12	12	5	5
Calcium (Ca)	39.9		1.0	mg/L	10-MAY-13				
Magnesium (Mg)	6.5		1.0	mg/L	10-MAY-13				
Sodium (Na)	8.0		1.0	mg/L	10-MAY-13				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	10-MAY-13	40	50	7.5	7.5
Arsenic (As)	1.9		1.0	ug/g	10-MAY-13	18	18	18	18
Barium (Ba)	243		1.0	ug/g	10-MAY-13	670	670	390	390
Beryllium (Be)	<0.50		0.50	ug/g	10-MAY-13	8	10	4	5
Boron (B)	17.3		5.0	ug/g	10-MAY-13	120	120	120	120
Boron (B), Hot Water Ext.	0.21		0.10	ug/g	10-MAY-13	2	2	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	10-MAY-13	1.9	1.9	1.2	1.2
Chromium (Cr)	17.4		1.0	ug/g	10-MAY-13	160	160	160	160
Cobalt (Co)	5.4		1.0	ug/g	10-MAY-13	80	100	22	22
Copper (Cu)	14.8		1.0	ug/g	10-MAY-13	230	300	140	180
Lead (Pb)	46.9		1.0	ug/g	10-MAY-13	120	120	120	120
Mercury (Hg)	0.015		0.010	ug/g	10-MAY-13	3.9	20	0.27	1.8
Molybdenum (Mo)	1.5		1.0	ug/g	10-MAY-13	40	40	6.9	6.9
Nickel (Ni)	11.6		1.0	ug/g	10-MAY-13	270	340	100	130
Selenium (Se)	<1.0		1.0	ug/g	10-MAY-13	5.5	5.5	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	10-MAY-13	40	50	20	25
Thallium (Tl)	<0.50		0.50	ug/g	10-MAY-13	3.3	3.3	1	1
Uranium (U)	<1.0		1.0	ug/g	10-MAY-13	33	33	23	23
Vanadium (V)	17.5		1.0	ug/g	10-MAY-13	86	86	86	86
Zinc (Zn)	38.9		5.0	ug/g	10-MAY-13	340	340	340	340
Speciated Metals									
Chromium, Hexavalent	0.50		0.20	ug/g	10-MAY-13	8	10	8	10
Volatile Organic Compounds									
Benzene	<0.020		0.020	ug/g	13-MAY-13	0.32	0.4	0.21	0.17
Ethyl Benzene	<0.050		0.050	ug/g	13-MAY-13	1.1	1.6	1.1	1.6
Toluene	<0.20		0.20	ug/g	13-MAY-13	6.4	9	2.3	6
o-Xylene	<0.020		0.020	ug/g	13-MAY-13				
m+p-Xylenes	<0.030		0.030	ug/g	13-MAY-13				
Xylenes (Total)	<0.050		0.050	ug/g	14-MAY-13	26	30	3.1	25
Surrogate: 4-Bromofluorobenzene	88.4		70-130	%	13-MAY-13				
Surrogate: 1,4-Difluorobenzene	99.9		70-130	%	13-MAY-13				
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	13-MAY-13	55	65	55	65
F1-BTEX	<5.0		5.0	ug/g	14-MAY-13	55	65	55	65
F2 (C10-C16)	<10		10	ug/g	14-MAY-13	230	250	98	150
F2-Naphth	<10		10	ug/g	14-MAY-13				
F3 (C16-C34)	<50		50	ug/g	14-MAY-13	1700	2500	300	1300
F3-PAH	<50		50	ug/g	14-MAY-13				

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#2: T2-Soil-Ind/Com/Commu Property Use (Fine)

#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-2 BH13-3 SS1									
Sampled By: B. Ritchie/K. Linton on 01-MAY-13									
Matrix: soil									
Hydrocarbons									
F4 (C34-C50)	<50		50	ug/g	14-MAY-13	3300	6600	2800	5600
Total Hydrocarbons (C6-C50)	<50		50	ug/g	14-MAY-13				
Chrom. to baseline at nC50	YES			No Unit	14-MAY-13				
Surrogate: 2-Bromobenzotrifluoride	87.7		60-140	%	14-MAY-13				
Surrogate: 3,4-Dichlorotoluene	103.7		60-140	%	13-MAY-13				
Surrogate: Octacosane	101.8		60-140	%	14-MAY-13				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	13-MAY-13	21	29	7.9	29
Acenaphthylene	<0.050		0.050	ug/g	13-MAY-13	0.15	0.17	0.15	0.17
Anthracene	<0.050		0.050	ug/g	13-MAY-13	0.67	0.74	0.67	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.5	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	13-MAY-13	0.3	0.3	0.3	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.78	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	6.6	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.78	0.78
Chrysene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	7	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	13-MAY-13	0.1	0.1	0.1	0.1
Fluoranthene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	0.69	0.69
Fluorene	<0.050		0.050	ug/g	13-MAY-13	62	69	62	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	13-MAY-13	0.76	0.95	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	13-MAY-13	30	42	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	13-MAY-13	30	42	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	13-MAY-13	30	42	0.99	3.4
Naphthalene	<0.050		0.050	ug/g	13-MAY-13	9.6	28	0.6	0.75
Phenanthrene	<0.050		0.050	ug/g	13-MAY-13	12	16	6.2	7.8
Pyrene	<0.050		0.050	ug/g	13-MAY-13	96	96	78	78
Surrogate: 2-Fluorobiphenyl	101.9		50-140	%	13-MAY-13				
Surrogate: p-Terphenyl d14	112.7		50-140	%	13-MAY-13				
L1298752-3 BH13-4 SS1									
Sampled By: B. Ritchie/K. Linton on 06-MAY-13									
Matrix: soil						#1	#2	#3	#4
Physical Tests									
Conductivity	0.303		0.0040	mS/cm	10-MAY-13	1.4	1.4	0.7	0.7
% Moisture	2.96		0.10	%	09-MAY-13				
pH	7.75		0.10	pH units	10-MAY-13				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	13-MAY-13	0.051	0.051	0.051	0.051
Saturated Paste Extractables									
SAR	0.23		0.10	SAR	10-MAY-13	12	12	5	5
Calcium (Ca)	39.5		1.0	mg/L	10-MAY-13				
Magnesium (Mg)	5.7		1.0	mg/L	10-MAY-13				
Sodium (Na)	5.9		1.0	mg/L	10-MAY-13				
Metals									

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T2-RPI-ICC-C/F-SOIL

#1: T2-Soil-Ind/Com/Commu Property Use (Coarse)

#2: T2-Soil-Ind/Com/Commu Property Use (Fine)

#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-3 BH13-4 SS1									
Sampled By: B. Ritchie/K. Linton on 06-MAY-13									
Matrix: soil									
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	10-MAY-13	40	50	7.5	7.5
Arsenic (As)	2.5		1.0	ug/g	10-MAY-13	18	18	18	18
Barium (Ba)	281		1.0	ug/g	10-MAY-13	670	670	390	390
Beryllium (Be)	<0.50		0.50	ug/g	10-MAY-13	8	10	4	5
Boron (B)	24.3		5.0	ug/g	10-MAY-13	120	120	120	120
Boron (B), Hot Water Ext.	0.24		0.10	ug/g	10-MAY-13	2	2	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	10-MAY-13	1.9	1.9	1.2	1.2
Chromium (Cr)	17.3		1.0	ug/g	10-MAY-13	160	160	160	160
Cobalt (Co)	6.9		1.0	ug/g	10-MAY-13	80	100	22	22
Copper (Cu)	17.4		1.0	ug/g	10-MAY-13	230	300	140	180
Lead (Pb)	20.8		1.0	ug/g	10-MAY-13	120	120	120	120
Mercury (Hg)	0.016		0.010	ug/g	10-MAY-13	3.9	20	0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	10-MAY-13	40	40	6.9	6.9
Nickel (Ni)	14.5		1.0	ug/g	10-MAY-13	270	340	100	130
Selenium (Se)	<1.0		1.0	ug/g	10-MAY-13	5.5	5.5	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	10-MAY-13	40	50	20	25
Thallium (Tl)	<0.50		0.50	ug/g	10-MAY-13	3.3	3.3	1	1
Uranium (U)	<1.0		1.0	ug/g	10-MAY-13	33	33	23	23
Vanadium (V)	18.4		1.0	ug/g	10-MAY-13	86	86	86	86
Zinc (Zn)	49.5		5.0	ug/g	10-MAY-13	340	340	340	340
Speciated Metals									
Chromium, Hexavalent	0.34		0.20	ug/g	10-MAY-13	8	10	8	10
Volatile Organic Compounds									
Benzene	<0.020		0.020	ug/g	13-MAY-13	0.32	0.4	0.21	0.17
Ethyl Benzene	<0.050		0.050	ug/g	13-MAY-13	1.1	1.6	1.1	1.6
Toluene	<0.20		0.20	ug/g	13-MAY-13	6.4	9	2.3	6
o-Xylene	<0.020		0.020	ug/g	13-MAY-13				
m+p-Xylenes	<0.030		0.030	ug/g	13-MAY-13				
Xylenes (Total)	<0.050		0.050	ug/g	14-MAY-13	26	30	3.1	25
Surrogate: 4-Bromofluorobenzene	97.1		70-130	%	13-MAY-13				
Surrogate: 1,4-Difluorobenzene	98.1		70-130	%	13-MAY-13				
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	13-MAY-13	55	65	55	65
F1-BTEX	<5.0		5.0	ug/g	15-MAY-13	55	65	55	65
F2 (C10-C16)	<10		10	ug/g	14-MAY-13	230	250	98	150
F2-Naphth	<10		10	ug/g	15-MAY-13				
F3 (C16-C34)	401		50	ug/g	14-MAY-13	1700	2500	*300	1300
F3-PAH	401		50	ug/g	15-MAY-13				
F4 (C34-C50)	1090		50	ug/g	14-MAY-13	3300	6600	2800	5600
F4G-SG (GHH-Silica)	2850		250	mg/kg	15-MAY-13	3300	6600	*2800	5600
Total Hydrocarbons (C6-C50)	1490		50	ug/g	15-MAY-13				
Chrom. to baseline at nC50	NO			No Unit	14-MAY-13				
Surrogate: 2-Bromobenzotrifluoride	71.8		60-140	%	14-MAY-13				

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T2-RPI-ICC-C/F-SOIL

#1: T2-Soil-Ind/Com/Commu Property Use (Coarse)

#2: T2-Soil-Ind/Com/Commu Property Use (Fine)

#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-3 BH13-4 SS1									
Sampled By: B. Ritchie/K. Linton on 06-MAY-13									
Matrix: soil									
Hydrocarbons									
Surrogate: 3,4-Dichlorotoluene	93.2		60-140	%	13-MAY-13				
Surrogate: Octacosane	111.8		60-140	%	14-MAY-13				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	15-MAY-13	21	29	7.9	29
Acenaphthylene	<0.050		0.050	ug/g	15-MAY-13	0.15	0.17	0.15	0.17
Anthracene	<0.050		0.050	ug/g	15-MAY-13	0.67	0.74	0.67	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	15-MAY-13	0.96	0.96	0.5	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	15-MAY-13	0.3	0.3	0.3	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-MAY-13	0.96	0.96	0.78	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-MAY-13	9.6	9.6	6.6	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-MAY-13	0.96	0.96	0.78	0.78
Chrysene	<0.050		0.050	ug/g	15-MAY-13	9.6	9.6	7	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-MAY-13	0.1	0.1	0.1	0.1
Fluoranthene	<0.050		0.050	ug/g	15-MAY-13	9.6	9.6	0.69	0.69
Fluorene	<0.050		0.050	ug/g	15-MAY-13	62	69	62	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-MAY-13	0.76	0.95	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	15-MAY-13	30	42	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	15-MAY-13	30	42	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	15-MAY-13	30	42	0.99	3.4
Naphthalene	<0.050		0.050	ug/g	15-MAY-13	9.6	28	0.6	0.75
Phenanthrene	<0.050		0.050	ug/g	15-MAY-13	12	16	6.2	7.8
Pyrene	<0.050		0.050	ug/g	15-MAY-13	96	96	78	78
Surrogate: 2-Fluorobiphenyl	100.9		50-140	%	15-MAY-13				
Surrogate: p-Terphenyl d14	106.8		50-140	%	15-MAY-13				
L1298752-4 BH13-5 SS1									
Sampled By: B. Ritchie/K. Linton on 06-MAY-13									
Matrix: soil									
Physical Tests									
Conductivity	0.365		0.0040	mS/cm	10-MAY-13	1.4	1.4	0.7	0.7
% Moisture	3.62		0.10	%	09-MAY-13				
pH	7.66		0.10	pH units	10-MAY-13				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	13-MAY-13	0.051	0.051	0.051	0.051
Saturated Paste Extractables									
SAR	0.54		0.10	SAR	10-MAY-13	12	12	5	5
Calcium (Ca)	40.9		1.0	mg/L	10-MAY-13				
Magnesium (Mg)	10.2		1.0	mg/L	10-MAY-13				
Sodium (Na)	15.0		1.0	mg/L	10-MAY-13				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	10-MAY-13	40	50	7.5	7.5
Arsenic (As)	2.3		1.0	ug/g	10-MAY-13	18	18	18	18
Barium (Ba)	244		1.0	ug/g	10-MAY-13	670	670	390	390

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T2-RPI-ICC-C/F-SOIL

#1: T2-Soil-Ind/Com/Commu Property Use (Coarse)

#2: T2-Soil-Ind/Com/Commu Property Use (Fine)

#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-4 BH13-5 SS1									
Sampled By: B. Ritchie/K. Linton on 06-MAY-13									
Matrix: soil									
Metals									
Beryllium (Be)	<0.50		0.50	ug/g	10-MAY-13	8	10	4	5
Boron (B)	11.4		5.0	ug/g	10-MAY-13	120	120	120	120
Boron (B), Hot Water Ext.	0.26		0.10	ug/g	10-MAY-13	2	2	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	10-MAY-13	1.9	1.9	1.2	1.2
Chromium (Cr)	30.2		1.0	ug/g	10-MAY-13	160	160	160	160
Cobalt (Co)	8.5		1.0	ug/g	10-MAY-13	80	100	22	22
Copper (Cu)	19.9		1.0	ug/g	10-MAY-13	230	300	140	180
Lead (Pb)	26.9		1.0	ug/g	10-MAY-13	120	120	120	120
Mercury (Hg)	0.014		0.010	ug/g	10-MAY-13	3.9	20	0.27	1.8
Molybdenum (Mo)	1.2		1.0	ug/g	10-MAY-13	40	40	6.9	6.9
Nickel (Ni)	17.0		1.0	ug/g	10-MAY-13	270	340	100	130
Selenium (Se)	<1.0		1.0	ug/g	10-MAY-13	5.5	5.5	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	10-MAY-13	40	50	20	25
Thallium (Tl)	<0.50		0.50	ug/g	10-MAY-13	3.3	3.3	1	1
Uranium (U)	<1.0		1.0	ug/g	10-MAY-13	33	33	23	23
Vanadium (V)	38.6		1.0	ug/g	10-MAY-13	86	86	86	86
Zinc (Zn)	52.1		5.0	ug/g	10-MAY-13	340	340	340	340
Speciated Metals									
Chromium, Hexavalent	1.08		0.20	ug/g	10-MAY-13	8	10	8	10
Volatile Organic Compounds									
Benzene	<0.020		0.020	ug/g	13-MAY-13	0.32	0.4	0.21	0.17
Ethyl Benzene	<0.050		0.050	ug/g	13-MAY-13	1.1	1.6	1.1	1.6
Toluene	<0.20		0.20	ug/g	13-MAY-13	6.4	9	2.3	6
o-Xylene	<0.020		0.020	ug/g	13-MAY-13				
m+p-Xylenes	<0.030		0.030	ug/g	13-MAY-13				
Xylenes (Total)	<0.050		0.050	ug/g	14-MAY-13	26	30	3.1	25
Surrogate: 4-Bromofluorobenzene	89.3		70-130	%	13-MAY-13				
Surrogate: 1,4-Difluorobenzene	100.1		70-130	%	13-MAY-13				
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	13-MAY-13	55	65	55	65
F1-BTEX	<5.0		5.0	ug/g	15-MAY-13	55	65	55	65
F2 (C10-C16)	<10		10	ug/g	14-MAY-13	230	250	98	150
F2-Naphth	<10		10	ug/g	15-MAY-13				
F3 (C16-C34)	288		50	ug/g	14-MAY-13	1700	2500	300	1300
F3-PAH	288		50	ug/g	15-MAY-13				
F4 (C34-C50)	455		50	ug/g	14-MAY-13	3300	6600	2800	5600
F4G-SG (GHH-Silica)	1400		250	mg/kg	15-MAY-13	3300	6600	2800	5600
Total Hydrocarbons (C6-C50)	743		50	ug/g	15-MAY-13				
Chrom. to baseline at nC50	NO			No Unit	14-MAY-13				
Surrogate: 2-Bromobenzotrifluoride	80.3		60-140	%	14-MAY-13				
Surrogate: 3,4-Dichlorotoluene	79.6		60-140	%	13-MAY-13				
Surrogate: Octacosane	107.8		60-140	%	14-MAY-13				
Polycyclic Aromatic Hydrocarbons									

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T2-RPI-ICC-C/F-SOIL

#1: T2-Soil-Ind/Com/Commu Property Use (Coarse)

#2: T2-Soil-Ind/Com/Commu Property Use (Fine)

#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-4 BH13-5 SS1									
Sampled By: B. Ritchie/K. Linton on 06-MAY-13									
Matrix: soil									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	15-MAY-13	21	29	7.9	29
Acenaphthylene	<0.050		0.050	ug/g	15-MAY-13	0.15	0.17	0.15	0.17
Anthracene	<0.050		0.050	ug/g	15-MAY-13	0.67	0.74	0.67	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	15-MAY-13	0.96	0.96	0.5	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	15-MAY-13	0.3	0.3	0.3	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-MAY-13	0.96	0.96	0.78	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-MAY-13	9.6	9.6	6.6	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-MAY-13	0.96	0.96	0.78	0.78
Chrysene	<0.050		0.050	ug/g	15-MAY-13	9.6	9.6	7	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-MAY-13	0.1	0.1	0.1	0.1
Fluoranthene	<0.050		0.050	ug/g	15-MAY-13	9.6	9.6	0.69	0.69
Fluorene	<0.050		0.050	ug/g	15-MAY-13	62	69	62	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-MAY-13	0.76	0.95	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	15-MAY-13	30	42	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	15-MAY-13	30	42	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	15-MAY-13	30	42	0.99	3.4
Naphthalene	<0.050		0.050	ug/g	15-MAY-13	9.6	28	0.6	0.75
Phenanthrene	<0.050		0.050	ug/g	15-MAY-13	12	16	6.2	7.8
Pyrene	<0.050		0.050	ug/g	15-MAY-13	96	96	78	78
Surrogate: 2-Fluorobiphenyl	100.8		50-140	%	15-MAY-13				
Surrogate: p-Terphenyl d14	108.2		50-140	%	15-MAY-13				
L1298752-5 BH13-6 SS1A									
Sampled By: B. Ritchie/K. Linton on 02-MAY-13									
Matrix: soil						#1	#2	#3	#4
Physical Tests									
Conductivity	0.133		0.0040	mS/cm	10-MAY-13	1.4	1.4	0.7	0.7
% Moisture	6.16		0.10	%	09-MAY-13				
pH	7.77		0.10	pH units	10-MAY-13				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	13-MAY-13	0.051	0.051	0.051	0.051
Saturated Paste Extractables									
SAR	<0.10		0.10	SAR	10-MAY-13	12	12	5	5
Calcium (Ca)	35.7		1.0	mg/L	10-MAY-13				
Magnesium (Mg)	1.9		1.0	mg/L	10-MAY-13				
Sodium (Na)	1.4		1.0	mg/L	10-MAY-13				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	10-MAY-13	40	50	7.5	7.5
Arsenic (As)	<1.0		1.0	ug/g	10-MAY-13	18	18	18	18
Barium (Ba)	83.3		1.0	ug/g	10-MAY-13	670	670	390	390
Beryllium (Be)	<0.50		0.50	ug/g	10-MAY-13	8	10	4	5
Boron (B)	6.4		5.0	ug/g	10-MAY-13	120	120	120	120
Boron (B), Hot Water Ext.	0.16		0.10	ug/g	10-MAY-13	2	2	1.5	1.5

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T2-RPI-ICC-C/F-SOIL

#1: T2-Soil-Ind/Com/Commu Property Use (Coarse)

#2: T2-Soil-Ind/Com/Commu Property Use (Fine)

#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-5 BH13-6 SS1A									
Sampled By: B. Ritchie/K. Linton on 02-MAY-13									
Matrix: soil									
Metals									
Cadmium (Cd)	<0.50		0.50	ug/g	10-MAY-13	1.9	1.9	1.2	1.2
Chromium (Cr)	9.4		1.0	ug/g	10-MAY-13	160	160	160	160
Cobalt (Co)	3.8		1.0	ug/g	10-MAY-13	80	100	22	22
Copper (Cu)	9.3		1.0	ug/g	10-MAY-13	230	300	140	180
Lead (Pb)	7.7		1.0	ug/g	10-MAY-13	120	120	120	120
Mercury (Hg)	<0.010		0.010	ug/g	10-MAY-13	3.9	20	0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	10-MAY-13	40	40	6.9	6.9
Nickel (Ni)	6.6		1.0	ug/g	10-MAY-13	270	340	100	130
Selenium (Se)	<1.0		1.0	ug/g	10-MAY-13	5.5	5.5	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	10-MAY-13	40	50	20	25
Thallium (Tl)	<0.50		0.50	ug/g	10-MAY-13	3.3	3.3	1	1
Uranium (U)	<1.0		1.0	ug/g	10-MAY-13	33	33	23	23
Vanadium (V)	19.9		1.0	ug/g	10-MAY-13	86	86	86	86
Zinc (Zn)	22.5		5.0	ug/g	10-MAY-13	340	340	340	340
Speciated Metals									
Chromium, Hexavalent	0.31		0.20	ug/g	10-MAY-13	8	10	8	10
Volatile Organic Compounds									
Benzene	<0.020		0.020	ug/g	13-MAY-13	0.32	0.4	0.21	0.17
Ethyl Benzene	<0.050		0.050	ug/g	13-MAY-13	1.1	1.6	1.1	1.6
Toluene	<0.20		0.20	ug/g	13-MAY-13	6.4	9	2.3	6
o-Xylene	<0.020		0.020	ug/g	13-MAY-13				
m+p-Xylenes	<0.030		0.030	ug/g	13-MAY-13				
Xylenes (Total)	<0.050		0.050	ug/g	14-MAY-13	26	30	3.1	25
Surrogate: 4-Bromofluorobenzene	94.9		70-130	%	13-MAY-13				
Surrogate: 1,4-Difluorobenzene	100.3		70-130	%	13-MAY-13				
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	13-MAY-13	55	65	55	65
F1-BTEX	<5.0		5.0	ug/g	14-MAY-13	55	65	55	65
F2 (C10-C16)	<10		10	ug/g	14-MAY-13	230	250	98	150
F2-Naphth	<10		10	ug/g	14-MAY-13				
F3 (C16-C34)	<50		50	ug/g	14-MAY-13	1700	2500	300	1300
F3-PAH	<50		50	ug/g	14-MAY-13				
F4 (C34-C50)	<50		50	ug/g	14-MAY-13	3300	6600	2800	5600
Total Hydrocarbons (C6-C50)	<50		50	ug/g	14-MAY-13				
Chrom. to baseline at nC50	YES			No Unit	14-MAY-13				
Surrogate: 2-Bromobenzotrifluoride	98.2		60-140	%	14-MAY-13				
Surrogate: 3,4-Dichlorotoluene	98.9		60-140	%	13-MAY-13				
Surrogate: Octacosane	110.1		60-140	%	14-MAY-13				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	13-MAY-13	21	29	7.9	29
Acenaphthylene	<0.050		0.050	ug/g	13-MAY-13	0.15	0.17	0.15	0.17
Anthracene	<0.050		0.050	ug/g	13-MAY-13	0.67	0.74	0.67	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.5	0.63

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#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-5 BH13-6 SS1A									
Sampled By: B. Ritchie/K. Linton on 02-MAY-13									
Matrix: soil									
Polycyclic Aromatic Hydrocarbons									
Benzo(a)pyrene	<0.050		0.050	ug/g	13-MAY-13	0.3	0.3	0.3	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.78	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	6.6	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.78	0.78
Chrysene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	7	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	13-MAY-13	0.1	0.1	0.1	0.1
Fluoranthene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	0.69	0.69
Fluorene	<0.050		0.050	ug/g	13-MAY-13	62	69	62	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	13-MAY-13	0.76	0.95	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	13-MAY-13	30	42	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	13-MAY-13	30	42	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	13-MAY-13	30	42	0.99	3.4
Naphthalene	<0.050		0.050	ug/g	13-MAY-13	9.6	28	0.6	0.75
Phenanthrene	<0.050		0.050	ug/g	13-MAY-13	12	16	6.2	7.8
Pyrene	<0.050		0.050	ug/g	13-MAY-13	96	96	78	78
Surrogate: 2-Fluorobiphenyl	103.1		50-140	%	13-MAY-13				
Surrogate: p-Terphenyl d14	105.9		50-140	%	13-MAY-13				
L1298752-6 BH13-8 SS1									
Sampled By: B. Ritchie/K. Linton on 02-MAY-13									
Matrix: soil						#1	#2	#3	#4
Physical Tests									
Conductivity	0.180		0.0040	mS/cm	10-MAY-13	1.4	1.4	0.7	0.7
% Moisture	8.66		0.10	%	09-MAY-13				
pH	7.60		0.10	pH units	10-MAY-13				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	13-MAY-13	0.051	0.051	0.051	0.051
Saturated Paste Extractables									
SAR	0.11		0.10	SAR	10-MAY-13	12	12	5	5
Calcium (Ca)	39.1		1.0	mg/L	10-MAY-13				
Magnesium (Mg)	1.8		1.0	mg/L	10-MAY-13				
Sodium (Na)	2.6		1.0	mg/L	10-MAY-13				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	10-MAY-13	40	50	7.5	7.5
Arsenic (As)	2.7		1.0	ug/g	10-MAY-13	18	18	18	18
Barium (Ba)	142		1.0	ug/g	10-MAY-13	670	670	390	390
Beryllium (Be)	<0.50		0.50	ug/g	10-MAY-13	8	10	4	5
Boron (B)	12.6		5.0	ug/g	10-MAY-13	120	120	120	120
Boron (B), Hot Water Ext.	0.19		0.10	ug/g	10-MAY-13	2	2	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	10-MAY-13	1.9	1.9	1.2	1.2
Chromium (Cr)	16.8		1.0	ug/g	10-MAY-13	160	160	160	160
Cobalt (Co)	5.6		1.0	ug/g	10-MAY-13	80	100	22	22
Copper (Cu)	24.2		1.0	ug/g	10-MAY-13	230	300	140	180

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#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-6 BH13-8 SS1									
Sampled By: B. Ritchie/K. Linton on 02-MAY-13									
Matrix: soil									
Metals									
Lead (Pb)	28.3		1.0	ug/g	10-MAY-13	120	120	120	120
Mercury (Hg)	0.017		0.010	ug/g	10-MAY-13	3.9	20	0.27	1.8
Molybdenum (Mo)	1.9		1.0	ug/g	10-MAY-13	40	40	6.9	6.9
Nickel (Ni)	14.7		1.0	ug/g	10-MAY-13	270	340	100	130
Selenium (Se)	<1.0		1.0	ug/g	10-MAY-13	5.5	5.5	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	10-MAY-13	40	50	20	25
Thallium (Tl)	<0.50		0.50	ug/g	10-MAY-13	3.3	3.3	1	1
Uranium (U)	<1.0		1.0	ug/g	10-MAY-13	33	33	23	23
Vanadium (V)	18.0		1.0	ug/g	10-MAY-13	86	86	86	86
Zinc (Zn)	92.9		5.0	ug/g	10-MAY-13	340	340	340	340
Speciated Metals									
Chromium, Hexavalent	0.41		0.20	ug/g	10-MAY-13	8	10	8	10
Volatile Organic Compounds									
Benzene	<0.020		0.020	ug/g	13-MAY-13	0.32	0.4	0.21	0.17
Ethyl Benzene	<0.050		0.050	ug/g	13-MAY-13	1.1	1.6	1.1	1.6
Toluene	<0.20		0.20	ug/g	13-MAY-13	6.4	9	2.3	6
o-Xylene	<0.020		0.020	ug/g	13-MAY-13				
m+p-Xylenes	<0.030		0.030	ug/g	13-MAY-13				
Xylenes (Total)	<0.050		0.050	ug/g	14-MAY-13	26	30	3.1	25
Surrogate: 4-Bromofluorobenzene	92.3		70-130	%	13-MAY-13				
Surrogate: 1,4-Difluorobenzene	99.5		70-130	%	13-MAY-13				
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	13-MAY-13	55	65	55	65
F1-BTEX	<5.0		5.0	ug/g	14-MAY-13	55	65	55	65
F2 (C10-C16)	<10		10	ug/g	14-MAY-13	230	250	98	150
F2-Naphth	<10		10	ug/g	14-MAY-13				
F3 (C16-C34)	113		50	ug/g	14-MAY-13	1700	2500	300	1300
F3-PAH	113		50	ug/g	14-MAY-13				
F4 (C34-C50)	190		50	ug/g	14-MAY-13	3300	6600	2800	5600
Total Hydrocarbons (C6-C50)	303		50	ug/g	14-MAY-13				
Chrom. to baseline at nC50	YES			No Unit	14-MAY-13				
Surrogate: 2-Bromobenzotrifluoride	76.9		60-140	%	14-MAY-13				
Surrogate: 3,4-Dichlorotoluene	91.5		60-140	%	13-MAY-13				
Surrogate: Octacosane	102.9		60-140	%	14-MAY-13				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	13-MAY-13	21	29	7.9	29
Acenaphthylene	<0.050		0.050	ug/g	13-MAY-13	0.15	0.17	0.15	0.17
Anthracene	<0.050		0.050	ug/g	13-MAY-13	0.67	0.74	0.67	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.5	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	13-MAY-13	0.3	0.3	0.3	0.3
Benzo(b)fluoranthene	0.058		0.050	ug/g	13-MAY-13	0.96	0.96	0.78	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	6.6	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	13-MAY-13	0.96	0.96	0.78	0.78

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#3: T2-Soil-Res/Park/Inst. Property Use (Coarse)

#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2	#3	#4
L1298752-6 BH13-8 SS1									
Sampled By: B. Ritchie/K. Linton on 02-MAY-13									
Matrix: soil									
Polycyclic Aromatic Hydrocarbons									
Chrysene	<0.050		0.050	ug/g	13-MAY-13	9.6	9.6	7	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	13-MAY-13	0.1	0.1	0.1	0.1
Fluoranthene	0.065		0.050	ug/g	13-MAY-13	9.6	9.6	0.69	0.69
Fluorene	<0.050		0.050	ug/g	13-MAY-13	62	69	62	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	13-MAY-13	0.76	0.95	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	13-MAY-13	30	42	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	13-MAY-13	30	42	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	13-MAY-13	30	42	0.99	3.4
Naphthalene	<0.050		0.050	ug/g	13-MAY-13	9.6	28	0.6	0.75
Phenanthrene	<0.050		0.050	ug/g	13-MAY-13	12	16	6.2	7.8
Pyrene	0.053		0.050	ug/g	13-MAY-13	96	96	78	78
Surrogate: 2-Fluorobiphenyl	96.5		50-140	%	13-MAY-13				
Surrogate: p-Terphenyl d14	103.7		50-140	%	13-MAY-13				
L1298752-7 QAQC1									
Sampled By: B. Ritchie/K. Linton on 02-MAY-13									
Matrix: soil									
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	10-MAY-13	40	50	7.5	7.5
Arsenic (As)	2.1		1.0	ug/g	10-MAY-13	18	18	18	18
Barium (Ba)	107		1.0	ug/g	10-MAY-13	670	670	390	390
Beryllium (Be)	<0.50		0.50	ug/g	10-MAY-13	8	10	4	5
Boron (B)	8.9		5.0	ug/g	10-MAY-13	120	120	120	120
Cadmium (Cd)	<0.50		0.50	ug/g	10-MAY-13	1.9	1.9	1.2	1.2
Chromium (Cr)	13.7		1.0	ug/g	10-MAY-13	160	160	160	160
Cobalt (Co)	4.4		1.0	ug/g	10-MAY-13	80	100	22	22
Copper (Cu)	18.4		1.0	ug/g	10-MAY-13	230	300	140	180
Lead (Pb)	20.4		1.0	ug/g	10-MAY-13	120	120	120	120
Molybdenum (Mo)	1.2		1.0	ug/g	10-MAY-13	40	40	6.9	6.9
Nickel (Ni)	10.5		1.0	ug/g	10-MAY-13	270	340	100	130
Selenium (Se)	<1.0		1.0	ug/g	10-MAY-13	5.5	5.5	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	10-MAY-13	40	50	20	25
Thallium (Tl)	<0.50		0.50	ug/g	10-MAY-13	3.3	3.3	1	1
Uranium (U)	<1.0		1.0	ug/g	10-MAY-13	33	33	23	23
Vanadium (V)	13.8		1.0	ug/g	10-MAY-13	86	86	86	86
Zinc (Zn)	69.1		5.0	ug/g	10-MAY-13	340	340	340	340

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#4: T2-Soil-Res/Park/Inst. Property Use (Fine)

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
G	QC result did not meet ALS DQO. Refer to narrative comments for further information.
CINT	Cooling initiated. Samples were packaged with ice or ice packs upon receipt.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

BTX-511-HS-WT	Soil	BTEX-O.Reg 153/04 (July 2011)	SW846 8260

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-R511-WT	Soil	Hex Chrom-O.Reg 153/04 (July 2011)	SW846 3060A/7199 R511

Soil sample undergoes a alkaline digestion process where the sample is acidified and derivatized with 1,5-diphenylcarbazide (DPC) using ion chromatography.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-R511-WT	Soil	Conductivity-O.Reg 153/04 (July 2011)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC DEC-2000 - PUB# 1310-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Soil	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

Reference Information

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1

Fractions F2, F3 and F4 are determined by extracting a soil sample with a solvent mix. The solvent recovered from the extracted soil sample is dried and treated to remove polar material. The extract is analyzed by GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F4G-ADD-511-WT	Soil	F4G SG-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1

F4G, gravimetric analysis, is determined if the chromatogram does not return to baseline at or before C50. A soil sample is extracted with a solvent mix, the solvent is evaporated and the weight of the residue is determined.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

HG-R511-WT	Soil	Mercury-O.Reg 153/04 (July 2011)	SW846 3050B/7471

Solid sample is digested with a heated, strong, mixed acid solution to convert all forms of mercury to divalent mercury. The divalent mercury is then reduced to elemental mercury, sparged from solution and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-UG/G-CCMS-WT	Soil	Metal Scan Collision Cell ICPMS	EPA 200.2/6020A

Sample is vigorously digested with nitric and hydrochloric acid. Analysis is conducted by ICP/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-R511-WT	Soil	pH-O.Reg 153/04 (July 2011)	MOEE E3137A

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	SW846 6010C

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody numbers:

128939

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1298752 Report Date: 15-MAY-13

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R2602885								
WG1667587-4 DUP		**WG1667587-3**						
Boron (B), Hot Water Ext.		15.3	16.0		ug/g	4.0	40	10-MAY-13
WG1667587-6 DUP		**L1299532-14**						
Boron (B), Hot Water Ext.		3.22	3.10		ug/g	3.8	40	10-MAY-13
WG1667587-2 LCS								
Boron (B), Hot Water Ext.			89.0		%		70-130	10-MAY-13
WG1667587-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	10-MAY-13
WG1667587-5 MS		**WG1667587-3**						
Boron (B), Hot Water Ext.			N/A	MS-B	%		-	10-MAY-13
WG1667587-7 MS		**L1299532-14**						
Boron (B), Hot Water Ext.			N/A	MS-B	%		-	10-MAY-13
Batch R2606217								
WG1668716-20 DUP		**L1299891-2**						
Boron (B), Hot Water Ext.		0.51	0.47		ug/g	8.5	40	13-MAY-13
WG1668716-22 DUP		**L1300332-2**						
Boron (B), Hot Water Ext.		<0.10	<0.10	RPD-NA	ug/g	N/A	40	13-MAY-13
WG1668716-5 LCS								
Boron (B), Hot Water Ext.			92.6		%		70-130	13-MAY-13
WG1668716-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	13-MAY-13
WG1668716-19 MS		**L1299891-2**						
Boron (B), Hot Water Ext.			N/A	MS-B	%		-	13-MAY-13
WG1668716-21 MS		**L1300332-2**						
Boron (B), Hot Water Ext.			112.5		%		60-140	13-MAY-13
BTX-511-HS-WT	**Soil**							
Batch R2604559								
WG1667167-1 CVS								
Benzene			96.5		%		75-125	13-MAY-13
Ethyl Benzene			95.1		%		75-125	13-MAY-13
m+p-Xylenes			99.0		%		75-125	13-MAY-13
o-Xylene			96.2		%		75-125	13-MAY-13
Toluene			92.9		%		75-125	13-MAY-13
WG1666922-4 DUP		**WG1666922-3**						
Benzene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	13-MAY-13
Ethyl Benzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	13-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT	**Soil**							
Batch R2604559								
WG1666922-4 DUP		**WG1666922-3**						
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	13-MAY-13
Toluene		<0.20	<0.20	RPD-NA	ug/g	N/A	40	13-MAY-13
WG1666922-2 LCS								
Benzene			87.0		%		70-130	13-MAY-13
Ethyl Benzene			86.4		%		70-130	13-MAY-13
m+p-Xylenes			87.9		%		70-130	13-MAY-13
o-Xylene			87.4		%		70-130	13-MAY-13
Toluene			86.3		%		70-130	13-MAY-13
WG1666922-1 MB								
Benzene			<0.020		ug/g		0.02	13-MAY-13
Ethyl Benzene			<0.050		ug/g		0.05	13-MAY-13
m+p-Xylenes			<0.030		ug/g		0.03	13-MAY-13
o-Xylene			<0.020		ug/g		0.02	13-MAY-13
Toluene			<0.20		ug/g		0.2	13-MAY-13
Surrogate: 1,4-Difluorobenzene			97.2		%		70-130	13-MAY-13
Surrogate: 4-Bromofluorobenzene			103.0		%		70-130	13-MAY-13
WG1666922-5 MS		**WG1666922-3**						
Benzene			114.0		%		60-140	13-MAY-13
Ethyl Benzene			98.8		%		60-140	13-MAY-13
m+p-Xylenes			109.0		%		60-140	13-MAY-13
o-Xylene			101.4		%		60-140	13-MAY-13
Toluene			110.1		%		60-140	13-MAY-13
CN-WAD-R511-WT	**Soil**							
Batch R2606043								
WG1669473-3 CVS								
Cyanide, Weak Acid Diss			106.5		%		80-120	13-MAY-13
WG1667082-4 DUP		**L1298752-1**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	13-MAY-13
WG1667082-2 LCS								
Cyanide, Weak Acid Diss			100.5		%		80-120	13-MAY-13
WG1667082-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	13-MAY-13
WG1667082-3 MS		**L1298752-1**						
Cyanide, Weak Acid Diss			95.0		%		70-130	13-MAY-13
CR-CR6-IC-R511-WT	**Soil**							

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-R511-WT	**Soil**							
Batch R2602985								
WG1667013-3 CRM		**WT-SQC012**						
Chromium, Hexavalent			98.0		%		80-120	10-MAY-13
WG1667013-4 DUP		**L1298752-1**						
Chromium, Hexavalent		<0.20	<0.20	RPD-NA	ug/g	N/A	35	10-MAY-13
WG1667013-2 LCS								
Chromium, Hexavalent			100.4		%		80-120	10-MAY-13
WG1667013-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	10-MAY-13
EC-R511-WT	**Soil**							
Batch R2602883								
WG1667591-2 DUP		**L1299306-1**						
Conductivity		0.192	0.187		mS/cm	2.6	20	10-MAY-13
WG1667677-1 LCS								
Conductivity			99.4		%		90-110	10-MAY-13
WG1667591-1 MB								
Conductivity			<0.0040		mS/cm		0.004	10-MAY-13
Batch R2604552								
WG1668789-3 DUP		**L1298394-3**						
Conductivity		1.74	1.69		mS/cm	2.9	20	13-MAY-13
WG1668789-4 DUP		**L1300401-4**						
Conductivity		0.192	0.199		mS/cm	3.6	20	13-MAY-13
WG1668789-5 LCS								
Conductivity			99.4		%		90-110	13-MAY-13
WG1668789-1 MB								
Conductivity			<0.0040		mS/cm		0.004	13-MAY-13
F1-HS-511-WT	**Soil**							
Batch R2604559								
WG1667167-1 CVS								
F1 (C6-C10)			93.3		%		80-120	13-MAY-13
WG1666922-4 DUP		**WG1666922-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	50	13-MAY-13
WG1666922-2 LCS								
F1 (C6-C10)			97.2		%		80-120	13-MAY-13
WG1666922-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	13-MAY-13
Surrogate: 3,4-Dichlorotoluene			114.8		%		60-140	13-MAY-13
WG1666922-7 MS		**WG1666922-6**						

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R2604559								
WG1666922-7 MS		**WG1666922-6**						
F1 (C6-C10)			118.8		%		60-140	13-MAY-13
F2-F4-511-WT	**Soil**							
Batch R2606589								
WG1667657-4 CRM		**ALS PHC2 IRM**						
F2 (C10-C16)			97.3		%		70-130	14-MAY-13
F3 (C16-C34)			93.6		%		70-130	14-MAY-13
F4 (C34-C50)			84.3		%		70-130	14-MAY-13
WG1669358-1 CVS								
F2 (C10-C16)			102.2		%		80-120	14-MAY-13
F3 (C16-C34)			103.6		%		80-120	14-MAY-13
F4 (C34-C50)			108.5		%		80-120	14-MAY-13
WG1669358-2 CVS								
F2 (C10-C16)			103.8		%		80-120	14-MAY-13
F3 (C16-C34)			103.2		%		80-120	14-MAY-13
F4 (C34-C50)			106.6		%		80-120	14-MAY-13
WG1667657-6 DUP		**WG1667657-5**						
F2 (C10-C16)		2020	2350		ug/g	15	40	14-MAY-13
F3 (C16-C34)		82	83		ug/g	1.0	40	14-MAY-13
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	40	14-MAY-13
COMMENTS: Qualified surrogate on sample due to high F2 concentrations.								
WG1667657-2 LCS								
F2 (C10-C16)			88.6		%		80-120	14-MAY-13
F3 (C16-C34)			93.2		%		80-120	14-MAY-13
F4 (C34-C50)			87.6		%		80-120	14-MAY-13
WG1667657-3 LCSD		**WG1667657-2**						
F2 (C10-C16)		88.6	89.2		%	0.7	50	14-MAY-13
F3 (C16-C34)		93.2	96.7		%	3.8	50	14-MAY-13
F4 (C34-C50)		87.6	94.7		%	7.8	50	14-MAY-13
WG1667657-1 MB								
F2 (C10-C16)			<10		ug/g		10	14-MAY-13
F3 (C16-C34)			<50		ug/g		50	14-MAY-13
F4 (C34-C50)			<50		ug/g		50	14-MAY-13
Surrogate: Octacosane			109.8		%		60-140	14-MAY-13
Surrogate: 2-Bromobenzotrifluoride			91.0		%		60-140	14-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F4G-ADD-511-WT	**Soil**							
Batch R2606830								
WG1670159-2 LCS								
F4G-SG (GHH-Silica)			71.3		%		60-140	15-MAY-13
WG1670159-3 LCSD		**WG1670159-2**						
F4G-SG (GHH-Silica)		71.3	78.2		%	9.1	50	15-MAY-13
WG1670159-1 MB								
F4G-SG (GHH-Silica)			<250		mg/kg		250	15-MAY-13
HG-R511-WT	**Soil**							
Batch R2602935								
WG1667581-2 CRM		**WT-SS-1**						
Mercury (Hg)			94.6		%		70-130	10-MAY-13
WG1667581-6 DUP		**WG1667581-5**						
Mercury (Hg)		0.041	0.042		ug/g	0.8	30	10-MAY-13
WG1667581-4 LCS								
Mercury (Hg)			100.5		%		80-120	10-MAY-13
WG1667581-1 MB								
Mercury (Hg)			<0.010		ug/g		0.01	10-MAY-13
WG1667581-7 MS		**WG1667581-5**						
Mercury (Hg)			89.3		%		70-130	10-MAY-13
Batch R2604872								
WG1668709-2 CRM		**WT-SS-1**						
Mercury (Hg)			86.4		%		70-130	13-MAY-13
WG1668709-6 DUP		**WG1668709-5**						
Mercury (Hg)		<0.010	<0.010	RPD-NA	ug/g	N/A	30	13-MAY-13
WG1668709-8 DUP		**L1299891-5**						
Mercury (Hg)		0.021	0.021		ug/g	1.3	30	13-MAY-13
WG1668709-4 LCS								
Mercury (Hg)			94.0		%		80-120	13-MAY-13
WG1668709-1 MB								
Mercury (Hg)			<0.010		ug/g		0.01	13-MAY-13
WG1668709-7 MS		**WG1668709-5**						
Mercury (Hg)			95.0		%		70-130	13-MAY-13
WG1668709-9 MS		**L1299891-5**						
Mercury (Hg)			87.2		%		70-130	13-MAY-13
MET-UG/G-CCMS-WT	**Soil**							
Batch R2603015								
WG1667618-2 CVS								
Antimony (Sb)			93.5		%		70-130	10-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT	**Soil**							
Batch R2603015								
WG1667618-2 CVS								
Arsenic (As)			104.8		%		70-130	10-MAY-13
Barium (Ba)			102.6		%		70-130	10-MAY-13
Beryllium (Be)			109.7		%		70-130	10-MAY-13
Boron (B)			107.0		%		70-130	10-MAY-13
Cadmium (Cd)			100.0		%		70-130	10-MAY-13
Chromium (Cr)			99.5		%		70-130	10-MAY-13
Cobalt (Co)			101.0		%		70-130	10-MAY-13
Copper (Cu)			100.6		%		70-130	10-MAY-13
Lead (Pb)			96.0		%		70-130	10-MAY-13
Molybdenum (Mo)			110.9		%		70-130	10-MAY-13
Nickel (Ni)			99.4		%		70-130	10-MAY-13
Selenium (Se)			99.6		%		70-130	10-MAY-13
Silver (Ag)			94.3		%		70-130	10-MAY-13
Thallium (Tl)			92.6		%		70-130	10-MAY-13
Uranium (U)			91.2		%		70-130	10-MAY-13
Vanadium (V)			99.3		%		70-130	10-MAY-13
Zinc (Zn)			97.7		%		70-130	10-MAY-13
WG1667581-6 DUP		**WG1667581-5**						
Antimony (Sb)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	10-MAY-13
Arsenic (As)		3.82	4.15		ug/g	8.3	30	10-MAY-13
Barium (Ba)		103	114		ug/g	10	40	10-MAY-13
Beryllium (Be)		0.88	0.99		ug/g	11	30	10-MAY-13
Boron (B)		9.5	10.4		ug/g	8.9	30	10-MAY-13
Cadmium (Cd)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	10-MAY-13
Chromium (Cr)		27.5	30.0		ug/g	8.5	30	10-MAY-13
Cobalt (Co)		10.9	11.7		ug/g	7.6	30	10-MAY-13
Copper (Cu)		13.5	14.7		ug/g	8.4	30	10-MAY-13
Lead (Pb)		12.9	14.3		ug/g	9.9	40	10-MAY-13
Molybdenum (Mo)		<1.0	<1.0	RPD-NA	ug/g	N/A	40	10-MAY-13
Nickel (Ni)		19.9	21.7		ug/g	8.6	30	10-MAY-13
Selenium (Se)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	10-MAY-13
Silver (Ag)		<0.20	<0.20	RPD-NA	ug/g	N/A	40	10-MAY-13
Thallium (Tl)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	10-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT	**Soil**							
Batch R2603015								
WG1667581-6 DUP		**WG1667581-5**						
Uranium (U)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	10-MAY-13
Vanadium (V)		39.6	43.0		ug/g	8.2	30	10-MAY-13
Zinc (Zn)		68.6	75.3		ug/g	9.3	30	10-MAY-13
WG1667581-8 DUP		**L1298167-15**						
Antimony (Sb)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	10-MAY-13
Arsenic (As)		5.9	6.0		ug/g	1.4	30	10-MAY-13
Barium (Ba)		101	102		ug/g	1.1	40	10-MAY-13
Beryllium (Be)		0.74	0.79		ug/g	7.4	30	10-MAY-13
Boron (B)		15.3	15.6		ug/g	2.0	30	10-MAY-13
Cadmium (Cd)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	10-MAY-13
Chromium (Cr)		24.5	25.3		ug/g	3.1	30	10-MAY-13
Cobalt (Co)		10.7	10.7		ug/g	0.3	30	10-MAY-13
Copper (Cu)		21.9	22.2		ug/g	1.3	30	10-MAY-13
Lead (Pb)		12.9	13.0		ug/g	0.7	40	10-MAY-13
Molybdenum (Mo)		<1.0	<1.0	RPD-NA	ug/g	N/A	40	10-MAY-13
Nickel (Ni)		21.8	21.8		ug/g	0.1	30	10-MAY-13
Selenium (Se)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	10-MAY-13
Silver (Ag)		<0.20	<0.20	RPD-NA	ug/g	N/A	40	10-MAY-13
Thallium (Tl)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	10-MAY-13
Uranium (U)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	10-MAY-13
Vanadium (V)		38.8	39.7		ug/g	2.5	30	10-MAY-13
Zinc (Zn)		70.9	72.9		ug/g	2.9	30	10-MAY-13
WG1667581-3 LCS								
Antimony (Sb)			104.9		%		80-120	10-MAY-13
Arsenic (As)			100.6		%		80-120	10-MAY-13
Barium (Ba)			99.7		%		80-120	10-MAY-13
Beryllium (Be)			106.5		%		80-120	10-MAY-13
Boron (B)			108.0		%		80-120	10-MAY-13
Cadmium (Cd)			104.2		%		80-120	10-MAY-13
Chromium (Cr)			103.5		%		80-120	10-MAY-13
Cobalt (Co)			100.5		%		80-120	10-MAY-13
Copper (Cu)			101.8		%		80-120	10-MAY-13
Lead (Pb)			109.6		%		80-120	10-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT	**Soil**							
Batch R2603015								
WG1667581-3 LCS								
Molybdenum (Mo)			110.2		%		80-120	10-MAY-13
Nickel (Ni)			103.3		%		80-120	10-MAY-13
Selenium (Se)			107.1		%		80-120	10-MAY-13
Silver (Ag)			108.6		%		80-120	10-MAY-13
Thallium (Tl)			107.4		%		80-120	10-MAY-13
Uranium (U)			112.6		%		80-120	10-MAY-13
Vanadium (V)			101.4		%		80-120	10-MAY-13
Zinc (Zn)			101.3		%		80-120	10-MAY-13
WG1667581-1 MB								
Antimony (Sb)			<1.0		ug/g		1	10-MAY-13
Arsenic (As)			<0.20		ug/g		0.2	10-MAY-13
Barium (Ba)			<1.0		ug/g		1	10-MAY-13
Beryllium (Be)			<0.50		ug/g		0.5	10-MAY-13
Boron (B)			<5.0		ug/g		5	10-MAY-13
Cadmium (Cd)			<0.50		ug/g		0.5	10-MAY-13
Chromium (Cr)			<1.0		ug/g		1	10-MAY-13
Cobalt (Co)			<1.0		ug/g		1	10-MAY-13
Copper (Cu)			<1.0		ug/g		1	10-MAY-13
Lead (Pb)			<1.0		ug/g		1	10-MAY-13
Molybdenum (Mo)			<1.0		ug/g		1	10-MAY-13
Nickel (Ni)			<1.0		ug/g		1	10-MAY-13
Selenium (Se)			<1.0		ug/g		1	10-MAY-13
Silver (Ag)			<0.20		ug/g		0.2	10-MAY-13
Thallium (Tl)			<0.50		ug/g		0.5	10-MAY-13
Uranium (U)			<1.0		ug/g		1	10-MAY-13
Vanadium (V)			<1.0		ug/g		1	10-MAY-13
Zinc (Zn)			<5.0		ug/g		5	10-MAY-13
WG1667581-7 MS		**WG1667581-5**						
Antimony (Sb)			84.8		%		70-130	10-MAY-13
Arsenic (As)			N/A	MS-B	%		-	10-MAY-13
Barium (Ba)			N/A	MS-B	%		-	10-MAY-13
Beryllium (Be)			119.6		%		70-130	10-MAY-13
Boron (B)			N/A	MS-B	%		-	10-MAY-13
Cadmium (Cd)			117.5		%		70-130	10-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT	**Soil**							
Batch R2603015								
WG1667581-7 MS		**WG1667581-5**						
Chromium (Cr)			N/A	MS-B	%		-	10-MAY-13
Cobalt (Co)			N/A	MS-B	%		-	10-MAY-13
Copper (Cu)			N/A	MS-B	%		-	10-MAY-13
Lead (Pb)			N/A	MS-B	%		-	10-MAY-13
Molybdenum (Mo)			127.8		%		70-130	10-MAY-13
Nickel (Ni)			N/A	MS-B	%		-	10-MAY-13
Selenium (Se)			115.7		%		70-130	10-MAY-13
Silver (Ag)			104.2		%		70-130	10-MAY-13
Thallium (Tl)			103.5		%		70-130	10-MAY-13
Uranium (U)			119.8		%		70-130	10-MAY-13
Vanadium (V)			N/A	MS-B	%		-	10-MAY-13
Zinc (Zn)			N/A	MS-B	%		-	10-MAY-13
Batch R2604829								
WG1668720-2 CVS								
Antimony (Sb)			96.9		%		70-130	13-MAY-13
Arsenic (As)			105.6		%		70-130	13-MAY-13
Barium (Ba)			101.3		%		70-130	13-MAY-13
Beryllium (Be)			101.1		%		70-130	13-MAY-13
Boron (B)			96.9		%		70-130	13-MAY-13
Cadmium (Cd)			103.2		%		70-130	13-MAY-13
Chromium (Cr)			99.3		%		70-130	13-MAY-13
Cobalt (Co)			102.3		%		70-130	13-MAY-13
Copper (Cu)			102.0		%		70-130	13-MAY-13
Lead (Pb)			96.2		%		70-130	13-MAY-13
Molybdenum (Mo)			103.4		%		70-130	13-MAY-13
Nickel (Ni)			100.3		%		70-130	13-MAY-13
Selenium (Se)			96.6		%		70-130	13-MAY-13
Silver (Ag)			97.0		%		70-130	13-MAY-13
Thallium (Tl)			94.9		%		70-130	13-MAY-13
Uranium (U)			93.0		%		70-130	13-MAY-13
Vanadium (V)			99.7		%		70-130	13-MAY-13
Zinc (Zn)			100.1		%		70-130	13-MAY-13
WG1668709-10 DUP		**L1300401-2**						
Antimony (Sb)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	13-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT	**Soil**							
Batch R2604829								
WG1668709-10 DUP		**L1300401-2**						
Arsenic (As)		1.9	1.9		ug/g	4.4	30	13-MAY-13
Barium (Ba)		51.2	51.2		ug/g	0.1	40	13-MAY-13
Beryllium (Be)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	13-MAY-13
Boron (B)		8.0	6.3		ug/g	24	30	13-MAY-13
Cadmium (Cd)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	13-MAY-13
Chromium (Cr)		16.6	16.7		ug/g	0.5	30	13-MAY-13
Cobalt (Co)		3.9	3.9		ug/g	1.0	30	13-MAY-13
Copper (Cu)		9.4	9.6		ug/g	1.4	30	13-MAY-13
Lead (Pb)		10.7	10.4		ug/g	2.7	40	13-MAY-13
Molybdenum (Mo)		<1.0	<1.0	RPD-NA	ug/g	N/A	40	13-MAY-13
Nickel (Ni)		9.8	9.7		ug/g	0.4	30	13-MAY-13
Selenium (Se)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	13-MAY-13
Silver (Ag)		<0.20	<0.20	RPD-NA	ug/g	N/A	40	13-MAY-13
Thallium (Tl)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	13-MAY-13
Uranium (U)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	13-MAY-13
Vanadium (V)		26.3	26.2		ug/g	0.6	30	13-MAY-13
Zinc (Zn)		41.2	41.4		ug/g	0.6	30	13-MAY-13
WG1668709-6 DUP		**WG1668709-5**						
Antimony (Sb)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	13-MAY-13
Arsenic (As)		1.09	1.04		ug/g	4.7	30	13-MAY-13
Barium (Ba)		196	198		ug/g	0.9	40	13-MAY-13
Beryllium (Be)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	13-MAY-13
Boron (B)		<5.0	5.3	RPD-NA	ug/g	N/A	30	13-MAY-13
Cadmium (Cd)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	13-MAY-13
Chromium (Cr)		37.5	37.2		ug/g	1.0	30	13-MAY-13
Cobalt (Co)		10.2	10.0		ug/g	1.1	30	13-MAY-13
Copper (Cu)		20.4	20.1		ug/g	1.8	30	13-MAY-13
Lead (Pb)		4.0	3.9		ug/g	1.3	40	13-MAY-13
Molybdenum (Mo)		<1.0	<1.0	RPD-NA	ug/g	N/A	40	13-MAY-13
Nickel (Ni)		21.5	21.2		ug/g	1.5	30	13-MAY-13
Selenium (Se)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	13-MAY-13
Silver (Ag)		<0.20	<0.20	RPD-NA	ug/g	N/A	40	13-MAY-13
Thallium (Tl)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	13-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT	**Soil**							
Batch R2604829								
WG1668709-6 DUP		**WG1668709-5**						
Uranium (U)		1.1	<1.0	RPD-NA	ug/g	N/A	30	13-MAY-13
Vanadium (V)		54.4	53.7		ug/g	1.3	30	13-MAY-13
Zinc (Zn)		56.1	56.0		ug/g	0.2	30	13-MAY-13
WG1668709-8 DUP		**L1299891-5**						
Antimony (Sb)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	13-MAY-13
Arsenic (As)		5.4	5.4		ug/g	0.0	30	13-MAY-13
Barium (Ba)		116	118		ug/g	1.4	40	13-MAY-13
Beryllium (Be)		0.74	0.75		ug/g	0.4	30	13-MAY-13
Boron (B)		27.8	28.2		ug/g	1.4	30	13-MAY-13
Cadmium (Cd)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	13-MAY-13
Chromium (Cr)		27.9	28.8		ug/g	3.0	30	13-MAY-13
Cobalt (Co)		8.0	8.4		ug/g	5.2	30	13-MAY-13
Copper (Cu)		17.6	17.6		ug/g	0.1	30	13-MAY-13
Lead (Pb)		7.9	8.1		ug/g	2.2	40	13-MAY-13
Molybdenum (Mo)		3.9	3.8		ug/g	1.8	40	13-MAY-13
Nickel (Ni)		27.2	27.1		ug/g	0.3	30	13-MAY-13
Selenium (Se)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	13-MAY-13
Silver (Ag)		<0.20	<0.20	RPD-NA	ug/g	N/A	40	13-MAY-13
Thallium (Tl)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	13-MAY-13
Uranium (U)		1.7	1.7		ug/g	1.8	30	13-MAY-13
Vanadium (V)		39.3	40.9		ug/g	3.9	30	13-MAY-13
Zinc (Zn)		48.3	48.4		ug/g	0.1	30	13-MAY-13
WG1668709-3 LCS								
Antimony (Sb)			106.7		%		80-120	13-MAY-13
Arsenic (As)			98.5		%		80-120	13-MAY-13
Barium (Ba)			97.6		%		80-120	13-MAY-13
Beryllium (Be)			99.3		%		80-120	13-MAY-13
Boron (B)			103.4		%		80-120	13-MAY-13
Cadmium (Cd)			104.1		%		80-120	13-MAY-13
Chromium (Cr)			99.8		%		80-120	13-MAY-13
Cobalt (Co)			97.9		%		80-120	13-MAY-13
Copper (Cu)			108.4		%		80-120	13-MAY-13
Lead (Pb)			109.4		%		80-120	13-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT	**Soil**							
Batch R2604829								
WG1668709-3 LCS								
Molybdenum (Mo)			108.6		%		80-120	13-MAY-13
Nickel (Ni)			99.6		%		80-120	13-MAY-13
Selenium (Se)			101.9		%		80-120	13-MAY-13
Silver (Ag)			104.2		%		80-120	13-MAY-13
Thallium (Tl)			109.7		%		80-120	13-MAY-13
Uranium (U)			111.4		%		80-120	13-MAY-13
Vanadium (V)			97.8		%		80-120	13-MAY-13
Zinc (Zn)			102.7		%		80-120	13-MAY-13
WG1668709-1 MB								
Antimony (Sb)			<1.0		ug/g		1	13-MAY-13
Arsenic (As)			<0.20		ug/g		0.2	13-MAY-13
Barium (Ba)			<1.0		ug/g		1	13-MAY-13
Beryllium (Be)			<0.50		ug/g		0.5	13-MAY-13
Boron (B)			<5.0		ug/g		5	13-MAY-13
Cadmium (Cd)			<0.50		ug/g		0.5	13-MAY-13
Chromium (Cr)			<1.0		ug/g		1	13-MAY-13
Cobalt (Co)			<1.0		ug/g		1	13-MAY-13
Copper (Cu)			<1.0		ug/g		1	13-MAY-13
Lead (Pb)			<1.0		ug/g		1	13-MAY-13
Molybdenum (Mo)			<1.0		ug/g		1	13-MAY-13
Nickel (Ni)			<1.0		ug/g		1	13-MAY-13
Selenium (Se)			<1.0		ug/g		1	13-MAY-13
Silver (Ag)			<0.20		ug/g		0.2	13-MAY-13
Thallium (Tl)			<0.50		ug/g		0.5	13-MAY-13
Uranium (U)			<1.0		ug/g		1	13-MAY-13
Vanadium (V)			<1.0		ug/g		1	13-MAY-13
Zinc (Zn)			<5.0		ug/g		5	13-MAY-13
WG1668709-11 MS		**L1300401-2**						
Antimony (Sb)			75.9		%		70-130	13-MAY-13
Arsenic (As)			103.4		%		70-130	13-MAY-13
Barium (Ba)			N/A	MS-B	%		-	13-MAY-13
Beryllium (Be)			113.0		%		70-130	13-MAY-13
Boron (B)			N/A	MS-B	%		-	13-MAY-13
Cadmium (Cd)			101.5		%		70-130	13-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT	**Soil**							
Batch R2604829								
WG1668709-11 MS		**L1300401-2**						
Chromium (Cr)			N/A	MS-B	%		-	13-MAY-13
Cobalt (Co)			N/A	MS-B	%		-	13-MAY-13
Copper (Cu)			N/A	MS-B	%		-	13-MAY-13
Lead (Pb)			N/A	MS-B	%		-	13-MAY-13
Molybdenum (Mo)			110.0		%		70-130	13-MAY-13
Nickel (Ni)			N/A	MS-B	%		-	13-MAY-13
Selenium (Se)			107.9		%		70-130	13-MAY-13
Silver (Ag)			91.1		%		70-130	13-MAY-13
Thallium (Tl)			94.1		%		70-130	13-MAY-13
Uranium (U)			109.2		%		70-130	13-MAY-13
Vanadium (V)			N/A	MS-B	%		-	13-MAY-13
Zinc (Zn)			N/A	MS-B	%		-	13-MAY-13
WG1668709-9 MS		**L1299891-5**						
Antimony (Sb)			75.3		%		70-130	13-MAY-13
Arsenic (As)			N/A	MS-B	%		-	13-MAY-13
Barium (Ba)			N/A	MS-B	%		-	13-MAY-13
Beryllium (Be)			102.6		%		70-130	13-MAY-13
Boron (B)			N/A	MS-B	%		-	13-MAY-13
Cadmium (Cd)			102.6		%		70-130	13-MAY-13
Chromium (Cr)			N/A	MS-B	%		-	13-MAY-13
Cobalt (Co)			N/A	MS-B	%		-	13-MAY-13
Copper (Cu)			N/A	MS-B	%		-	13-MAY-13
Lead (Pb)			N/A	MS-B	%		-	13-MAY-13
Molybdenum (Mo)			N/A	MS-B	%		-	13-MAY-13
Nickel (Ni)			N/A	MS-B	%		-	13-MAY-13
Selenium (Se)			111.0		%		70-130	13-MAY-13
Silver (Ag)			96.9		%		70-130	13-MAY-13
Thallium (Tl)			101.9		%		70-130	13-MAY-13
Uranium (U)			98.8		%		70-130	13-MAY-13
Vanadium (V)			N/A	MS-B	%		-	13-MAY-13
Zinc (Zn)			N/A	MS-B	%		-	13-MAY-13
MOISTURE-WT	**Soil**							

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	**Soil**							
Batch R2602504								
WG1666906-3 DUP		**L1298318-5**						
% Moisture		4.79	4.74		%	1.0	30	09-MAY-13
WG1666906-2 LCS								
% Moisture			102.7		%		70-130	09-MAY-13
WG1666906-1 MB								
% Moisture			<0.10		%		0.1	09-MAY-13
PAH-511-WT	**Soil**							
Batch R2605131								
WG1669145-1 CVS								
1-Methylnaphthalene			94.1		%		50-140	10-MAY-13
2-Methylnaphthalene			96.6		%		50-140	10-MAY-13
Acenaphthene			94.6		%		50-140	10-MAY-13
Acenaphthylene			94.3		%		50-140	10-MAY-13
Anthracene			90.5		%		50-140	10-MAY-13
Benzo(a)anthracene			92.0		%		50-140	10-MAY-13
Benzo(a)pyrene			96.6		%		50-140	10-MAY-13
Benzo(b)fluoranthene			92.4		%		50-140	10-MAY-13
Benzo(g,h,i)perylene			87.3		%		50-140	10-MAY-13
Benzo(k)fluoranthene			97.4		%		50-140	10-MAY-13
Chrysene			97.9		%		50-140	10-MAY-13
Dibenzo(ah)anthracene			93.3		%		50-140	10-MAY-13
Fluoranthene			94.8		%		50-140	10-MAY-13
Fluorene			95.0		%		50-140	10-MAY-13
Indeno(1,2,3-cd)pyrene			93.0		%		50-140	10-MAY-13
Naphthalene			99.5		%		50-140	10-MAY-13
Phenanthrene			94.4		%		50-140	10-MAY-13
Pyrene			94.9		%		50-140	10-MAY-13
WG1669145-2 CVS								
1-Methylnaphthalene			93.8		%		50-140	15-MAY-13
2-Methylnaphthalene			101.2		%		50-140	15-MAY-13
Acenaphthene			101.9		%		50-140	15-MAY-13
Acenaphthylene			107.2		%		50-140	15-MAY-13
Anthracene			94.2		%		50-140	15-MAY-13
Benzo(a)anthracene			99.3		%		50-140	15-MAY-13
Benzo(a)pyrene			97.3		%		50-140	15-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R2605131								
WG1669145-2 CVS								
Benzo(b)fluoranthene			88.9		%		50-140	15-MAY-13
Benzo(g,h,i)perylene			86.8		%		50-140	15-MAY-13
Benzo(k)fluoranthene			94.9		%		50-140	15-MAY-13
Chrysene			91.2		%		50-140	15-MAY-13
Dibenzo(ah)anthracene			91.9		%		50-140	15-MAY-13
Fluoranthene			98.2		%		50-140	15-MAY-13
Fluorene			101.5		%		50-140	15-MAY-13
Indeno(1,2,3-cd)pyrene			97.8		%		50-140	15-MAY-13
Naphthalene			96.2		%		50-140	15-MAY-13
Phenanthrene			94.1		%		50-140	15-MAY-13
Pyrene			99.6		%		50-140	15-MAY-13
WG1667030-6 DUP		**WG1667030-7**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	13-MAY-13
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	13-MAY-13
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Naphthalene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Phenanthrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	13-MAY-13
WG1667030-2 LCS								
1-Methylnaphthalene			86.8		%		50-140	13-MAY-13
2-Methylnaphthalene			88.7		%		50-140	13-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R2605131								
WG1667030-2 LCS								
Acenaphthene			87.0		%		50-140	13-MAY-13
Acenaphthylene			88.6		%		50-140	13-MAY-13
Anthracene			84.2		%		50-140	13-MAY-13
Benzo(a)anthracene			86.6		%		50-140	13-MAY-13
Benzo(a)pyrene			85.2		%		50-140	13-MAY-13
Benzo(b)fluoranthene			85.7		%		50-140	13-MAY-13
Benzo(g,h,i)perylene			86.4		%		50-140	13-MAY-13
Benzo(k)fluoranthene			80.0		%		50-140	13-MAY-13
Chrysene			84.2		%		50-140	13-MAY-13
Dibenzo(ah)anthracene			83.2		%		50-140	13-MAY-13
Fluoranthene			86.1		%		50-140	13-MAY-13
Fluorene			87.0		%		50-140	13-MAY-13
Indeno(1,2,3-cd)pyrene			86.4		%		50-140	13-MAY-13
Naphthalene			89.7		%		50-140	13-MAY-13
Phenanthrene			84.8		%		50-140	13-MAY-13
Pyrene			86.7		%		50-140	13-MAY-13
WG1667030-3 LCSD		**WG1667030-2**						
1-Methylnaphthalene		86.8	92.5		%	6.4	50	13-MAY-13
2-Methylnaphthalene		88.7	95.4		%	7.3	50	13-MAY-13
Acenaphthene		87.0	93.6		%	7.3	50	13-MAY-13
Acenaphthylene		88.6	95.2		%	7.2	50	13-MAY-13
Anthracene		84.2	87.9		%	4.2	50	13-MAY-13
Benzo(a)anthracene		86.6	90.6		%	4.6	50	13-MAY-13
Benzo(a)pyrene		85.2	92.1		%	7.8	50	13-MAY-13
Benzo(b)fluoranthene		85.7	89.5		%	4.4	50	13-MAY-13
Benzo(g,h,i)perylene		86.4	92.2		%	6.5	50	13-MAY-13
Benzo(k)fluoranthene		80.0	90.2		%	12	50	13-MAY-13
Chrysene		84.2	93.3		%	10	50	13-MAY-13
Dibenzo(ah)anthracene		83.2	90.9		%	8.9	50	13-MAY-13
Fluoranthene		86.1	92.3		%	6.9	50	13-MAY-13
Fluorene		87.0	94.1		%	7.8	50	13-MAY-13
Indeno(1,2,3-cd)pyrene		86.4	90.0		%	4.1	50	13-MAY-13
Naphthalene		89.7	95.7		%	6.4	50	13-MAY-13

Quality Control Report

Workorder: L1298752 Report Date: 15-MAY-13

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R2605131								
WG1667030-3 LCSD		**WG1667030-2**						
Phenanthrene		84.8	91.5		%	7.6	50	13-MAY-13
Pyrene		86.7	92.8		%	6.8	50	13-MAY-13
WG1667030-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	13-MAY-13
2-Methylnaphthalene			<0.030		ug/g		0.03	13-MAY-13
Acenaphthene			<0.050		ug/g		0.05	13-MAY-13
Acenaphthylene			<0.050		ug/g		0.05	13-MAY-13
Anthracene			<0.050		ug/g		0.05	13-MAY-13
Benzo(a)anthracene			<0.050		ug/g		0.05	13-MAY-13
Benzo(a)pyrene			<0.050		ug/g		0.05	13-MAY-13
Benzo(b)fluoranthene			<0.050		ug/g		0.05	13-MAY-13
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	13-MAY-13
Benzo(k)fluoranthene			<0.050		ug/g		0.05	13-MAY-13
Chrysene			<0.050		ug/g		0.05	13-MAY-13
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	13-MAY-13
Fluoranthene			<0.050		ug/g		0.05	13-MAY-13
Fluorene			<0.050		ug/g		0.05	13-MAY-13
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	13-MAY-13
Naphthalene			<0.050		ug/g		0.05	13-MAY-13
Phenanthrene			<0.050		ug/g		0.05	13-MAY-13
Pyrene			<0.050		ug/g		0.05	13-MAY-13
Surrogate: 2-Fluorobiphenyl			92.6		%		50-140	13-MAY-13
Surrogate: p-Terphenyl d14			87.9		%		50-140	13-MAY-13
WG1667030-4 MS		**WG1667030-7**						
1-Methylnaphthalene			88.3		%		50-140	13-MAY-13
2-Methylnaphthalene			90.2		%		50-140	13-MAY-13
Acenaphthene			88.9		%		50-140	13-MAY-13
Acenaphthylene			89.2		%		50-140	13-MAY-13
Anthracene			83.9		%		50-140	13-MAY-13
Benzo(a)anthracene			85.8		%		50-140	13-MAY-13
Benzo(a)pyrene			87.4		%		50-140	13-MAY-13
Benzo(b)fluoranthene			86.2		%		50-140	13-MAY-13
Benzo(g,h,i)perylene			87.6		%		50-140	13-MAY-13
Benzo(k)fluoranthene			83.8		%		50-140	13-MAY-13

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R2605131								
WG1667030-4 MS		**WG1667030-7**						
Chrysene			86.8		%		50-140	13-MAY-13
Dibenzo(ah)anthracene			84.2		%		50-140	13-MAY-13
Fluoranthene			88.1		%		50-140	13-MAY-13
Fluorene			88.1		%		50-140	13-MAY-13
Indeno(1,2,3-cd)pyrene			88.8		%		50-140	13-MAY-13
Naphthalene			90.2		%		50-140	13-MAY-13
Phenanthrene			86.8		%		50-140	13-MAY-13
Pyrene			88.1		%		50-140	13-MAY-13
PH-R511-WT	**Soil**							
Batch R2603190								
WG1667052-1 DUP		**L1298167-14**						
pH		7.51	7.57	J	pH units	0.06	0.3	10-MAY-13
WG1667678-1 LCS								
pH			6.99		pH units		6.7-7.3	10-MAY-13
SAR-R511-WT	**Soil**							
Batch R2602888								
WG1667591-2 DUP		**L1299306-1**						
Calcium (Ca)		39.1	37.3		mg/L	4.6	40	10-MAY-13
Sodium (Na)		3.4	3.5		mg/L	2.9	40	10-MAY-13
Magnesium (Mg)		1.1	1.1		mg/L	4.8	40	10-MAY-13
WG1667591-1 MB								
Calcium (Ca)			<1.0		mg/L		1	10-MAY-13
Sodium (Na)			<1.0		mg/L		1	10-MAY-13
Magnesium (Mg)			<1.0		mg/L		1	10-MAY-13
Batch R2606272								
WG1668721-2 DUP		**L1300401-4**						
Calcium (Ca)		62.8	56.9		mg/L	9.8	40	13-MAY-13
Sodium (Na)		<1.0	<1.0	RPD-NA	mg/L	N/A	40	13-MAY-13
Magnesium (Mg)		<1.0	<1.0	RPD-NA	mg/L	N/A	40	13-MAY-13
WG1668721-1 MB								
Calcium (Ca)			<1.0		mg/L		1	13-MAY-13
Sodium (Na)			<1.0		mg/L		1	13-MAY-13
Magnesium (Mg)			<1.0		mg/L		1	13-MAY-13

Quality Control Report

Workorder: L1298752 Report Date: 15-MAY-13

Client: SPL CONSULTANTS LIMITED (Ottawa)
146 Colonnade Road S Units 17 & 18
Nepean ON K2E 7Y1
Contact: Daniel Charette

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

128939

C of C # 00000

60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910
Fax: (519) 886-9047
Toll Free: 1-800-668-9878

ALS Environmental

CHAIN OF CUSTODY / ANALYTICAL SERVICES REQUEST FORM

Page 1 of 1

Note: all TAT Quoted material is in business days which exclude statutory holidays and weekends. TAT samples received past 3:00 pm or Saturday/Sunday begin the next day.

Specify date required

Service requested:
- 5 day (regular) X
- 3-4 day (25%)
- 2 day TAT (50%)
- Next day TAT (100%)
- Same day TAT (200%)

COMPANY NAME	SPL CONSULTANTS LTD.
OFFICE	17-1146 COLONNADE Rd. S. OTTAWA, ON, K2E 7Y1
PROJECT MANAGER	DANIEL CHARETTE
PROJECT #	1599-710
PHONE	613-228-0065
FAX	613-228-0045
ACCOUNT #	22763
QUOTATION #	2013 MSA
PO #	N/A

CRITERIA — Criteria on report YES ✓ NO ___

Reg 153/04 ☐ Reg 511/09 ☑

Table 1 (2) (3) 4 5 6 7 8 9

TCLP ___ MISA ___ PWQO ___

ODWS ___ OTHER ___ RESIDENTIAL

REPORT FORMAT/DISTRIBUTION

EMAIL ✓ FAX ___ BOTH ___

SELECT: PDF ✓ DIGITAL Excel BOTH ✓

EMAIL 1 dcharette@splconsultants.ca

EMAIL 2 ___

ANALYSIS REQUEST

F

SAMPLING INFORMATION

Sample Date/Time: Date (dd-mm-yy)	Time (24hr) (hh:mm)	TYPE: COMP	TYPE: GRAB	MATRIX: WATER	MATRIX: SOIL	MATRIX: OTHER	SAMPLE DESCRIPTION TO APPEAR ON REPORT	NUMBER OF CONTAINERS	PHCs (F1-F4) + BTEX	PAHs	Metals + Inorganics	metals (short list)	COMMENTS	LAB ID
03-05-2013	—				X		BH13-2 SS7	4	X	X	X		ON Hold at Lab	-1
01-05-2013	—				X		BH13-3 SS1	4	X	X	X		ON " "	-2
06-05-2013	—				X		BH13-4 SS1	4	X	X	X			-3
06-05-2013	—				X		BH13-5 SS1	4	X	X	X			-4
02-05-2013	—				X		BH13-6 SS1A	4	X	X	X		ON HOLD AT LAB	-5
02-05-2013	—				X		BH13-8 SS1	4	X	X	X		ON	-6
02-05-2013	—				X		QAQC1	1				X	ON ↓	-7

L1298752-COFC

PLEASE INDICATE FILTERED, PRESERVED OR BOTH <----- (F, P, F/P)

SUBMISSION #: L1298752.

ENTERED BY: BMARK

DATE/TIME ENTERED: May 8/13 1:20pm

BIN #: B575

SPECIAL INSTRUCTIONS/COMMENTS

THE QUESTIONS BELOW MUST BE ANSWERED FORWATER SAMPLES (CHECK Yes OR No)

Are any samples taken from a regulated DW System? Yes ☐ No ☑

If yes, an authorized drinking water COC MUST be used for this submission.

Is the water sampled intended to be potable for human consumption? Yes ☐ No ☑

SAMPLE CONDITION

FROZEN ☐ COLD ☐ COOLING INITIATED ☑ AMBIENT ☐

MEAN TEMP 15°C

OBSERVATIONS Yes ☐ No ☐ If yes add SIF

INIT

SAMPLED BY: B. Ritchie / K. Linton	DATE & TIME	RECEIVED BY: BMARK	DATE & TIME May 8/13 12:40
RELINQUISHED BY:	DATE & TIME 08/05/2013 12h00	RECEIVED AT LAB BY:	DATE & TIME

Notes

1. Quote number must be provided to ensure proper pricing
2. TAT may vary dependent on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs.
3. Any known or suspected hazards relating to a sample must be noted on the chain of custody in comments section.