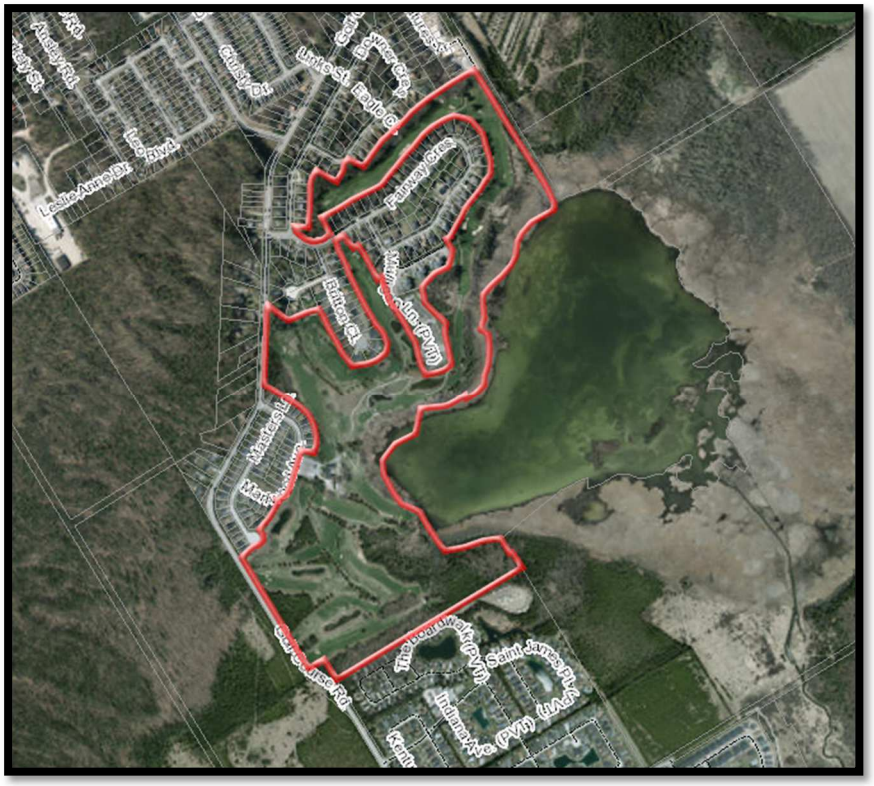
MARLWOOD GOLF & COUNTRY CLUB

31 MARLWOOD AVENUE, WASAGA BEACH, ONTARIO

PRELIMINARY GEOTECHNICAL INVESTIGATION

JANUARY 07, 2020



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PRELIMINARY GEOTECHNICAL INVESTIGATION

MARLWOOD GOLF & COUNTRY CLUB

PRELIMINARY REPORT

PROJECT NO.: 151-62944-00

DATE: JANUARY 07, 2020

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January 07, 2020

Marlwood Golf & Country Club
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Attention: Marlwood Golf & Country Club

Dear Mr. E. Tjeerdsma,

Subject: 31 Marlwood Avenue, Wasaga Beach, Ontario - Preliminary Geotechnical Investigation

WSP Canada Inc. was retained to update the Preliminary Geotechnical Investigation at the above noted site. The purpose of the preliminary investigation is to identify the subsurface conditions at the borehole locations and to provide design recommendations toward the design of the proposed development, as well as identify any potential geotechnical related constraints which may be encountered during construction.

Kind regards,

Kent Malcolm, P.Eng.
Senior Geotechnical Engineer

Gord Jarvis
Team Lead, Environment

MKM/ham

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1 INTRODUCTION

SPL Consultants Limited now operating as **WSP Canada Inc. (WSP),** was retained by R.J. Burnside and Associates Limited on behalf of the Marlwood Golf & Country Club to provide an update to the Preliminary Geotechnical Investigation for the proposed residential development of Marlwood Golf & Country Club located at 31 Marlwood Avenue, in Wasaga Beach, Ontario.

The scope of this preliminary investigation update was to obtain information about the subsurface conditions through the advancement of twelve (12) boreholes and based upon the findings of the boreholes ultimately provide recommendations herein pertaining to the following:

- General soil conditions;
- Soil parameters for excavations for grading, utilities, subdivision roads;
- Excavation and backfill;
- Groundwater levels and preliminary comments for a EASR or PTTW;
- Soil bearing capacity; and,
- Site seismic classification.

This report deals with geotechnical issues only.

This report is provided based on the terms of reference presented above and, on the assumption, that the design will be in accordance with the applicable codes and standards. If there are any changes in the design features relevant to the geotechnical analyses, or if any questions arise concerning the geotechnical aspects of the codes and standards, this office should be contacted to review the design.

The site investigation and recommendations follow generally accepted practice for Geotechnical Consultants in Ontario. The format and contents are guided by client specific needs and economics and do not conform to generalized standards for services. Laboratory testing follows ASTM or CSA Standards or modifications of these standards that have become standard practice.

This report has been prepared for R.J. Burnside and Associates Limited on behalf of Marlwood Golf & Country Club. Third party use of this report without WSP consent is prohibited.

2 SITE BACKGROUND AND PROJECT DESCRIPTION

The subject property (site) is identified by civic address 31 Marlwood Avenue in the Town of Wasaga Beach. The site is situated on a relatively flat to gently sloping terrain, and abuts Golf Course Road, Marlwood Avenue and Masters Lane on the west side, Birdie Court, Britton Court, Mulligan Lane on the north side. The residential development of Park Place is located along the south boundary and Marl Lake is located along the east boundary. The property currently occupies Marlwood Golf and Country Club.

It is understood that the proposed development will consist of single-family residential dwellings and will include internal roads and associated municipal sewers and water supply. Although the previously proposed new clubhouse is not depicted on the updated plans, we currently understand that the construction of a Storm Water Management Pond (SWMP) and Pumping Station are now being considered, within Blocks 52 and 54, respectively. The layout plan of the proposed development as shown on the R.J. Burnside preliminary drawings are provided in ***Appendix A***. Neither detailed drawings nor Plan and Profile drawings have not been prepared yet, as such, the proposed footing founding elevations of the proposed construction and the invert of the site services is not known to us at the time of writing this report.

3 INVESTIGATION METHODOLOGY

The field investigation consisted of drilling twelve (12) boreholes (BH15-01 to BH15-12), at the site between September 3 and 9, 2015. The locations of each site are shown on the attached ***Borehole Location Plan – Figure 1.***

The boreholes were advanced to depths ranging from 5.2 metres below site grades (mbgs) to 8.2 mbgs. The boreholes were drilled with hollow stem continuous flight auger equipment.

Drilling equipment was supplied and operated by a drilling sub-contractor under the direction and supervision of WSP personnel. Samples were retrieved at regular intervals with a 50 mm O.D. split-barrel sampler driven with a hammer in accordance with the Standard Penetration Test (ASTM D 1586) method. This sampling method recovers samples from the soil strata, and the number of blows required to drive the sampler a 0.3 m depth into the undisturbed soil (SPT 'N' values) gives an indication of the compactness condition or consistency of the sampled soil material. The SPT 'N' values are indicated on the ***Borehole Logs - Enclosures 1-12***.

Soil samples were visually classified in the field and re-evaluated by a senior engineer in our laboratory. All soil samples were tested for moisture contents. Laboratory Grain Size Analyses were carried out on representative samples and the results are provided in ***Laboratory Results - Enclosures 13.***

Water level observations were made during the drilling and in the open boreholes upon the completion of drilling operations. Monitoring wells (50mm diameter) were installed at five (5) borehole locations; WSP returned to the site after the drilling operations to obtain groundwater levels at the site.

Selected soil samples were subjected to chemical analysis to assess the environmental quality of the soils to assist in determining off-site disposal options. Chemical testing results are presented in ***Appendix C.***

4 SITE AND SUBSURFACE CONDITIONS

Details of the subsurface conditions encountered are presented on the Borehole Logs ***(Enclosures 1-12)*** and summarized in the following sections. It is noted that subsurface conditions can change between boreholes and the details provided below refer to soil conditions that were encountered at the borehole locations only.

4.1 GENERAL SUBSURFACE CONDITIONS

Based on the results of the field investigation, the subsurface conditions at the borehole locations generally comprised a surficial layer of topsoil. The surficial cover was underlain by both native cohesive and non-cohesive deposits, which extended beyond the final depth investigated. Some of the non-cohesive deposits appeared to be reworked and as such are considered to be Disturbed Soils.

4.1.1 SURFICIAL COVER

Topsoil was encountered surficially in each of the boreholes; while Disturbed Soils were encountered below the topsoil at BH15-01, BH15-05 and BH15-07. The Disturbed Soils comprised silty sand with trace organic matter and roots. A summary of the thicknesses at each of the borehole locations is summarized below.

It should be noted that topsoil/Disturbed Soil quantities should not be calculated from the borehole information, as large variations in depth may exist between boreholes. A detailed topsoil/Disturbed Soils layer thickness survey is required to determine an accurate evaluation of quantity.

BOREHOLE	MATERIAL TYPE	DEPTH (cm)	MATERIAL THICKNESS (cm)
15-01	Topsoil	23	23
	Disturbed Soil	23-80	57
15-02	Topsoil	18	18
15-03	Topsoil	13	13
15-04	Topsoil	13	13
15-05	Topsoil	10	10
	Disturbed Soil	10-80	70
15-06	Topsoil	15	15
15-07	Topsoil	15	15
	Disturbed Soil	15-60	45
15-08	Topsoil	15	15
15-09	Topsoil	13	13
15-10	Topsoil	5	5
15-11	Topsoil	18	18
15-12	Topsoil	20	20

4.1.2 COHESIVE SOIL

A cohesive deposit of clayey silt resembling Marl was encountered in boreholes BH15-02, BH15-04 and BH15-06 to BH15-12, at varying depths but generally underlying the topsoil and/or Disturbed Soils. The clayey silt, Marl, included some sand to sandy, trace organic matter and occasional shell fragments. The Marl was beige in colour, moist and extended to depths ranged between 0.3 meters below existing ground surface (mbgs) to 2.3 mbgs.

Standard Penetration Tests performed in the Marl deposit yielded 'N'-values generally ranging from 5 to 16 blows per 0.3 m penetration indicating a soft to firm condition. The measured natural moisture content of the samples from these materials ranges from 8% to 41%, indicating moist to saturated condition.

It should be noted that the Marl deposit encountered throughout the site is not considered suitable for supporting structures such as buildings and roads. These deposits should be completely removed in areas where such structures are proposed.

A grain size analyses of one sample of the cohesive deposit acquired from BH15-04/SS4 was completed and the gradation curve is presented in ***Enclosure 13***. A review of the grain size analysis indicates the following ranges of clay, silt, sand and gravel percentages:

- Gravel: 0%
- Sand: 20%
- Silt: 52%
- Clay: 28%

4.1.3 NON-COHESIVE SOIL

A non-cohesive deposit comprised of sand to silty sand and sand and gravel was encountered in each of the boreholes underlying the surface cover and cohesive Marl deposits. Marl seams or pockets within the non-cohesive deposit between 3 cm and 10 cm in thickness were encountered in BH15-05, BH15-06 and BH15-09, as deep as 3.1 mbgs.

Standard Penetration Tests performed of the non-cohesive deposits comprised predominantly of sand yielded 'N'-values generally ranging from 2 to 100 blows per 0.3 m penetration indicating a very loose to very dense condition. More importantly, very loose to loose conditions were encountered within the non-cohesive sand deposits at the depths tabulated below.

BOREHOLE	MATERIAL TYPE	N VALUES	DEPTH (cm)	MATERIAL THICKNESS (cm)
15-03	Sand	7 - 8	10 - 150	140
15-05	Sand some clayey silt layers	2 - 4	80 - 350	270
15-06	Sand some clayey pockets	5	310 - 390	80
15-07	Sand some gravel	4	460 - 540	90
15-08	Sand	4	20 - 80	60
15-09	Sand	5	10 - 80	70
15-10	Sand some silt trace clay	5	300 - 380	80
15-11	Sand some silt trace gravel	2 - 6	230 - >520	>290

The measured natural moisture content of the predominant sand samples ranged from 2% to 27%, indicating moist to saturated condition.

Grain size analyses of samples of the non-cohesive deposits predominantly of sand were acquired from BH15-07/SS6 and BH15-09/SS5 were completed and the gradation curves are presented in ***Enclosure 13***. A review of the grain size analyses indicates the following ranges of clay, silt, sand and gravel percentages:

- Gravel: 0%
- Sand: 95% to 96%
- Silt: 2% to 5%
- Clay: 0% to 2%

Standard Penetration Tests performed of the non-cohesive deposits predominantly comprised of sand and gravel at BH15-01, BH15-02, BH15-04, BH15-05 and BH15-12, yielded 'N'-values generally ranging from 20 to 88 blows per 0.3 m penetration indicating a compact to very dense condition. The measured natural moisture content of the samples from these materials ranged from 1% to 18%, indicating moist to saturated condition.

Grain size analyse of a sample of the non-cohesive deposits predominantly of sand and gravel were acquired from BH15-02/SS5 was completed and the gradation curve is presented in ***Enclosure 13***. A review of the grain size analyses indicates the following ranges of clay, silt, sand and gravel percentages:

- Gravel: 45%
- Sand: 48%
- Silt: 5%
- Clay: 2%

4.2 GROUNDWATER

During drilling and at the completion of drilling, groundwater and/or wet soil conditions were found in all boreholes at various depths as indicated in the individual borehole logs (***Enclosures 1-12***).

The water levels observed in the monitoring wells installed at borehole locations BH 15-01, BH 15-05, BH 15-07, BH 15-09 and BH 15-12 between September 3rd and August 23rd, 2016 were recorded at depths ranging between 0.99 m (BH15-05) and 4.91 m (BH15-09) below the existing ground surface and as high as an approximate elevation of 186.63 m (BH15-01) on March 31, 2016.

A summary of the groundwater conditions encountered at the site are summarized in the tables below.

BOREHOLE	DATE	GROUNDWATER DEPTH (MBGS)	MEASUREMENT SOURCE
15-01	September 9, 2015	~3.1	Open Borehole
15-02	September 9, 2015	~2.2	Open Borehole
15-03	September 8, 2015	~3.1	Open Borehole
15-04	September 8, 2015	~2.5	Open Borehole
15-05	September 8, 2015	~1.4	Open Borehole
15-06	September 4, 2015	~2.0	Open Borehole
15-07	September 4, 2015	~3.2	Open Borehole
15-08	September 3, 2015	~4.0	Open Borehole

BOREHOLE	DATE	GROUNDWATER DEPTH (MBGS)	MEASUREMENT SOURCE
15-09	September 3, 2015	~4.8	Open Borehole
15-10	September 3, 2015	~2.4	Open Borehole
15-11	September 4, 2015	~1.7	Open Borehole
15-12	September 9, 2015	~2.1	Open Borehole

BOREHOLE:	BH15-01		BH15-05		BH15-07		BH15-09		BH15-12	
GROUND ELEVATION (masl)	~189		~187		~187		~190		~188	
	Groundwater Level Measurements									
DATE	mbgs	masl	mbgs	masl	mbgs	masl	mbgs	masl	mbgs	masl
Oct. 14, 2015	3.13	185.87	1.48	185.52	3.22	183.78	4.87	185.13	2.20	185.80
Dec. 31, 2015	3.07	185.93	1.35	185.65	3.19	183.81	4.91	185.09	2.12	185.88
Jan. 28, 2016	3.01	185.99	1.34	185.66	3.16	183.84	4.91	185.09	2.06	185.94
Feb. 29, 2016	2.96	186.04	1.28	185.72	3.12	183.88	4.88	185.12	2.02	185.98
Mar. 31, 2016	2.37	**186.63**	**0.99**	186.01	2.77	184.23	4.54	185.46	1.44	185.56
Apr. 30, 2016	2.51	186.49	1.15	185.85	3.17	183.83	4.38	185.62	1.56	185.44
May 31, 2016	2.70	186.30	1.25	185.75	3.27	183.73	4.44	185.56	1.74	185.26
Jun. 10, 2016	2.75	186.25	1.24	185.76	3.09	183.91	4.48	185.52	1.80	185.20
Jun. 30, 2016	2.85	186.15	1.33	185.67	3.11	183.89	4.50	185.50	1.91	185.09
Jul. 31, 2016	2.95	186.05	1.44	185.56	3.14	183.86	4.56	185.44	2.04	185.96
Aug. 23, 2016	3.02	185.98	1.42	185.58	3.13	183.87	4.62	185.38	2.11	185.89

It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to major weather events.

5 DISCUSSIONS/RECOMMENDATIONS

5.1 GENERAL

The following recommendations for the proposed site development are based on the information obtained from the borehole investigation and laboratory testing, which we believe fairly represents the subsurface conditions of the site. These recommendations are intended for the guidance of the design engineer to establish constructability and should not be construed as instructions to contractors. If significant differences in the subsurface conditions described above are found, we request to be contacted immediately to review and revise our findings and recommendations, if necessary.

The construction methods described in this report must not be considered as being specifications or recommendations to the prospective contractors, or as being the only suitable methods. Prospective contractors should evaluate all the information, obtain additional subsurface information as they might deem necessary and should select their construction methods, sequencing and equipment based on their own experience in similar ground conditions. The readers of this report are also reminded that the conditions are known only at the borehole locations and in view of the generally wide spacing of the boreholes, conditions may vary significantly between boreholes.

5.2 SITE BACKGROUND

The subject property is situated on a relatively flat to gently sloping terrain, and abuts Golf Course Road, Marlwood Avenue and Masters Lane on the west side, Birdie Court, Britton Court, Mulligan Lane on the north side. The residential development of Park Place is located along the south boundary and Marl Lake is located along the east boundary. The property currently occupies Marlwood Golf and Country Club.

Based on the results of the field investigation, the subsurface conditions at the borehole locations generally comprised a surficial layer of topsoil and Disturbed Soils. The surface cover was underlain by native cohesive and non-cohesive deposits of clayey silt, Marl, sand to silty sand and sand and gravel. Sandy soils predominate the site and are encountered in all boreholes. Marl was encountered in boreholes BH15-02, BH15-04 and BH15-06 to BH15-12 and extended to depths ranged between 0.3 mbgs to 2.3 mbgs surface.

Groundwater levels varied across the site and measured as high as 1.4 mbgs.

It is understood that the proposed development will consist of single-family residential dwellings and will include internal roads, associated municipal sewers and water supply. Although the previously proposed new clubhouse is not included in the updated Preliminary drawings, we understand that the construction of a SWMP and Pumping Station is being considered within Blocks 52 and 54, respectively. The layout plan of the proposed development as shown on the R.J. Burnside preliminary drawings are provided in ***Appendix A***. Neither detailed drawings nor Plan and Profile drawings have not been prepared yet, as such, the proposed footing founding elevations of the proposed construction and the invert of the site services is not known to us at the time of writing this report.

5.3 SITE PREPARATION AND GRADING

Removal of all topsoil, Disturbed Soils and/or Marl as well as any fill materials in both cut and fill areas will be required to facilitate future development of the site. To avoid settlement of the proposed structures, the Disturbed Soils and Marl deposits must be completely removed.

The thicknesses and extents of unsuitable soil should be further refined across the site, it is therefore recommended that a test pit program be completed at the site by WSP prior to construction. Regarding the reuse of the site topsoil

and fill, these materials may be reused in landscaping applications or other non-structural fill applications. WSP should be contacted to review all proposed topsoil and fill reuse on site.

Any fill required for re-grading the site or backfill should be select, clean material, free of topsoil, organic or other foreign and unsuitable matter. It should be noted that some of the excavated native materials will be wet and must be aerated and left to dry out before they can be used as backfill. Non-structural fill should be placed in thin layers and compacted to at least 95% of its SPMDD. The degree of compaction should be increased to 98% within the top 1.0 m of the subgrade, or as per Town Standards. The compaction of the new fill should be checked by frequent field density tests.

It is unknown if engineered fill will be required at the site to facilitate grading. If fill thicknesses greater than 1 m are required at the site, WSP should be contacted to provide input toward potential long-term consolidation of the cohesive deposits.

After the completion of the required stripping and removal of all unsuitable materials, the sub-grade should be proof-rolled and inspected by experienced WSP geotechnical engineering personnel. The proof-rolling and compaction of the exposed sub-grade is recommended to be conducted using a vibratory compactor with a minimum static weight of 10 tonnes. The proof-rolling program should consist of a minimum of six (6) passes per unit area and be tested to assure that the sub-grade is compacted to a minimum of 98% of the exposed material's Standard Proctor Maximum Dry Density (SPMDD). Any loose/soft or wet areas identified at the time of proof-rolling that cannot be uniformly compacted are recommended to be sub-excavated and backfilled with approved engineered fill consistent with the recommendations provided in ***Appendix B***.

Where engineered fill is required to develop the design grades and elevations or for use in backfilling excavations created through the removal of unsuitable materials or soils as described above, the excavated on-site materials may be re-used, subject that these are free of organic and other unsuitable materials and have appropriate moisture content. Boulders or cobbles greater than 200 mm in size should be removed from the fill prior to or during placement.

Alternatively, Ontario Provincial Standard Specification (OPSS) Granular B – Type I, OPSS Select Subgrade Material (SSM) or approved equal may be used.

All fill materials imported to the site must meet all applicable municipal, provincial and federal guidelines and requirements associated with environmental characterization of the materials.

Engineered fill is to be placed in maximum 200 mm thick loose lifts under full time supervision of qualified geotechnical personnel. Each lift is to be uniformly compacted to achieve a minimum of 100% of the material's SPMDD. Additional information related to the placement and compaction of engineered fill can be found in ***Appendix B***.

5.4 TEMPORARY EXCAVATIONS AND GROUNDWATER CONTROL

The details for the proposed services installations are not available at the time of preparing this report. The recommendations provided below assume that conventional depths for services will be carried out (approximately 3 m to 5 m below existing site grades).

Based upon the subsurface conditions at the borehole locations, excavations can be carried out with heavy hydraulic back-hoes. It is recommended that provision be carried in the contract for the excavation and disposal of obstructions on site, including cobbles and boulders.

All temporary excavations must be carried out in accordance with the Occupational Health and Safety Act (OHSA). In accordance with OHSA, the soils (assuming they are above the groundwater table or properly dewatered) would be classified as a Type 3 soil. Below the groundwater level the soil would be classified as a Type 4 soil. If space limitations exist due to adjacent structures or facilities, consideration could be given to the construction of a

temporary support system to provide protection to the structures and/or facilities. All excavated spoil should be placed at least the depth of the trench away from the edge of the trench for safety reasons.

As noted above, at the time of investigation, the groundwater levels were encountered between 1.4 mbgs and 4.9 mbgs below the existing grades. Dewatering will be required for any excavation in the sand to silty sand, or sand and gravel deposits below the water table. Where the anticipated trench base is below the groundwater level, positive dewatering such as well points/eductors will be required to lower the water table to at least 1.0 m below the excavation base. Otherwise, it will result in an unstable base and flowing sides.

As such, depending on site grading requirements and excavation depths there is a strong likelihood that dewatering will be required at the Site and an Environmental Activity and Sector Registry (EASR) or a Permit to Take Water (PTTW) will be required for the excavations for general servicing and deep replacement of unsuitable soil / fill. It should be noted that the requirements for a PTTW, issued by the Ontario Ministry of the Environment and Climate Change (MOECC) have recently changed; daily water takings of 50 m^3/day require registration of the MOECC EASR database, and daily water takings of 400 m^3/day require a PTTW. Both the EASR and the PTTW require a hydrogeological assessment report to support the specific application. In addition, a permit to discharge the collected water to the sewer system/water body will be required from the applicable agency.

In the planning of the excavation and shoring of trenches, the presence of any adjacent existing buried service pipes should be considered. In addition to the stability of any existing adjacent pipes, which must be maintained without detrimental settlements; the backfill in these trenches and especially the granular bedding surrounding the existing service pipes, manholes, etc. may be a source of water, which, if encountered, must be dealt with.

In the sand to silty sand deposits where the soil exhibits dilatancy during construction and due to the high groundwater levels encountered, the soils may have to be stabilized. Any form of soil stabilization and/or dewatering to facilitate construction (e.g. well points, etc.) must be designed and performed being cognizant of the fact that dewatering may induce settlements of existing structures in the vicinity, including existing service pipes. Although unlikely, basal instability could possibly occur if a relatively coarser stratum (such as silty sand with gravel) under excess hydrostatic pressure occurs below the base of an excavation comprised of relatively impervious soils (e.g. sandy silt/clayey silt/silty clay). Should this occur, these layers must be depressurized. For this reason, the bases of the excavated trenches should be monitored for evidence of basal heave.

For all these reasons, it would be prudent to open the trenches in relatively short sections and carry out the laying of the pipe and backfilling expeditiously in order to reduce the length of time the trench would be open. It is further recommended that the excavations for service trenches below the groundwater table be carried out in short sections using a suitable ‘geofabric’ below the bedding (fine migration prevention) and backfilling the trench section immediately after service placement.

We provide the following soil parameters to determine the earth pressure acting on the sheeting and bracing.

γ = Unit weight of soil above groundwater table, assuming 20 kN/m^3;

γ_1 = Submerged unit weight of soil below water table, assuming 10 kN/m^3;

A determination of the actual lateral earth pressure can be provided, if required, after design has been finalized.

5.5 PIPE BEDDING AND COVER

The native soils above the groundwater level, or properly dewatered if encountered below the groundwater level, will provide adequate support for the sewer pipes and allow the use of normal Class B type bedding. The recommended minimum thickness of granular bedding below the invert of the pipes is 150 mm. The thickness of the bedding may, however, be increased depending on the pipe diameter or in accordance with local standards or if wet or weak subgrade conditions are encountered, especially when the soil at the trench base level consists of wet, dilatant silt. The bedding material should consist of well graded granular material such as Granular ‘A’ or equivalent. After installing the pipe on the bedding, a granular surround of approved bedding material, which extends at least 300 mm above the obvert of the pipe, or as set out by the local authority or municipality, should be

placed. It is recommended that WSP be on site during excavations to assess the suitability of the subgrade materials to support the pipes.

If localized wet trench conditions are encountered, a uniformly graded clear stone may be used provided a suitable, approved filter fabric (geotextile) is placed in conjunction with the clear stone. The geotextile must extend underneath the clear stone, along the sides of the trench, and wrapped on top of the clear stone such that **the clear stone is fully wrapped by the geotextile.** A minimum geotextile overlap of 1 m is required; alternatively stitching of the geotextile could be considered.

Alternatively, localized, wet and unstable soils encountered within generally stable soil zones can be commonly stabilized by 'punching' a 50 mm well graded crusher run limestone pad into the soft subgrade prior to bedding placement. The thickness of the 'pad' will depend on field conditions and should be examined by WSP personnel during the construction operations.

In areas where the soils become wet, unstable and dilatant (easily disturbed) such as saturated silts, careful construction techniques and dewatering should be followed, as discussed earlier. If the pipes are laid on disturbed, dilatant soil, significant post-construction settlements could occur after the trenches are backfilled. In such cases, the bottom of the trenches will have to be stabilized by dewatering.

Sewer pipe bedding recommended for wet, unstable soils is a Class 'A' bedding. The rigid concrete bedding (lean mix) should be laid from manhole to manhole and this concrete 'pad' may sit directly on disturbed native subgrade. In isolated situations, where exposed subgrade tends to be wet and unstable, the concrete 'pad' should be poured on a HL-6 stone layer. It is recommended that the HL-6 bed be encircled with an approved filter fabric to prevent the migration of fines.

Where the sewer pipe is placed in water bearing soils below the water table, the joints connecting the sewer sections should be very well sealed to prevent piping of fines into the sewer pipe and manhole catch basin risers.

5.6 TRENCH BACKFILL

Approved excavated soils can be used as construction backfill provided their moisture content at the time of placement is within 2% of the optimum moisture content and that the soils do not contain organic content. Some moisture conditioning may be required is excess pore air and pore water pressures are generated during compaction process. If bulking is noted, delaying the placement of subsequent lifts may be necessary, to allow for the dissipation of such induced excess pressures. Boulders or cobbles greater than 200 mm in size should be removed from the trench backfill. WSP should be on site during all trench backfilling operations to confirm the suitability of the material being used.

For the granular soils, smooth drum type vibratory rollers are recommended. Cohesive soils, if encountered, should be compacted with sheepsfoot type vibratory compactors. The trench backfill should be placed in maximum 0.3 m lift thickness and compacted to at least 98 percent of its SPMDD. Trench backfilling operations should be avoided during freezing weather.

It is preferable that the native soils be re-used from approximately the position at which they are excavated so that frost response characteristics of the soils after construction remain essentially similar. If required, consideration may also be given to backfilling trenches with a well graded, compacted granular soil such as Granular 'B' material or Select Subgrade Material. The use of such material, if thoroughly compacted, would reduce the post construction settlements to a negligible amount and may also expedite the compaction process. In this instance, however, frost response characteristics of non-frost susceptible granular fill and the frost susceptible indigenous soils would be different giving rise to differential frost heave. In this case, it would be prudent to use as backfill the on-site excavated naturally occurring soils to match the existing conditions within the frost zone (i.e. within about 1.5 m below the road surface elevation) as well as to provide a frost taper zone (i.e. to provide a zone of taper to prevent a sudden change in frost heave characteristics to reduce the effects of frost heave).

It should be noted that the excavated soils are subject to moisture content increase during wet weather which would make these materials too wet for adequate compaction. Stockpiles should therefore be compacted at the surface or be covered with tarpaulins to help minimize moisture uptake.

The degree of compaction of the trench backfill under the roads or other areas where future settlements would be of concern should be at least 98% Standard Proctor Maximum Dry Density (SPMDD) within 2 m of the road surface. The granular pavement sub-base and base materials should be compacted to at least 100% of their respective SPMDD.

5.7 PAVEMENT DESIGN

The investigation has shown that the predominant subgrade soils encountered at the site, after stripping any topsoil, Disturbed Soils, Marl, organic matter or otherwise unsuitable soil will be non-cohesive deposits, or possibly newly compacted fill.

Prior to the placement of granular materials as part of the pavement structure, the subgrade should be prepared and heavily proof-rolled under the supervision of WSP. Any poorly performing areas should be sub-excavated and replaced with either granular earth fill approved by WSP or imported Granular B, Type I material conforming to the requirements of OPSS.

Based on the above and if traffic usage will be residential minor local, the following minimum pavement thickness is recommended:

PAVEMENT LAYER	COMPACTION REQUIREMENTS	LOCAL ROADS	COLLECTOR ROADS
Asphaltic Concrete	92.0 to 96.5% Maximum Relative Density (MRD)	40 mm HL 3 or	50 mm HL 3
		50 mm HL 8	90 mm HL 8
OPSS Granular A Base	100% SPMDD	200 mm	200 mm
OPSS Granular B	100% SPMDD	300 mm	400 mm

We note that the pavement design noted above should be considered preliminary only. If required, a more refined pavement structure design can be performed based on specific traffic data and design life requirements and will involve specific laboratory tests to determine frost susceptibility and strength characteristics of the subgrade soils, as well as specific data input from the client.

The site subgrade and weather conditions (i.e. if wet) at the time of construction may necessitate the placement of geogrid/filter fabric and/or thicker granular sub-base layer in order to facilitate the construction. Furthermore, heavy construction equipment may have to be kept off the newly constructed roads before the placement of asphalt and/or immediately thereafter, to avoid damaging the weak subgrade by heavy truck traffic.

Installation of full-length subdrains is required on all roads. The subdrains should be properly filtered to prevent the loss of (and clogging by) soil fines.

All paved surfaces should be sloped to provide satisfactory drainage towards catch basins. All water trapped in the granular sub-base materials should be drained rapidly towards subdrains or other interceptors.

5.8 PRELIMINARY FOUNDATION RECOMMENDATIONS

Details of the proposed development such as underside of footing elevations were not available at the time when this report was prepared. When this information is available, the recommendations provided below should be reviewed by WSP to confirm that the recommendations are still valid based on the design information.

Currently, it is our understanding that single family residential dwellings are proposed to be constructed as well as a Pumping Station situated in Block 54.

Based on the borehole information, the proposed structures can be supported by conventional spread and strip footings founded on either undisturbed native soils or engineered fill.

5.8.1 FOOTINGS ON NATIVE SOILS

Boreholes BH15-01 to BH15-05 and BH15-08 to BH15-10 and BH15-12 advanced in the proposed residential development area revealed native sand and sand and gravel below the surface cover and deposits of Disturbed Soil and/or Marl. While boreholes BH15-06 and BH15-07 were advanced in the area that was previously being considered for a clubhouse relocation which revealed subsurface conditions comprised of similar materials.

Although the Pumping Station was not included at the time of the geotechnical field work, Borehole BH15-05 was situated relatively close to the proposed Pumping Station. Borehole BH15-05, revealed loose to very loose sand extended to an approximate depth of 3.5 mbgs. It is currently understood that the inlet for the station will be at an elevation of approximately 183.25 m which will require a cut in the order of 4.0 mbgs.

Based upon field testing and observations, it is our considered opinion that proposed structures may be supported by conventional spread and strip footings founded on the compact undisturbed sand and sand and gravel. Furthermore, Standard Penetration Testing has established that a Design Bearing Resistance of at least 75 kPa at the Serviceability Limit States (SLS), and for a factored geotechnical resistance of 125 kPa at the Ultimate Limit States (ULS).

The bearing values and the corresponding founding elevations at the borehole locations are summarized on Table 1.

BH NO.	MATERIAL	BEARING CAPACITY AT SLS (KPA)	FACTORED GEOTECHNICAL RESISTANCE AT ULS (KPA)	MINIMUM DEPTH BELOW EXISTING GROUND (M)	NOTE (IF ANY)
BH15-01	Sand	100	150	0.9	Reworked soil in area
BH15-02	Sand	150	225	0.9	Marl in area
BH15-03	Sand	150	225	1.6	Fill in area
BH15-04	Sand	150	225	2.1	Marl in area
BH15-05	Sand	150	225	3.5	Very loose soil in area
BH15-06	Sand	150	225	0.9	Marl in area
BH15-07	Sand	100	150	1.8	Marl in area

BH NO.	MATERIAL	BEARING CAPACITY AT SLS (KPA)	FACTORED GEOTECHNICAL RESISTANCE AT ULS (KPA)	MINIMUM DEPTH BELOW EXISTING GROUND (M)	NOTE (IF ANY)
BH15-08	Sand	100	150	1.8	Marl in area
BH15-09	Sand	150	225	2.4	Marl in area
BH15-10	Sand	150	225	0.6	Marl in area
BH15-11	Sand	75	125	0.7	Marl in area
BH15-12	Sand	150	225	1.1	Marl in area

Variations in the soil conditions are expected in between the borehole locations, and during construction, the soil bearing pressures should be confirmed by the Geotechnical Engineer.

Foundations designed to the specified bearing capacities at the serviceability limit states (SLS) are expected to settle less than 25 mm total and 20 mm differential.

5.8.2 FOUNDATIONS ON ENGINEERED FILL

For the construction of single-family dwellings, where the grades need to be raised, proposed structures may be supported by spread and strip footings founded on engineered fill. The engineered fill can provide a geotechnical reaction of 75 kPa at SLS, and a factored geotechnical resistance of 125 kPa at ULS, provided the requirements for the Construction of Engineered Fill as provided in ***Appendix B*** are adhered to.

Prior to the placement of the engineered fill, all unsuitable soils and surficially softened/loosened native soils must be removed and the exposed subgrade proof-rolled. Any soft spots revealed during proof-rolling must be sub-excavated and re-engineered. To reduce the risk of improperly placed engineered compacted fill, full-time supervision of the contractor is essential.

Where engineered fill is used to support the foundations, the floor slab can also be supported by engineered fill.

5.8.3 GENERAL FOUNDATION COMMENTS

All footings exposed to seasonal freezing conditions should be provided with at least 1.5 m of earth cover or equivalent thermal insulation against frost. It is recommended to keep footings as high as possible to avoid or minimize penetration below groundwater levels while considering the minimum frost cover requirement.

Where it is necessary to place footings at different levels, the upper footing must be founded below an imaginary 10 horizontal to 7 vertical line drawn up from the base of the lower footing. The lower footing must be installed first to help minimize the risk of undermining the upper foundations.

Silty soils at the base of footings can be easily disturbed by construction machinery and foot traffic or lose their strength in contact with surface water. We recommend that an allowance be made for placing a 50-mm thick skim coat of low-strength concrete on the founding subgrade immediately after its approval, to prevent its disturbance by construction activities and from ground or surface water, where necessary.

During winter construction, foundations and slab on grades must not be poured on frozen soil. Foundations must be adequately protected always from cold weather and freezing conditions.

In the vicinity of the existing buried utilities, all footings must be lowered to undisturbed native soils, or alternatively the services must be structurally bridged.

Based upon preliminary findings, dewatering will be required for any excavation in the sand to silty sand, or gravelly sand below the water table level. Otherwise, it will result in an unstable excavation base and flowing sides. The groundwater table must be lowered one (1) meter below the lowest excavation level. Test pits should be carried out in the area prior to the excavation to further explore the groundwater and seepage conditions. A specialized dewatering contractor should install the dewatering system.

Standard geotechnical site investigations will not determine dewatering requirements for situations where there is planned excavation or construction below the groundwater table. To quantify conditions for dewatering purposes and to apply for required permits, both for construction and long-term drainage, hydrogeological study and carefully controlled pumping tests are necessary to adequately engineer a construction dewatering system and/or permanent groundwater control. WSP advises that the geotechnical conditions at this site require such hydrogeological study and analysis. The company is qualified and prepared to undertake this analysis upon proper authorization. Otherwise WSP accepts no responsibility for the design and construction of the dewatering details.

Depending on site grading requirements and excavation depths an Environmental Activity and Sector Registry (EASR) or a Permit to Take Water (PTTW) may be required for the excavations. A hydrogeological investigation would assess potential dewatering rates and determine the need for an EASR or PTTW from the MOECC, and is recommended for this site.

It is essential that imported free-draining OPSS Granular 'B' type fill be used as backfill against foundation walls and used as 'under-floor' (structural fill). Backfilling of the footing wall excavations (and under-floor) is recommended to be placed in 200 mm thick lifts, compacted to 100% SPMDD to proposed sub-grade elevations (***Figure 2***).

It should be noted that the recommended geotechnical resistances have been calculated by WSP from the borehole information for the preliminary design stage only. Additional input may be required as new design information becomes available and is refined. For example, more specific information is available with respect to conditions between boreholes when construction is underway. In this regard, the interpretation between boreholes and the recommendations of this report must therefore be checked through field inspections provided by WSP to validate the information for use during the construction stage.

5.9 EARTHQUAKE CONSIDERATIONS

The parameters for determination of Site Classification for Seismic Site Response are set out in Table 4.1.8.4A of the Ontario Building Code (2012). The classification is based on the determination of the average shear wave velocity in the top 30 meters of the site stratigraphy, where shear wave velocity measurements have been taken or alternatively estimated based on rational analysis of un-drained shear strength or penetration resistance.

It is our opinion that the Average Standard Penetration Resistance (N_{60}) can be taken as between 15 and 50. Therefore, for seismic design purposes, the site designation for seismic analysis is Class D (OBC 4.1.8.4 Table 4.1.8.4.A.).

5.10 FLOOR SLAB CONSTRUCTION AND DRAINAGE

If basements are being considered in the proposed design of the residential buildings and/or clubhouse, these floor slabs as well as the lowest slab of the Pumping Station can be supported on the stripped prepared grade. The floor slabs can be supported on grade provided the base is thoroughly proof rolled and any soft and unstable areas detected are sub-excavated and replaced with compacted fill materials. Fill required to raise the grade can consist of inorganic soil, placed in shallow lifts and compacted to at least 98 percent of Standard Proctor Maximum Dry Density (SPMDD).

For bedding and moisture barrier purposes, a 200-mm thick layer of 19 mm clear crushed stone must be provided under the concrete basement floor slab. Where wet and/or fine-grained soil conditions exist, the moisture barrier should be separated from the subgrade by a geotextile fabric to avoid loss of soil/fines and settlement problems.

Where the floor slab is below the water table, the foundation walls must be water proofed and both perimeter and underfloor drainage must be installed. A typical drainage and excavation scheme are shown on ***Figure 2***. As sandy soils with varying silt content are exposed below the groundwater table, filter cloth such as Terrafix 270R or equivalent must cover the subgrade, all drains, clear stone and other openings.

It is recommended to keep footings as high as possible to avoid or minimize penetration below groundwater levels, as de-watering will be required below the groundwater table.

5.11 INFILTRATION CHARACTERISTICS

Graphical depictions of the laboratory grain size analysis performed on samples recovered from the boreholes are attached as ***Enclosure 13***. Based on the gradation results, the materials encountered are tabulated below.

MATERIAL	BOREHOLE SAMPLE	PERMEABILITY (CM/SEC)	PERCOLATION TIME PERMEABILTY (MIN/CM)	COMMENT
Sand and Gravel	BH15-02, Sample 5	10^{-1} to 10^{-3}	2 to 10*	Below groundwater level
Marl	BH15-04, Sample 3	--	--	Unsuitable
Sand	BH15-07, Sample 6	10^{-1} to 10^{-3}	2 to 8*	Below groundwater level
Sand	BH15-09, Sample 5	10^{-1} to 10^{-3}	2 to 8	In an unsaturated state

*Applicable to unsaturated soil

We note that the Percolation Time ("T" time) or Permeability of the subsoil sampled was estimated. The material, as defined in the Ministry of the Environment Manual of Policy, Procedures and Guidelines for Onsite Sewage Systems, in the appendices 6.3.1 and 6.3.2, mostly resembles soil with medium permeability. We must state that this value is strictly for an unsaturated soil.

The value is solely based on the grain size distribution analysis shown in appendices 6.3.1 and 6.3.2 in the Ministry of the Environment Manual of Policy, Procedures and Guidelines for Onsite Sewage Systems. Furthermore, the estimate provided is indicative of the sample in a disturbed state only. We must emphasize that factors between boreholes such as, but not limited to, structure, consistency, density, organic content and degree of saturation influence the estimates.

An accurate analysis of soil infiltration characteristic is best determined with on-site permeameter testing at the location and level of the proposed infiltration condition.

5.12 CHEMICAL CHARACTERIZATION OF SOILS

Forty-four (44) selected soil samples and five (5) duplicate samples (DUP 1 to DUP 5) were collected from the geotechnical boreholes advanced on the property in September 2015 to assess the environmental quality of the soils, to assist in determining off-site disposal options. The chemical testing report and results are enclosed in ***Appendix C.***

5.13 DESIGN REVIEW, TESTING AND INSPECTIONS

WSP requests to be afforded the opportunity to complete a final review of the proposed development discussed in this report to verify that geotechnical recommendations are appropriate. If not given this opportunity, we cannot assume liability for omissions, misinterpretations or deficiencies in our recommendations.

WSP should be contacted to provide geotechnical testing and inspections during construction operations. Exposed subgrade soils for all structures are to be inspected to confirm the material is stable and competent. Inspections of seepage and groundwater conditions during construction are also required, as discussed in this report. Testing and inspections for general QA/QC are to include sampling and laboratory testing of fill materials and asphalt, compaction testing for the placement of fill materials and asphalt, and field and laboratory testing of concrete (including mix design reviews)

ENCLOSURES

ENCLOSURES 1 – 12: BOREHOLE LOGS

ENCLOSURES 13: LABORATORY RESULTS

LOG OF BOREHOLE BH15-01

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/09/2015

REF. NO.: 10002397
ENCL NO.: 2

(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
0.0	**TOPSOIL:** 230mm							OC Pesticides
0.2	**SILTY SAND(reworked):** some sand layers, trace organics, trace rootlets, brown, moist, loose		1	SS	9			
0.8	**SAND:** trace silt, light brown, damp, compact		2	SS	13			OC Pesticides, Metals & Inorganics
			3	SS	16			
2.0	stratified colours							
2.3	some gravel to gravelly, large gravel/cobble pieces at 2.4 and 2.7m, very dense		4	SS	100			
3.1	**SAND AND GRAVEL:** trace silt, brown, wet, very dense		5	SS	74		W. L. 3.1 mBGL Oct 14, 2015	PHCs & VOCs
4.7	**SAND:** some silt to silty, grey, wet, very dense		6	SS	78			
5.2	**END OF BOREHOLE**							

Notes:
-Installed monitoring well upon completion
-Water level was 3.06 mbg upon completion

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (C_U) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-02

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/08/2015

REF. NO.: 10002397
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS / 0.3 m	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 180mm					OC Pesticides
0.2	**MARL (Clayey Silt):** some sand to sandy, beige, moist, very stiff		1	SS	16	
0.8	**SAND:** trace silt, light brown, damp, compact		2	SS	23	OC Pesticides, Metals & Inorganics
1.5	some gravel		3	SS	22	
2.3	**SAND AND GRAVEL:** trace silt, trace clay, trace cobble pieces, brown, wet, very dense		4	SS	72	
			5	SS	73	45 48 5 2
4.6	trace to some silt		6	SS	53	
5.2	**END OF BOREHOLE**					

Notes:
-Borehole caved to 2.2mbg upon completion.

GROUND WATER CONDITIONS
ELEVATION

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (C_U) (kPa)
NATURAL UNIT WT (kN/m³)

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

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-03

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/08/2015

REF. NO.: 10002397
ENCL NO.: 4

(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 (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (C_u) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 130mm											
0.1	**SAND (reworked):** trace silt, trace rootlets, light brown, damp, loose		1	SS	8							OC Pesticides
1			2	SS	7				○			OC Pesticides, Metals & Inorganics
1.5	**SAND:** trace silt, light brown, damp, stratified colours, compact		3	SS	20				○			
2			4	SS	28				○			
3.1	some gravel to gravelly, wet		5	SS	26				○			
4												
4.6	trace to some silt, trace gravel, wet, compact to dense		6	SS	32				○			
5												
6			7	SS	12				○			
7												
8			8	SS	37				○			PHCs & VOCs
8.2	**END OF BOREHOLE** Notes: -Borehole caved to 3.1mbg upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-04

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/08/2015

REF. NO.: 10002397
ENCL NO.: 5

(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 (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (C_u) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 130mm											
0.1	**SAND(reworked):** trace silt, trace rootlets, orangish brown, damp, loose		1	SS	6							OC Pesticides
0.4	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, firm		2	SS	6							OC Pesticides, Metals & Inorganics
1			3	SS	5					40.6		0 20 52 28
2.0	**SAND:** trace silt, brown, moist, loose compact to dense		4	SS	30				○			
2.6	**SAND AND GRAVEL:** trace silt, brown, some black, wet, compact to dense		5	SS	20				○			
3												
4												
5			6	SS	25				○			
5.2	**END OF BOREHOLE** Notes: -Borehole caved to 2.5mbg upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-05

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/08/2015

REF. NO.: 10002397
ENCL NO.: 6

(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
0.0	**TOPSOIL:** 100mm							
0.1	**SILTY SAND(reworked):** some sand layers, trace organics, trace rootlets, brown, moist, compact		1	SS	14			OC Pesticides
0.8	**SAND:** trace silt, brown, moist, very loose		2	SS	2			Metals & Inorganics
1.3	some clayey silt layers, wet, very loose to loose		3	SS	2		W. L. 1.5 mBGL Oct 14, 2015	OC Pesticides
			4	SS	4			
3.1	30mm clayey silt seam at 3.1 mbg, loose		5	SS	9			
3.5	**SAND AND GRAVEL:** trace silt, brown, wet, loose							
4.9	**SAND:** some silt to silty, grey, wet, dilitant, compact		6	SS	22			
5.2	**END OF BOREHOLE**							

Notes:
-Installed monitoring well upon completion
-Water level was 1.44 mbg upon completion

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (C_U) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-06

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/04/2015

REF. NO.: 10002397
ENCL NO.: 7

(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 (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (C_u) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 150mm											
0.2	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff		1	SS	12							OC Pesticides
0.8	**SAND:** trace silt, brown, moist, gravel piece at 1.3 mbg, compact		2	SS	19				○			Metals & Inorganics
1.5	very dense		3	SS	52				○			OC Pesticides
2.3	trace gravel, wet, compact		4	SS	13				○			PHCs & VOCs
3.1	clayey pockets at 3.1 mbg, loose		5	SS	5				○			
3.5	orangish brown											
4.6	some gravel to gravelly, compact		6	SS	18				○			
5.2	**END OF BOREHOLE** Notes: -Borehole caved to 2.0mbg upon completion.											

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

LOG OF BOREHOLE BH15-07

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/04/2015

REF. NO.: 10002397
ENCL NO.: 8

(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
0.0	**TOPSOIL:** 150mm							OC Pesticides
0.2	**SILTY SAND(reworked):** some sand layers, trace organics, trace rootlets, brown, moist, compact		1	SS	22			
0.6	**MARL (Clayey Silt):** some sand to sandy, beige, moist, trace topsoil/organics, stiff		2	SS	14			OC Pesticides, Metals & Inorganics
1.7	**SAND:** trace silt, brown, damp to moist, compact		3	SS	12			
2.3	trace gravel, dense		4	SS	31			
3.1	some gravel, wet, compact		5	SS	22	W. L. 3.2 mBGL Oct 14, 2015		PHCs & VOCs
4.6	occassional gravel, very loose to loose		6	SS	4			0 96 2 2
6.1	compact		7	SS	12			
			8	SS	25			
8.2	**END OF BOREHOLE**							

Notes:
-Installed monitoring well upon completion
-Water level was 3.19 mbg upon completion

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (C_U) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-08

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/03/2015

REF. NO.: 10002397
ENCL NO.: 9

(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 (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (C_U) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 150mm											
0.2	**SAND:** trace organics, dry to damp, very loose to loose		1	SS	4							OC Pesticides
0.8	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, firm to stiff		2	SS	8				○			Metals & Inorganics
1.7	**SAND:** trace silt, brown, damp to moist, stratified colours, compact		3	SS	11				○			OC Pesticides
			4	SS	22				○			
3.1	loose to compact		5	SS	10				○			
4.6	trace to some silt, wet, dilitant, dense		6	SS	35				○			
5.2	**END OF BOREHOLE** Notes: -Borehole caved to 3.96mbg upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-09

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/03/2015

REF. NO.: 10002397
ENCL NO.: 10

(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
0.0	**TOPSOIL:** 130mm							OC Pesticides
0.1	**SAND:** trace silt, trace organics, orangish brown, dry to damp, loose		1	SS	5			
0.8	100mm wood/organic layer							Metals & Inorganics
0.9	brown, moist, stratified colours, loose to compact		2	SS	10			
			3	SS	10			OC Pesticides
1.8	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff							
2.3	**SAND:** trace silt, trace mollusks, brown, moist, compact		4	SS	26			
			5	SS	27			0 95 5 0
								PHCs & VOCs
4.9	wet, compact to dense		6	SS	30		W. L. 4.9 mBGL Oct 14, 2015	
6.1	some silt to silty, brown/grey, 50mm orange layer, dense		7	SS	40			
7.6	trace to some gravel, compact		8	SS	29			
8.2	**END OF BOREHOLE** -Installed monitoring well upon completion -Water level was 4.78 mbg upon completion							

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (C_U) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-10

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/03/2015

REF. NO.: 10002397
ENCL NO.: 11

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "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 (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (C_u) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 50mm											
0.1	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff		1	SS	11							OC Pesticides
0.3	**SAND:** trace silt, brown, moist, compact											
1			2	SS	21				○			OC Pesticides, Metals & Inorganics
2			3	SS	26				○			
2.3	stratified colours		4	SS	15				○			
3												
3.1	some silt to silty, trace clay, greyish brown, wet, dilitant, loose		5	SS	5				○			
4												
4.9	grey, some silt, very dense		6	SS	57				○			
5												
5.2	**END OF BOREHOLE**											

Notes:
-Borehole caved to 2.44mbg upon completion.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-11

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/04/2015

REF. NO.: 10002397
ENCL NO.: 12

(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 (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (C_U) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 180mm											
0.2	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff		1	SS	12							
0.5	**SAND:** trace silt, brown, damp, compact											
0.8	100mm silty sand layer, brown, moist		2	SS	18				○			
1												
			3	SS	14				○			
2												
2.3	trace to some silt, wet, loose		4	SS	6				○			
3												
3.1	trace to some gravel		5	SS	6				○			
4												
4.6	very loose		6	SS	2				○			
5												
5.2	**END OF BOREHOLE**											

Notes:
-Borehole caved to 1.7mbg upon completion.

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-12

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/09/2015

REF. NO.: 10002397
ENCL NO.: 13

(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
0.0	**TOPSOIL:** 200mm							OC Pesticides
0.2	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff		1	SS	10			
1.0	**SAND:** trace silt, brown, damp, dense		2	SS	32			Metals & Inorganics
1.5	some gravel		3	SS	33			OC Pesticides
2.3	**SAND AND GRAVEL:** trace silt, brown, wet, compact		4	SS	27		W. L. 2.2 mBGL Oct 14, 2015	
3.1	very dense		5	SS	88/ 280mm			PHCs & VOCs
4.6	**SAND:** trace silt, trace gravel, brown, wet, compact		6	SS	29			
5.2	**END OF BOREHOLE** Notes: -Borehole caved to 1.7mbg upon completion.							

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

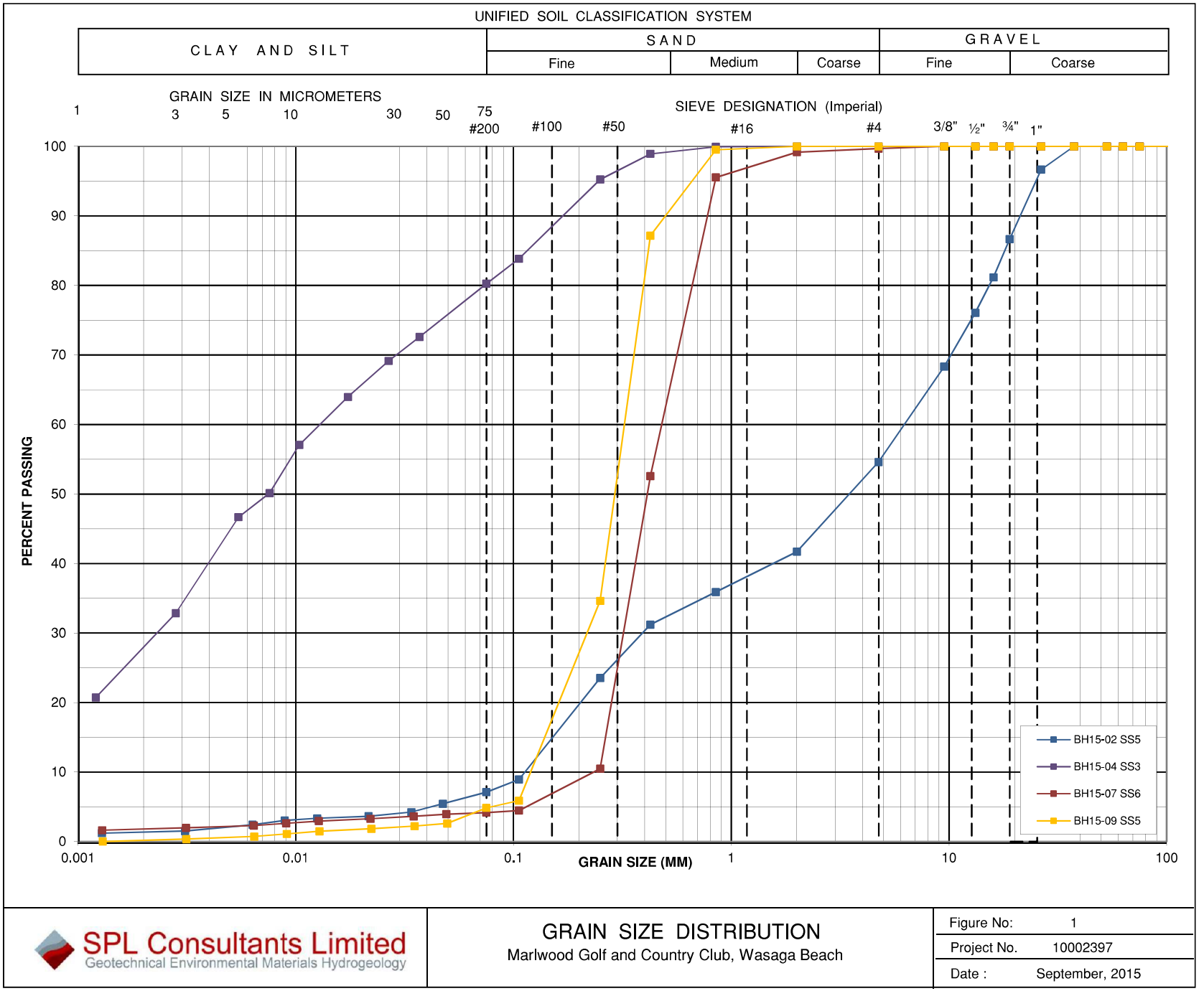
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (C_U) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15



SPL Consultants Limited
Geotechnical Environmental Materials Hydrogeology

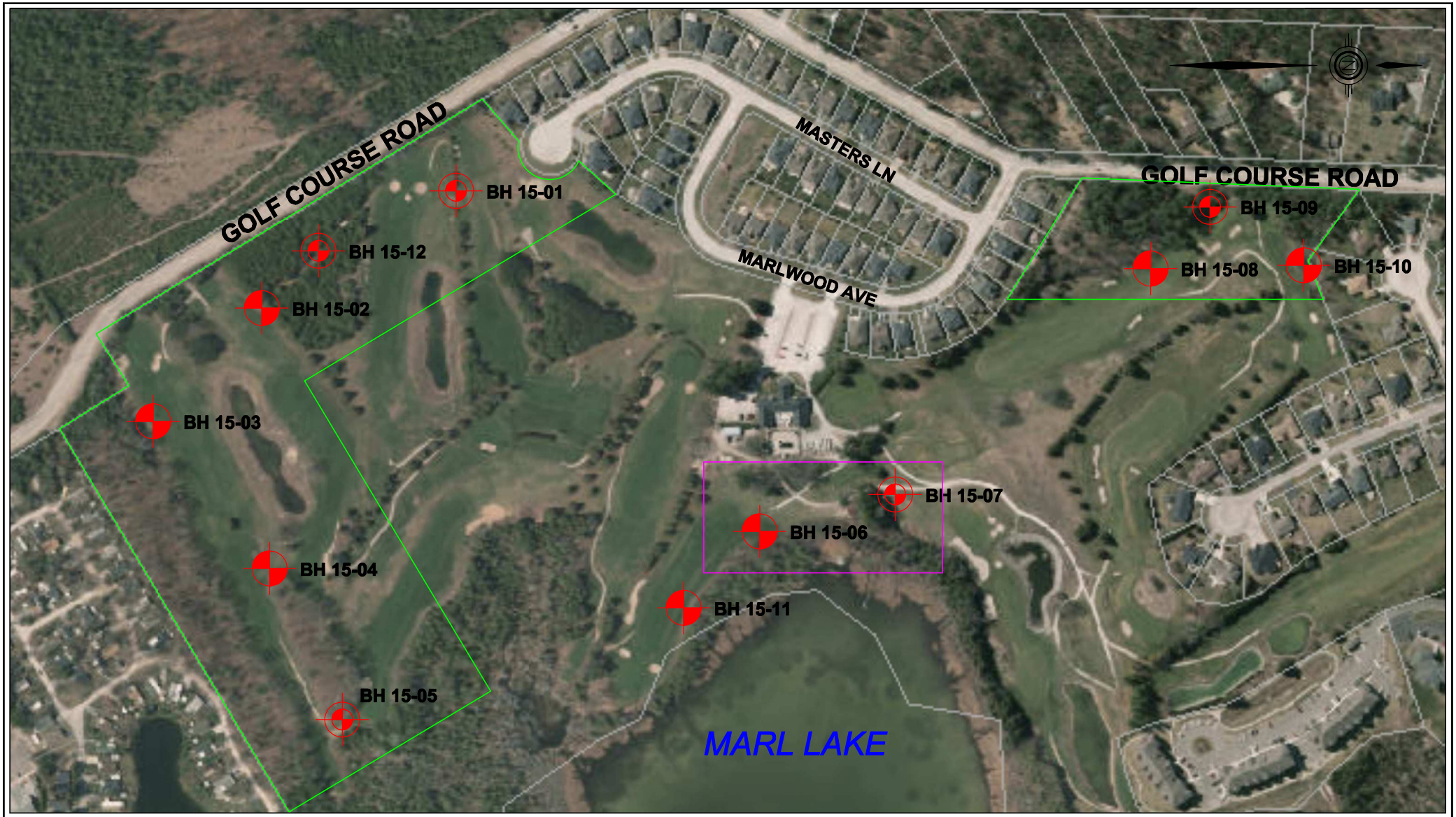
GRAIN SIZE DISTRIBUTION

Marlwood Golf and Country Club, Wasaga Beach

Figure No:	1
Project No.	10002397
Date :	September, 2015

FIGURES

FIGURE 1: BOREHOLE LOCATION PLAN
FIGURE 2: BACKFILL AND BASEMENT DRAINAGE PLAN



LEGEND

BH 15-XX Borehole Location

BH 15-XX Borehole Location with Groundwater Monitoring Well Installed

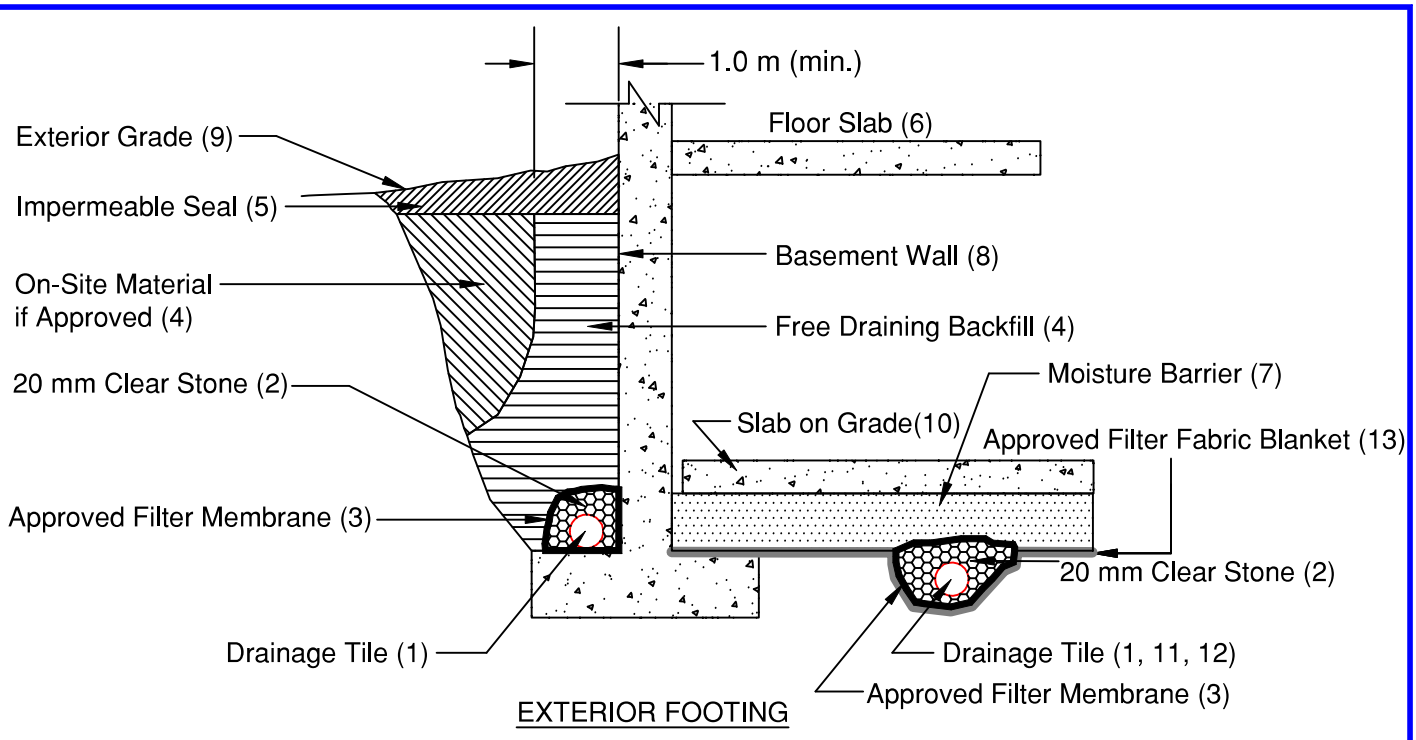
APRROXIMATE SCALE

0m 10m 25m 50m 100m

Approximate Area of Investigation for Proposed Residential Development

Approximate Area of Investigation for Proposed Relocation of Clubhouse

Client:	MARLWOOD GOLF AND COUNTRY CLUB			Project No.: 10002397	Figure No.: 1
Drawn:	MV	Approved:	GJ	Title:	BOREHOLE LOCATION PLAN
Date:	NOVEMBER, 2015	Scale:	AS SHOWN	Project:	PRELIMINARY GEOTECHNICAL INVESTIGATION 31 MARLWOOD AVE, WASAGA BEACH, ONTARIO
Original Size:	TABLOID	Rev:	1		SPL Consultants Limited | ENGINEERING SOLUTIONS



Notes

1. Drainage tile to consist of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet.
2. 20 mm (3/4") clear stone - 150 mm (6") top and side of drain. If drain is not on footing, place100 mm (4 inches) of stone below drain .
3. Wrap the clear stone with an approved filter membrane (Terrafix 270R or equivalent).
4. Free Draining backfill - OPSS Granular B or equivalent compacted to the specified density. Do not use heavy compaction equipment within 450 mm (18") of the wall. Use hand controlled light compaction equipment within 1.8 m (6') of wall. The minimum width of the Granular 'B' backfill must be 1.0 m.
5. Impermeable backfill seal - compacted clay, clayey silt or equivalent. If original soil is free-draining, seal may be omitted. Maximum thickness of seal to be 0.5 m.
6. Do not backfill until wall is supported by basement and floor slabs or adequate bracing.
7. Moisture barrier to be at least 200 mm (8") of compacted clear 20 mm (3/4") stone or equivalent free draining material. A vapour barrier may be required for specialty floors.
8. Basement wall to be damp proofed /water proofed.
9. Exterior grade to slope away from building.
10. Slab on grade should not be structurally connected to the wall or footing.
11. Underfloor drain invert to be at least 300 mm (12") below underside of floor slab.
12. Drainage tile placed in parallel rows 6 to 8 m (20 to 25') centers one way. Place drain on 100 mm (4") clear stone with 150 mm (6") of clear stone on top and sides. Enclose stone with filter fabric as noted in (3).
13. The entire subgrade to be sealed with approved filter fabric (Terrafix 270R or equivalent) if non-cohesive (sandy) soils below ground water table encountered.
14. Do not connect the underfloor drains to perimeter drains.
15. Review the geotechnical report for specific details.

DRAINAGE AND BACKFILL RECOMMENDATIONS
Basement with Underfloor Drainage

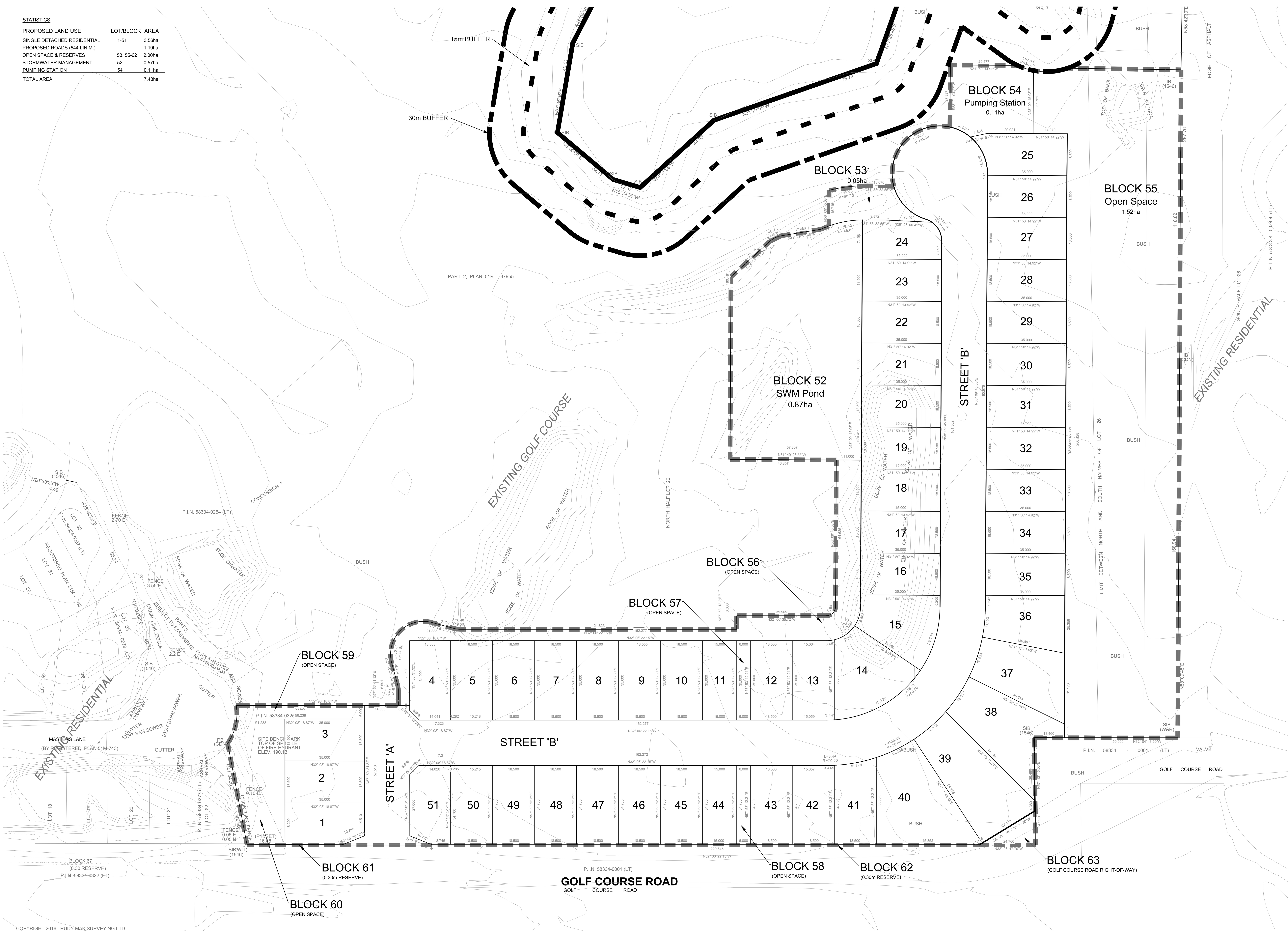
(not to scale)

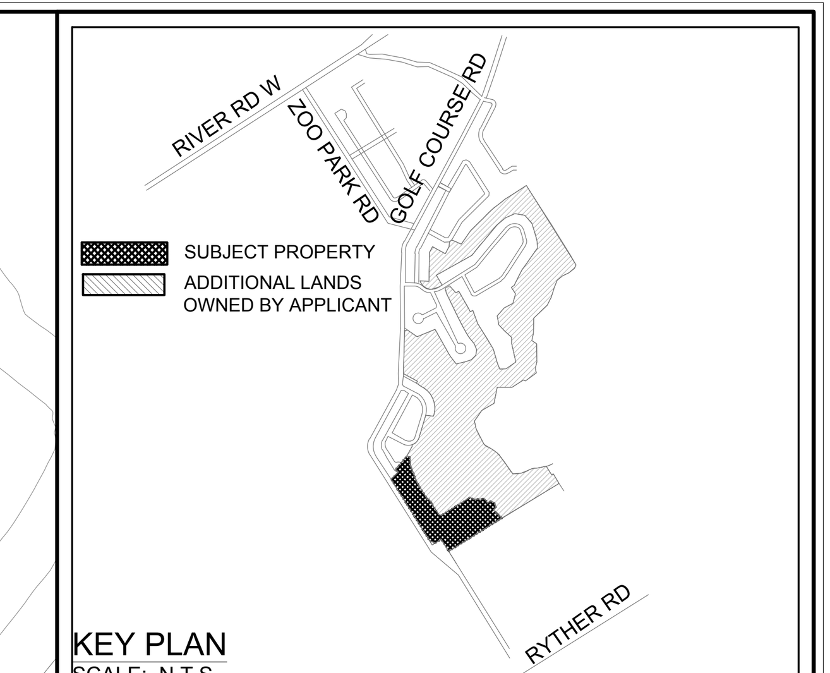
APPENDIX

A R.J. BURNSIDE DEVELOPMENT PLANS

STATISTICS

PROPOSED LAND USE	LOT/BLOCK	AREA
SINGLE DETACHED RESIDENTIAL	1-51	3.56ha
PROPOSED ROADS (544 LIN.M.)		1.19ha
OPEN SPACE & RESERVES	53, 55-62	2.00ha
STORMWATER MANAGEMENT	52	0.57ha
PUMPING STATION	54	0.11ha
TOTAL AREA		7.43ha





KEY PLAN
SCALE: N.T.S.

ADDITIONAL INFORMATION

As required under Section 51(17) of the Planning Act.

a), b), e), f), g) & j) – on plan
c) – on key plan
d) – see statistics
h) – piped water to be installed by developer
i) – sandy
k) – all municipal services to be made available
l) – nil

APPROVED SUBJECT TO CONDITIONS IN ACCORDANCE WITH SECTION 51(31) OF THE PLANNING ACT, RSO, CAP. P.13, AS AMENDED,

THIS_______ DAY OF ________________,__________

DIRECTOR OF PLANNING, DEVELOPMENT AND TOURISM, COUNTY OF SIMCOE

OWNER'S CERTIFICATE

We authorize LOFT Planning Inc. to prepare and submit this Plan of Subdivision for approval.

________________ A.S.O. ________________
TPC MARLWOOD INC. date

SURVEYOR'S CERTIFICATE

I hereby certify that the boundaries of the lands being subdivided and their relationship to the adjacent lands are accurately and correctly shown.

________________ ________________
RUDY MAK SURVEYING LTD. date

LOFT PLANNING
LAND USE PLANNING | PROJECT MANAGEMENT

0 50 100 200 300 400
Metres

BURNSIDE

Client
TPC MARLWOOD INC.

Figure Title
MARLWOOD MASTER'S LANE EXTENSION

PRELIMINARY DRAFT PLAN

Drawn	Checked	Date	Figure No.
EDT	JO	19/02/15	2
Scale		Project No.	
1:750		300037815	

File: \\collingwood\Shared Work Areas\037815 - Marlwood Preliminary Engineering\07_Figures\190604 (Draft Plan Option

15m BUFFER

30m BUFFER

STAKED WETLAND BOUNDARY

SANITARY PUMPING STATION (TO BE DESIGNED DURING DETAILED DESIGN)

MH45
TOP=183.71
SW INV=183.42

HDWL3
TOP=185.65
SW INV=185.15

MH14
TOP=186.66
SE INV=180.86
W INV=185.78

CBMH13
TOP=187.76
SW INV=186.10
NW INV=186.02

54.0m - STM @ 1.50%

30.0m - STM @ 3.33%

MH38
TOP=188.57
W INV=185.31
NE INV=185.21

50mm PE WATERMAIN LOOP

HDWL2
TOP=188.15
E INV=183.65

HDWL1
TOP=188.15
INV=183.55

MH17
TOP=188.61
SW INV=183.83
NE INV=183.80

CBMH11
TOP=188.17
SW INV=186.31
NE INV=186.28

CONCEPTUAL SWM FACILITY
FOREBAY BOTTOM ELEV. 184.60
MAIN CELL BOTTOM ELEV. 184.80
PERM. POOL ELEV. 185.60
TOP ELEV. 187.30

150mmØ WATERMAIN

CBMH10
TOP=188.80
SW INV=186.10
NE INV=186.49

1.0x1.5x1.5m DEPTH SOAKAWAY PIT PER TOWB STANDARD DRAWING No. 11 TO BE INSTALLED IN EACH LOT IN LOWEST REAR YARD CORNER, CONSERVATIVELY ASSUMED HOUSE LOT COVERAGE OF 40% (TYP.)

PROPOSED SANITARY FORCEMAIN (TO BE SIZED DURING DETAILED DESIGN)

MH09
TOP=188.50
W INV=184.54
NE INV=184.49

CBMH9
TOP=188.42
W INV=186.34
NE INV=186.34

MH10
TOP=188.39
NW INV=184.82
E INV=184.77

SANITARY FORCEMAIN TO TIE INTO MH

MH48
TOP=0.00
SE INV=187.97
NW INV=187.94

MH47
TOP=189.30
NW INV=188.30

EXMH3A

23.6m - SAN @ 1.50%

64.2m - SAN @ 0.52%

MH12
TOP=189.03
NW INV=185.54
SE INV=185.51

MH16
TOP=189.63
NW INV=185.10
SE INV=185.05

CBMH7
TOP=188.31
NW INV=186.75
E INV=186.46

MASTERS LANE

MH13
TOP=189.06
SW INV=186.18
SE INV=186.10

150mmØ WATERMAIN

113.0m - SAN @ 0.50%

STREET 'B'

80.6m - SAN @ 0.50%

60.0m - STM @ 0.44%

60.0m - STM @ 3.04%

60.0m - STM @ 0.40%

BELL VAULT / POST & SERVICE PANEL

VALVE

PROPOSED WATERMAIN TO TIE INTO EXISTING WATERMAIN

CBMH2
TOP=189.44
SE INV=187.89

CBMH3
TOP=189.13
NW INV=187.62
SE INV=188.97

CBMH5
TOP=188.85
NW INV=187.14
SE INV=187.14

CBMH6
TOP=188.54
NW INV=186.90
SE INV=186.90

GOLF COURSE ROAD

MH49
TOP=0.00
NE INV=186.50

50.0m - SAN @ 1.00%

STREET 'A'

CLEANWATER CSP CULVERT @ 0.25%
W. INV. 187.76
E. INV 187.59

PROPOSED WATERMAIN TO TIE INTO EXISTING WATERMAIN

SOAKAWAY PITS TO BE INSTALLED IN BOULEVARD OF GOLF COURSE ROAD SIZED TO INFILTRATE RUN-OFF FROM PORTION OF STREET 'A'. REFER TO POST DEVELOPMENT DRAINAGE AREA PLAN

NOTES:

1. 25mmØ PE160 WATER SERVICE CONNECTION TO BE INSTALLED AS PER OPSD 1104.010, WITH APPROVED SERVICE SADDLE

2. SANITARY SERVICE CONNECTION TO BE INSTALLED AS PER TOWN STANDARD DRAWING No. 12 (TYP.)

3. SANITARY SERVICE CLEANOUT TO BE INSTALLED AS PER TOWN STANDARD DRAWING No. 12 (TYP.)

LEGEND

- SANITARY SEWER/MANHOLE
- EXISTING SANITARY SEWER
- WATERMAIN
- EXISTING WATERMAIN
- STORM SEWER/MANHOLE
- EXISTING STORM SEWER
- HYDRANT

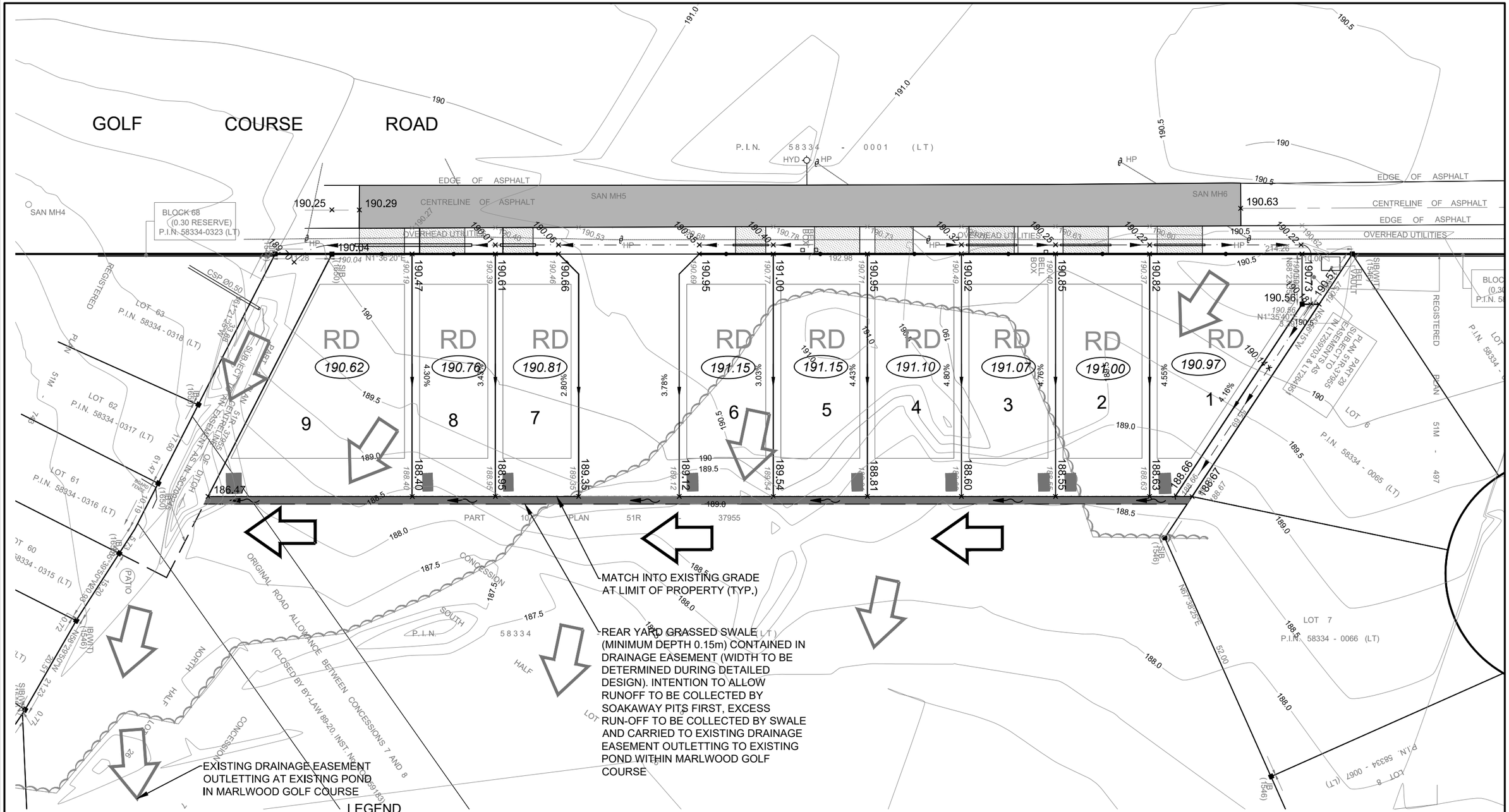
0 10 20 40 60
Metres

BURNSIDE

Figure Title
MARLWOOD MASTER'S LANE EXTENSION
PRELIMINARY UNDERGROUND SERVICING

Client
TPC MARLWOOD INC.

Drawn	Checked	Date	Figure No.
KAG	DM	17/10/23	4
Scale		Project No.	
1:750		300037815	



LEGEND

227.20 / 227.20	PROPOSED GRADE WITH EXISTING GRADE
227.20	APRON GRADE (MINIMUM 300mm ABOVE EDGE OF PAVEMENT)
	PROPOSED SWALE
	MAXIMUM 3:1 SLOPE UNLESS OTHERWISE NOTED
SD	SPLIT DRAINAGE LOT TYPE
	SOAKAWAY PIT
	EXISTING OVERLAND FLOW ROUTE
	PROPOSED OVERLAND FLOW ROUTE

N

0 10 20 40 60
Metres

BURNSIDE

Figure Title: **MARLWOOD (9 LOTS)**

PRELIMINARY GRADING

Client: **TPC MARLWOOD INC.**

Drawn	Checked	Date	Figure No.
KAG	EDT	17/09/25	5

Scale: 1:750

Project No.: 300039210

File: \\OSCAR\Shared Work Areas\039210 - Marlwood Golf Course 10 Lots\04_Preliminary\003_ProductionDwg\039210 - PRELIMINARY GRADING.dwg Date Plotted: November 26, 2019 - 5:55 PM

15m BUFFER

30m BUFFER

STAKED WETLAND BOUNDARY

PROPOSED OVERLAND FLOW ROUTE FROM POND TO BE DIRECTED TO PROPOSED HEADWALL; MAJOR SYSTEM

HDWL3

BLOCK 54
Pumping Station
0.11ha

BLOCK 53
0.05ha

BLOCK 55
Open Space
1.52ha

MH10

CBMH09

188.10

188.25

MH38

INLET HEADWALL
INV. 185.65 m

HDWL1

100YR WL = 186.78
REGIONAL (TIMMINS) WL = 186.64
25mm WL = 186.01

BLOCK 52
SWM Pond
0.57ha

CONCEPTUAL SWM FACILITY
FOREBAY BOTTOM ELEV. 184.60
MAIN CELL BOTTOM ELEV. 184.60
PERM. POOL ELEV. 185.60
TOP ELEV. 187.55

DITCH TO OUTLET TO PROPOSED POND. ACCESS ROAD TO BE DEPRESSED IN AREA OF DITCH INLET TO PROVIDE POSITIVE OUTLET FOR DITCH FLOWS.

STREET 'B'

CBMH08

CBMH07

CBMH06

CBMH05

CBMH04

CBMH03

CBMH02

CBMH01

BLOCK 56
(OPEN SPACE)

BLOCK 57
(OPEN SPACE)

BLOCK 59
(OPEN SPACE)

BLOCK 60
(OPEN SPACE)

BLOCK 61
(0.30m RESERVE)

BLOCK 58
(OPEN SPACE)

BLOCK 62
(0.30m RESERVE)

BLOCK 63
(GOLF COURSE ROAD RIGHT-OF-WAY)

STREET 'A'

MASTERS LANE
(BY REGISTERED PLAN 51M-747)

EXISTING RESIDENTIAL

EXISTING GOLF COURSE

GOLF COURSE ROAD

MATCH INTO EXISTING GRADE AT LIMIT OF PROPERTY (TYP.)

PROPOSED DITCH TO PROVIDE OUTLET FOR EXISTING LOW POINT ON GOLF COURSE ROAD. SWALE TO BE AT A MINIMUM OF 0.25%

LEGEND

- 188.14 / 188.14 — PROPOSED GRADE WITH EXISTING GRADE
- PROPOSED SWALE
- MAXIMUM 3:1 SLOPE UNLESS OTHERWISE NOTED
- SD — SPLIT DRAINAGE LOT TYPE
- WO — WALK OUT DRAINAGE LOT TYPE
- SOAKAWAY PIT
- PROPOSED OVERLAND FLOW ROUTE
- EXISTING OVERLAND FLOW ROUTE

0 10 20 40 60
Metres

BURNSIDE

Figure Title
MARLWOOD MASTER'S LANE EXTENSION
PRELIMINARY GRADING

Client
TPC MARLWOOD INC.

Drawn	Checked	Date
EDT	JO	19/11/26

Scale 1:750
Project No. 300037815
Figure No. **6**

APPENDIX

B ENGINEERED FILL

GENERAL REQUIREMENTS FOR ENGINEERED FILL

Compacted imported soil that meets specific engineering requirements and is free of organics and debris and that has been continually monitored on a full-time basis by a qualified geotechnical representative is classified as engineered fill. Engineered fill that meets these requirements and is bearing on suitable native subsoil can be used for the support of foundations.

Imported soil used as engineered fill can be removed from other portions of a site or can be brought in from other sites. In general, most of Ontario soils are too wet to achieve the 100% Standard Proctor Maximum Dry Density (SPMDD) and will require drying and careful site management if they are to be considered for engineered fill. Imported non-cohesive granular soil is preferred for all engineered fill. For engineered fill, we recommend use of OPSS Granular 'B' sand and gravel fill material.

Adverse weather conditions such as rain make the placement of engineered fill to the required degree of density difficult or impossible; engineered fill cannot be placed during freezing conditions, i.e. normally not between December 15 and April 1 of each year.

The location of the foundations on the engineered fill pad is critical and certification by a qualified surveyor that the foundations are within the stipulated boundaries is mandatory. Since layout stakes are often damaged or removed during fill placement, offset stakes must be installed and maintained by the surveyors during the course of fill placement so that the contractor and engineering staff are continually aware of where the engineered fill limits lie. Excavations within the engineered fill pad must be backfilled with the same conditions and quality control as the original pad.

To perform satisfactorily, engineered fill requires the cooperation of the designers, engineers, contractors and all parties must be aware of the requirements. The minimum requirements are as follows, however, the geotechnical report must be reviewed for specific information and requirements.

1. Prior to site work involving engineered fill, a site meeting to discuss all aspects must be convened. The surveyor, contractor, design engineer and geotechnical engineer must attend the meeting. At this meeting, the limits of the engineered fill will be defined. The contractor must make known where all fill material will be obtained from and samples must be provided to the geotechnical engineer for review, and approval before filling begins.

2. Detailed drawings indicating the lower boundaries as well as the upper boundaries of the engineered fill must be available at the site meeting and be approved by the geotechnical engineer.

3. The building footprint and base of the pad, including basements, garages, etc. must be defined by offset stakes that remain in place until the footings and service connections are all constructed. Confirmation that the footings are within the pad, service lines are in place, and that the grade conforms to drawings, must be obtained by the owner in writing from the surveyor and WSP Canada Inc. Without this confirmation no responsibility for the performance of the structure can be accepted by WSP Canada Inc. Survey drawing of the pre and post fill location and elevations will also be required.

4. The area must be stripped of all topsoil and fill materials. Subgrade must be proof-rolled. Soft spots must be dug out. The stripped native subgrade must be examined and approved by a WSP Canada Inc. engineer prior to placement of fill.

5. The approved engineered fill material must be compacted to 100% Standard Proctor Maximum Dry Density throughout. Engineered fill should not be placed during the winter months. Engineered fill compacted to 100% SPMDD will settle under its own weight approximately 0.5% of the fill height and the structural engineer must be aware of this settlement. In addition to the settlement of the fill, additional settlement due to consolidation of the underlying soils from the structural and fill loads will occur and should be evaluated prior to placing the fill.

6. Full-time geotechnical inspection by WSP Canada Inc. during placement of engineered fill is required. Work cannot commence or continue without the presence of the WSP Canada Inc. representative.

7. The fill must be placed such that the specified geometry is achieved. Refer to the attached sketches for minimum requirements. Take careful note that the projection of the compacted pad beyond the footing at footing level is a minimum of 2 m. The base of the compacted pad extends 2 m plus the depth of excavation beyond the edge of the footing.

8. A bearing capacity of 150 kPa at SLS (225 kPa at ULS) can be used provided that all conditions outlined above are adhered to. A minimum footing width of 500 mm (20 inches) is suggested and footings must be provided with nominal steel reinforcement.

9. All excavations must be done in accordance with the Occupational Health and Safety Regulations of Ontario.

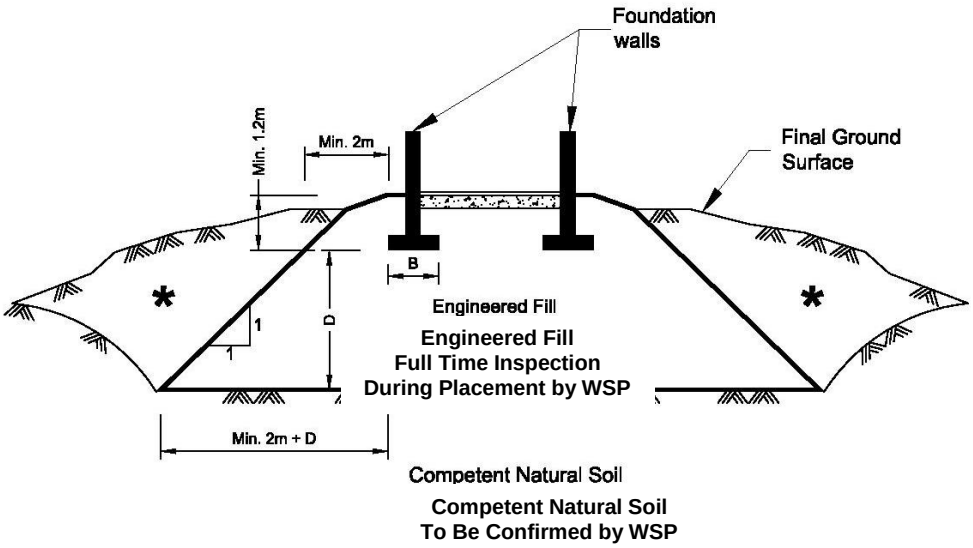
10. After completion of the engineered fill pad a second contractor may be selected to install footings. The prepared footing bases must be evaluated by engineering staff from WSP Canada Inc. prior to footing concrete placements. All excavations must be backfilled under full time supervision by WSP Canada Inc. to the same degree as the engineered fill pad. Surface water cannot be allowed to pond in excavations or to be trapped in clear stone backfill. Clear stone backfill can only be used with the approval of WSP Canada Inc.

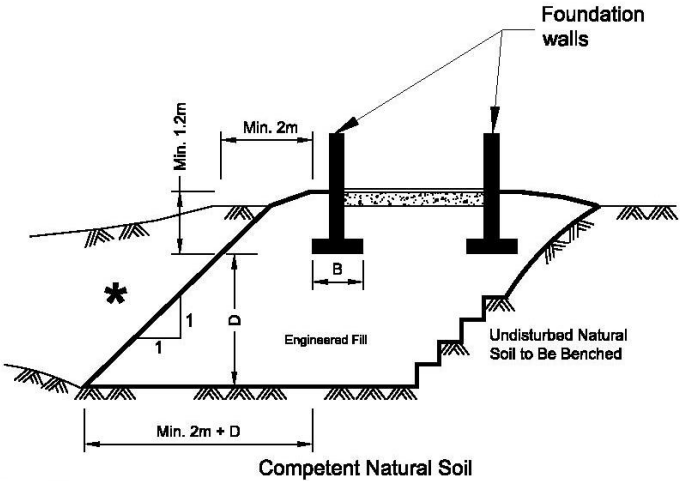
11. After completion of compaction, the surface of the engineered fill pad must be protected from disturbance from traffic, rain and frost. During the course of fill placement, the engineered fill must be smooth-graded, proof-rolled and sloped/crowned at the end of each day, prior to weekends and any stoppage in work in order to promote rapid runoff of rainwater and to avoid any ponding surface water. Any stockpiles of fill intended for use as engineered fill must also be smooth-bladed to promote runoff and/or protected from excessive moisture take up.

12. If there is a delay in construction, the engineered fill pad must be inspected and accepted by the geotechnical engineer. The location of the structure must be reconfirmed that it remains within the pad.

13. The geometry of the engineered fill as illustrated in these General Requirements is general in nature. Each project will have its own unique requirements. For example, if perimeter sidewalks are to be constructed around the building, then the projection of the engineered fill beyond the foundation wall may need to be greater.

14. These guidelines are to be read in conjunction with WSP Canada Inc. report attached.





* **Backfill in this area to be as per WSP report.**

APPENDIX

C SOIL QUALITY TESTING

SPL Consultants Limited | ENGINEERING SOLUTIONS

Project: 10002397-110 **October 7, 2015**

Marlwood Golf and Country Club
31 Marlwood Avenue
Wasaga Beach, Ontario
L9Z 1S8

Attention: Mr. Alex Smardenka

Re: Soil Quality Assessment Letter
Marlwood Golf and Country Club, Wasaga Beach, Ontario

SPL Consultants (SPL) was retained by Marlwood Golf and Country Club to provide a soil quality assessment at the Marlwood Golf and Country Club in Wasaga Beach, Ontario.

In order to assess options for potential offsite disposal of soils during the proposed residential development, a total of forty-four (44) soil samples and five (5) duplicate soil samples (DUP 1 to DUP 5) were collected from the geotechnical boreholes advanced on the property in September 2015. The borehole locations are shown on the attached Figure 1. Soil samples were collected by SPL and submitted for analysis of Organochlorine pesticides (OC Pesticides), metals and inorganics (M&Is), petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs), as set out in O.Reg. 153/04 as amended, Section XV.1 of the Environmental Protection Act (EPA). The **Certificates of Analysis** are attached. Sampling locations and parameters analyzed are provided in the following table.

TABLE 1: SOIL QUALITY SAMPLING AND ANALYSIS PROGRAM

Sample ID	Sample Date	Parameter(s)	Location	Depth (mbg)
BH15-01 SS1	September 9, 2015	OC Pesticides	South portion of the site	0-0.6 Top soil overlying sandy silt with trace organics
BH15-01 SS2	September 9, 2015	OC Pesticides, M&Is	South portion of the site	0.8-1.4 Sand, trace silt
BH15-01 SS5	September 9, 2015	PHCs, VOCs	South portion of the site	3.1-3.7 Sand and Gravel, trace silt
BH15-02 SS1	September 8, 2015	OC Pesticides (DUP 4)	South portion of the site	0-0.6 Top soil overlying clayey silt, some sand
BH15-02 SS2	September 8, 2015	OC Pesticides, M&Is	South portion of the site	0.8-1.4 Sand, trace silt
BH15-03 SS1	September 8, 2015	OC Pesticides	South portion of the site	0-0.6 Top soil overlying sand, trace silt
BH15-03 SS2	September 8, 2015	OC Pesticides, M&Is	South portion of the site	0-0.6 Sand, trace silt

Sample ID	Sample Date	Parameter(s)	Location	Depth (mbg)
BH15-03 SS8	September 8, 2015	PHCs, VOCs	South portion of the site	7.6-8.2 Sand, trace silt, trace gravel
BH15-04 SS1	September 8, 2015	OC Pesticides (DUP 3)	South portion of the site	0-0.6 Top soil overlying sand trace silt
BH15-04 SS2	September 8, 2015	OC Pesticides, M&Is	South portion of the site	0.8-1.4 Clayey silt, some sand
BH15-05 SS1	September 8, 2015	OC Pesticides	South portion of the site	0-0.6 Top soil overlying sandy silt with trace organics
BH15-05 SS2	September 8, 2015	M&Is	South portion of the site	0.8-1.4 Sand, trace silt
BH15-05 SS3	September 8, 2015	OC Pesticides	South portion of the site	1.5-2.1 Sand, trace silt
BH15-06 SS1	September 4, 2015	OC Pesticides	Central portion of the site	0-0.6 Top soil overlying clayey silt, some sand
BH15-06 SS2	September 4, 2015	M&Is	Central portion of the site	0.8-1.4 Sand, trace silt
BH15-06 SS3	September 4, 2015	OC Pesticides	Central portion of the site	1.5-2.1 Sand, trace silt
BH15-06 SS4	September 4, 2015	PHCs, VOCs (DUP 4)	Central portion of the site	2.3-2.9 Sand, trace silt, trace gravel
BH15-07 SS1	September 4, 2015	OC Pesticides (DUP 1)	Central portion of the site	0-0.6 Top soil overlying sandy silt with trace organics
BH15-07 SS2	September 4, 2015	OC Pesticides, M&Is	Central portion of the site	0.8-1.4 Clayey silt, some sand
BH15-07 SS5	September 4, 2015	PHCs, VOCs	Central portion of the site	3.1-3.7 Sand, some gravel
BH15-08 SS1	September 3, 2015	OC Pesticides	West Central portion of the site	0-0.6 Top soil overlying sand, trace silt with trace organics
BH15-08 SS2	September 3, 2015	M&Is	West Central portion of the site	0.8-1.4 Clayey silt, some sand
BH15-08 SS3	September 3, 2015	OC Pesticides	West Central portion of the site	1.5-2.1 Sand, trace silt
BH15-09 SS1	September 3, 2015	OC Pesticides	West Central portion of the site	0-0.6 Top soil overlying, trace silt with trace organics

Sample ID	Sample Date	Parameter(s)	Location	Depth (mbg)
BH15-09 SS2	September 3, 2015	M&Is	West Central portion of the site	0.8-1.4 Sand, trace silt
BH15-09 SS3	September 3, 2015	OC Pesticides	West Central portion of the site	1.5-2.1 Sand, trace silt overlying clayey silt, some sand
BH15-09 SS6	September 3, 2015	PHCs, VOCs	West Central portion of the site	4.6-5.2 Sand, trace silt
BH15-10 SS1	September 3, 2015	OC Pesticides	West Central portion of the site	0-0.6 Top soil overlying clayey silt, some sand
BH15-10 SS2	September 3, 2015	OC Pesticides, M&Is	West Central portion of the site	0.8-1.4 Sand, trace silt
BH15-12 SS1	September 9, 2015	OC Pesticides (DUP 5)	South portion of the site	0-0.6 Top soil overlying clayey silt, some sand
BH15-12 SS2	September 9, 2015	M&Is	South portion of the site	Clayey Silt, some sand overlying sand, trace silt
BH15-12 SS3	September 9, 2015	OC Pesticides	South portion of the site	1.5-2.1 Silt, trace silt, some gravel
BH15-12 SS5	September 9, 2015	PHCs, VOCs	South portion of the site	3.1-3.7 Sand and Gravel

Soil samples were collected and handled in accordance with generally accepted procedures used by the environmental consulting industry. Prior to each sampling event, new disposable gloves were used to transfer samples in plastic bags and glass jars supplied by the laboratory. All soil samples were kept under refrigerated conditions during field storage and transportation to the environmental analytical laboratory.

No visual or olfactory evidence of environmental impact (debris or staining) was noted in any of the soil samples collected.

The chemical analysis was conducted by ALS Environmental (ALS) located in Mississauga, 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.

For the purposes of soil disposal, the results of chemical analyses were compared to the Background Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition for All Property Uses other than Agricultural as contained in Table 9 of the “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act,” published by the Ministry of Environment (MOE) on April 15, 2011.

Based on the results of the chemical analysis, SPL provides the following conclusions/recommendations:

- When compared to MOE Table 9 property use standards all samples meet with the exception of Dieldrin from sample BH13-07 SS1;
- When compared to MOE Table 9 property use standards, assessment against the guide limit could not be made due to the detection limit exceeding the guide limit for Endrin in BH15-09 SS1;
- The vertical and lateral extents of the exceedances are unknown.
- Separation and re-testing may be an option to reduce disposal cost.
- The results of this testing evaluates the environmental quality of the soil and does not pertain to the geotechnical suitability of the material.
- Acceptance of any excavated soil will be at the discretion of the receiving site.

The purpose of this testing was to chemically characterize the soils analyzed and does not constitute a Phase Two Environmental Site Assessment as defined in O.Reg.153/04, as amended.

It should be noted that if any aesthetically impacted soils are identified during excavation it is recommended that SPL be notified in order to conduct further assessment and/or testing of the material in question.

This report was prepared for Marlwood Golf and Country Club. 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.

Thank you for the opportunity to be of service on this project. Should you have any questions or wish to review the contents of this letter in more detail, please do not hesitate to contact the undersigned.

Yours Very Truly,

SPL Consultants Limited

Gord Jarvis
Branch Manager, Collingwood

Attachments:

Figure 1

Laboratory Certificates of Analysis

SPL CONSULTANTS LIMITED (Collingwood)
ATTN: NICOLE COLLINS
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7

Date Received: 11- SEP- 15
Report Date: 22- SEP- 15 14:57 (MT)
Version: FINAL

Client Phone: 705- 445- 0064

Certificate of Analysis

Lab Work Order #: L1672015

Project P.O. #: NOT SUBMITTED
Job Reference: 10002397
C of C Numbers: 14- 465016, 14- 465017, 14- 465018, 14- 465019
Legal Site Desc:

Emerson Perez, B.S.E
Account Manager

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

			ALS ID	L1672015-1	L1672015-2	L1672015-3	L1672015-4	L1672015-5	L1672015-6
			Sampled Date	09-SEP-15	09-SEP-15	09-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15
			Sampled Time	-	-	-	12:00	12:00	12:00
			Sample ID	**BH15-01 SS1**	**BH15-01 SS2**	**BH15-01 SS5**	**BH15-02 SS1**	**BH15-02 SS2**	**BH15-03 SS1**
Analyte	Unit	**Guide Limit							
Conductivity	mS/cm	0.7		0.0801			0.0749	
% Moisture	%	-	17.0	9.13	13.1	16.0	21.0	10.8
pH	pH units	-		7.96			7.94	

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

			ALS ID	L1672015-7	L1672015-8	L1672015-9	L1672015-10	L1672015-11	L1672015-12
			Sampled Date	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15
			Sampled Time	12:00	12:00	-	-	-	-
			Sample ID	**BH15-03 SS2**	**BH15-03 SS8**	**BH15-04 SS1**	**BH15-04 SS2**	**BH15-05 SS1**	**BH15-05 SS2**
Analyte	Unit	**Guide Limit							
Conductivity	mS/cm	0.7		0.0774			0.140		0.145
% Moisture	%	-		22.5	19.7	36.2	21.6	14.0	7.12
pH	pH units	-		8.01			7.67		7.60

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

			ALS ID	L1672015-13	L1672015-14	L1672015-15	L1672015-16	L1672015-17	L1672015-18
			Sampled Date	08-SEP-15	04-SEP-15	04-SEP-15	04-SEP-15	04-SEP-15	04-SEP-15
			Sampled Time	-	-	-	-	-	-
			Sample ID	**BH15-05 SS3**	**BH15-06 SS1**	**BH15-06 SS2**	**BH15-06 SS3**	**BH15-06 SS4**	**BH15-07 SS1**
Analyte	Unit	**Guide Limit							
Conductivity	mS/cm	0.7				0.0937			
% Moisture	%	-		21.1	25.4	7.01	5.87	19.8	24.2
pH	pH units	-				7.92			

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

			ALS ID	L1672015-19	L1672015-20	L1672015-21	L1672015-22	L1672015-23	L1672015-24
			Sampled Date	04-SEP-15	04-SEP-15	03-SEP-15	03-SEP-15	03-SEP-15	03-SEP-15
			Sampled Time	-	-	-	-	-	-
			Sample ID	**BH15-07 SS2**	**BH15-07 SS5**	**BH15-08 SS1**	**BH15-08 SS2**	**BH15-08 SS3**	**BH15-09 SS1**
Analyte	Unit	**Guide Limit							
Conductivity	mS/cm	0.7		0.128			0.135		
% Moisture	%	-		22.3	20.4	25.1	23.6	30.7	6.36
pH	pH units	-		7.81			7.71		

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

			ALS ID	L1672015-25	L1672015-26	L1672015-27	L1672015-28	L1672015-29	L1672015-30
			Sampled Date	03-SEP-15	03-SEP-15	03-SEP-15	03-SEP-15	03-SEP-15	09-SEP-15
			Sampled Time	-	-	-	12:00	12:00	-
			Sample ID	**BH15-09 SS2**	**BH15-09 SS3**	**BH15-09 SS6**	**BH15-10 SS1**	**BH15-10 SS2**	**BH15-12 SS1**
Analyte	Unit	**Guide Limit							
Conductivity	mS/cm	0.7		0.0722				0.0593	
% Moisture	%	-		17.3	16.1	21.4	6.54	19.1	31.3
pH	pH units	-		7.78				8.01	

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

			ALS ID	L1672015-31	L1672015-32	L1672015-33	L1672015-34	L1672015-35	L1672015-36
			Sampled Date	09-SEP-15	09-SEP-15	09-SEP-15	09-SEP-15	09-SEP-15	09-SEP-15
			Sampled Time	-	-	-	-	-	-
			Sample ID	**BH15-12 SS2**	**BH15-12 SS3**	**BH15-12 SS5**	**DUP1**	**DUP2**	**DUP3**
Analyte	Unit	**Guide Limit							
Conductivity	mS/cm	0.7		0.139					
% Moisture	%	-		22.9	7.54	11.9	16.6	19.8	15.0
pH	pH units	-		8.02					

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

		ALS ID	L1672015-37	L1672015-38
		Sampled Date	09-SEP-15	09-SEP-15
		Sampled Time	-	-
		Sample ID	**DUP4**	**DUP5**
Analyte	Unit	**Guide Limit		
Conductivity	mS/cm	0.7		
% Moisture	%	-	16.3	28.9
pH	pH units	-		

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Cyanides (SOIL)

			ALS ID	L1672015-2	L1672015-5	L1672015-7	L1672015-10	L1672015-12	L1672015-15
			Sampled Date	09-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	04-SEP-15
			Sampled Time	-	12:00	12:00	-	-	-
			Sample ID	**BH15-01 SS2**	**BH15-02 SS2**	**BH15-03 SS2**	**BH15-04 SS2**	**BH15-05 SS2**	**BH15-06 SS2**
Analyte	Unit	**Guide Limit							
Cyanide, Weak Acid Diss	ug/g	0.051		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Ontario Regulation 153/04 - April 15, 2011 Standards - Cyanides (SOIL)

			ALS ID	L1672015-19	L1672015-22	L1672015-25	L1672015-29	L1672015-31
			Sampled Date	04-SEP-15	03-SEP-15	03-SEP-15	03-SEP-15	09-SEP-15
			Sampled Time	-	-	-	12:00	-
			Sample ID	**BH15-07 SS2**	**BH15-08 SS2**	**BH15-09 SS2**	**BH15-10 SS2**	**BH15-12 SS2**
Analyte	Unit	**Guide Limit						
Cyanide, Weak Acid Diss	ug/g	0.051		<0.050	<0.050	<0.050	<0.050	<0.050

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Saturated Paste Extractables (SOIL)

Analyte	Unit	**Guide Limit	ALS ID: L1672015-2 Sampled Date: 09-SEP-15 Sampled Time: - Sample ID: **BH15-01 SS2**	ALS ID: L1672015-5 Sampled Date: 08-SEP-15 Sampled Time: 12:00 Sample ID: **BH15-02 SS2**	ALS ID: L1672015-7 Sampled Date: 08-SEP-15 Sampled Time: 12:00 Sample ID: **BH15-03 SS2**	ALS ID: L1672015-10 Sampled Date: 08-SEP-15 Sampled Time: - Sample ID: **BH15-04 SS2**	ALS ID: L1672015-12 Sampled Date: 08-SEP-15 Sampled Time: - Sample ID: **BH15-05 SS2**	ALS ID: L1672015-15 Sampled Date: 04-SEP-15 Sampled Time: - Sample ID: **BH15-06 SS2**
SAR	SAR	5	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q
Calcium (Ca)	mg/L	-	30.7	45.1	50.9	64.3	51.2	49.7
Magnesium (Mg)	mg/L	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sodium (Na)	mg/L	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Ontario Regulation 153/04 - April 15, 2011 Standards - Saturated Paste Extractables (SOIL)

Analyte	Unit	**Guide Limit	ALS ID: L1672015-19 Sampled Date: 04-SEP-15 Sampled Time: - Sample ID: **BH15-07 SS2**	ALS ID: L1672015-22 Sampled Date: 03-SEP-15 Sampled Time: - Sample ID: **BH15-08 SS2**	ALS ID: L1672015-25 Sampled Date: 03-SEP-15 Sampled Time: - Sample ID: **BH15-09 SS2**	ALS ID: L1672015-29 Sampled Date: 03-SEP-15 Sampled Time: 12:00 Sample ID: **BH15-10 SS2**	ALS ID: L1672015-31 Sampled Date: 09-SEP-15 Sampled Time: - Sample ID: **BH15-12 SS2**
SAR	SAR	5	<0.10 SAR:Q	<0.10	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q
Calcium (Ca)	mg/L	-	26.7	26.3	37.2	18.4	60.9
Magnesium (Mg)	mg/L	-	<1.0	1.0	<1.0	<1.0	<1.0
Sodium (Na)	mg/L	-	<1.0	1.7	<1.0	<1.0	<1.0

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Metals (SOIL)

Analyte	Unit	**Guide Limit	ALS ID: L1672015-2 Sampled Date: 09-SEP-15 Sampled Time: - Sample ID: BH15-01 SS2	L1672015-5 08-SEP-15 12:00 BH15-02 SS2	L1672015-7 08-SEP-15 12:00 BH15-03 SS2	L1672015-10 08-SEP-15 - BH15-04 SS2	L1672015-12 08-SEP-15 - BH15-05 SS2	L1672015-15 04-SEP-15 - BH15-06 SS2
Antimony (Sb)	ug/g	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	<1.0	<1.0	<1.0	1.8	1.4	<1.0
Barium (Ba)	ug/g	220	8.8	14.9	13.7	129	89.2	16.5
Beryllium (Be)	ug/g	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron (B)	ug/g	36	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Boron (B), Hot Water Ext.	ug/g	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	ug/g	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	70	5.1	5.2	4.1	8.0	7.4	4.3
Cobalt (Co)	ug/g	22	1.3	1.6	1.4	2.0	2.0	1.1
Copper (Cu)	ug/g	92	1.1	1.6	1.3	8.9	5.3	1.5
Lead (Pb)	ug/g	120	1.2	1.4	<1.0	2.1	3.2	<1.0
Mercury (Hg)	ug/g	0.27	<0.0050	<0.0050	<0.0050	0.0068	0.0187	<0.0050
Molybdenum (Mo)	ug/g	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	ug/g	82	3.6	3.7	3.3	8.3	4.8	2.5
Selenium (Se)	ug/g	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	14.1	10.9	8.3	15.6	11.3	9.3
Zinc (Zn)	ug/g	290	<5.0	5.6	5.4	9.1	12.3	<5.0

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Metals (SOIL)

	ALS ID	L1672015-19	L1672015-22	L1672015-25	L1672015-29	L1672015-31
	Sampled Date	04-SEP-15	03-SEP-15	03-SEP-15	03-SEP-15	09-SEP-15
	Sampled Time	-	-	-	12:00	-
	Sample ID	**BH15-07 SS2**	**BH15-08 SS2**	**BH15-09 SS2**	**BH15-10 SS2**	**BH15-12 SS2**
Analyte	Unit	**Guide Limit				
Antimony (Sb)	ug/g	1.3	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	<1.0	<1.0	<1.0	<1.0	<1.0
Barium (Ba)	ug/g	220	159	107	6.8	11.3	121
Beryllium (Be)	ug/g	2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Boron (B)	ug/g	36	<5.0	<5.0	<5.0	<5.0	<5.0
Boron (B), Hot Water Ext.	ug/g	1.5	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	ug/g	1.2	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	70	6.5	6.2	4.6	10.3	4.1
Cobalt (Co)	ug/g	22	2.0	<1.0	1.2	2.1	1.3
Copper (Cu)	ug/g	92	6.6	1.9	<1.0	1.7	9.5
Lead (Pb)	ug/g	120	1.9	1.8	<1.0	1.2	1.3
Mercury (Hg)	ug/g	0.27	0.0137	0.0205	<0.0050	<0.0050	<0.0050
Molybdenum (Mo)	ug/g	2	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	ug/g	82	4.7	2.3	2.9	3.8	2.9
Selenium (Se)	ug/g	1.5	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	0.5	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	2.5	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	11.0	5.6	10.5	33.4	7.1
Zinc (Zn)	ug/g	290	8.1	7.5	<5.0	7.2	<5.0

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Speciated Metals (SOIL)

			ALS ID	L1672015-2	L1672015-5	L1672015-7	L1672015-10	L1672015-12	L1672015-15
			Sampled Date	09-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	04-SEP-15
			Sampled Time	-	12:00	12:00	-	-	-
			Sample ID	**BH15-01 SS2**	**BH15-02 SS2**	**BH15-03 SS2**	**BH15-04 SS2**	**BH15-05 SS2**	**BH15-06 SS2**
Analyte	Unit	**Guide Limit							
Chromium, Hexavalent	ug/g	0.66		<0.20	<0.20	<0.20	0.24	<0.20	<0.20

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Ontario Regulation 153/04 - April 15, 2011 Standards - Speciated Metals (SOIL)

			ALS ID	L1672015-19	L1672015-22	L1672015-25	L1672015-29	L1672015-31
			Sampled Date	04-SEP-15	03-SEP-15	03-SEP-15	03-SEP-15	09-SEP-15
			Sampled Time	-	-	-	12:00	-
			Sample ID	**BH15-07 SS2**	**BH15-08 SS2**	**BH15-09 SS2**	**BH15-10 SS2**	**BH15-12 SS2**
Analyte	Unit	**Guide Limit						
Chromium, Hexavalent	ug/g	0.66		<0.20	<0.20	<0.20	<0.20	<0.20

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Volatile Organic Compounds (SOIL)

Analyte	Unit	**Guide Limit	ALS ID: L1672015-3 Sampled Date: 09-SEP-15 Sampled Time: - Sample ID: BH15-01 SS5	L1672015-8 08-SEP-15 12:00 BH15-03 SS8	L1672015-17 04-SEP-15 - BH15-06 SS4	L1672015-20 04-SEP-15 - BH15-07 SS5	L1672015-27 03-SEP-15 - BH15-09 SS6	L1672015-33 09-SEP-15 - BH15-12 SS5
Acetone	ug/g	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	ug/g	0.02	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon tetrachloride	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dibromoethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichloropropene (cis & trans)	ug/g	0.05	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
Methylene Chloride	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	ug/g	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
trans-1,3-Dichloropropene	ug/g	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Ethylbenzene	ug/g	0.05	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	ug/g	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MTBE	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	ug/g	0.2	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Volatile Organic Compounds (SOIL)

	ALS ID	L1672015-35
	Sampled Date	09-SEP-15
	Sampled Time	-
	Sample ID	DUP2
Analyte	Unit	**Guide Limit	
Acetone	ug/g	0.5	<0.50
Benzene	ug/g	0.02	<0.0068
Bromodichloromethane	ug/g	0.05	<0.050
Bromoform	ug/g	0.05	<0.050
Bromomethane	ug/g	0.05	<0.050
Carbon tetrachloride	ug/g	0.05	<0.050
Chlorobenzene	ug/g	0.05	<0.050
Dibromochloromethane	ug/g	0.05	<0.050
Chloroform	ug/g	0.05	<0.050
1,2-Dibromoethane	ug/g	0.05	<0.050
1,2-Dichlorobenzene	ug/g	0.05	<0.050
1,3-Dichlorobenzene	ug/g	0.05	<0.050
1,4-Dichlorobenzene	ug/g	0.05	<0.050
Dichlorodifluoromethane	ug/g	0.05	<0.050
1,1-Dichloroethane	ug/g	0.05	<0.050
1,2-Dichloroethane	ug/g	0.05	<0.050
1,1-Dichloroethylene	ug/g	0.05	<0.050
cis-1,2-Dichloroethylene	ug/g	0.05	<0.050
trans-1,2-Dichloroethylene	ug/g	0.05	<0.050
1,3-Dichloropropene (cis & trans)	ug/g	0.05	<0.042
Methylene Chloride	ug/g	0.05	<0.050
1,2-Dichloropropane	ug/g	0.05	<0.050
cis-1,3-Dichloropropene	ug/g	-	<0.030
trans-1,3-Dichloropropene	ug/g	-	<0.030
Ethylbenzene	ug/g	0.05	<0.018
n-Hexane	ug/g	0.05	<0.050
Methyl Ethyl Ketone	ug/g	0.5	<0.50
Methyl Isobutyl Ketone	ug/g	0.5	<0.50
MTBE	ug/g	0.05	<0.050
Styrene	ug/g	0.05	<0.050
1,1,1,2-Tetrachloroethane	ug/g	0.05	<0.050
1,1,2,2-Tetrachloroethane	ug/g	0.05	<0.050
Tetrachloroethylene	ug/g	0.05	<0.050
Toluene	ug/g	0.2	<0.080
1,1,1-Trichloroethane	ug/g	0.05	<0.050

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Volatile Organic Compounds (SOIL)

	ALS ID	L1672015-3	L1672015-8	L1672015-17	L1672015-20	L1672015-27	L1672015-33
	Sampled Date	09-SEP-15	08-SEP-15	04-SEP-15	04-SEP-15	03-SEP-15	09-SEP-15
	Sampled Time	-	12:00	-	-	-	-
	Sample ID	**BH15-01 SS5**	**BH15-03 SS8**	**BH15-06 SS4**	**BH15-07 SS5**	**BH15-09 SS6**	**BH15-12 SS5**
Analyte	Unit	**Guide Limit					
1,1,2-Trichloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	ug/g	0.05	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Trichlorofluoromethane	ug/g	0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl chloride	ug/g	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	ug/g	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	91.2	93.0	89.1	91.7	87.1	97.1
Surrogate: 1,4-Difluorobenzene	%	-	96.8	96.9	95.1	96.3	95.6	97.5

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Volatile Organic Compounds (SOIL)

	ALS ID	L1672015-35
	Sampled Date	09-SEP-15
	Sampled Time	-
	Sample ID	DUP2
Analyte	Unit	**Guide Limit
1,1,2-Trichloroethane	ug/g	0.05	<0.050
Trichloroethylene	ug/g	0.05	<0.010
Trichlorofluoromethane	ug/g	0.25	<0.050
Vinyl chloride	ug/g	0.02	<0.020
o-Xylene	ug/g	-	<0.020
m+p-Xylenes	ug/g	-	<0.030
Xylenes (Total)	ug/g	0.05	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	91.3
Surrogate: 1,4-Difluorobenzene	%	-	97.3

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Ontario Regulation 153/04 - April 15, 2011 Standards - Hydrocarbons (SOIL)

	ALS ID	L1672015-3	L1672015-8	L1672015-17	L1672015-20	L1672015-27	L1672015-33
	Sampled Date	09-SEP-15	08-SEP-15	04-SEP-15	04-SEP-15	03-SEP-15	09-SEP-15
	Sampled Time	-	12:00	-	-	-	-
	Sample ID	BH15-01 SS5	BH15-03 SS8	BH15-06 SS4	BH15-07 SS5	BH15-09 SS6	BH15-12 SS5
Analyte	Unit	**Guide Limit					
F1 (C6-C10)	ug/g	25	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	ug/g	25	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	ug/g	10	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	ug/g	240	<50	<50	<50	<50	<50	50
F4 (C34-C50)	ug/g	120	<50	<50	<50	<50	<50	<50
Total Hydrocarbons (C6-C50)	ug/g	-	<72	<72	<72	<72	<72	<72
Chrom. to baseline at nC50	No Unit	-	YES	YES	YES	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	86.1	90.0	94.5	91.1	85.0	81.3
Surrogate: 3,4-Dichlorotoluene	%	-	98.3	97.7	93.1	94.0	80.5	113.5

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

			L1672015-1	L1672015-2	L1672015-4	L1672015-5	L1672015-6	L1672015-7
ALS ID								
Sampled Date			09-SEP-15	09-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15
Sampled Time			-	-	12:00	12:00	12:00	12:00
Sample ID			**BH15-01 SS1**	**BH15-01 SS2**	**BH15-02 SS1**	**BH15-02 SS2**	**BH15-03 SS1**	**BH15-03 SS2**
Analyte	Unit	**Guide Limit						
Aldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
g-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDD	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
o,p-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDE	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
op-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDT	ug/g	1.4	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Dieldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan I	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan II	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Endrin	ug/g	0.04	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	93.8	97.3	94.5	96.7	93.5	96.2
Surrogate: d14-Terphenyl	%	-	98.1	106.8	94.2	99.9	95.3	101.9

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

Analyte	Unit	**Guide Limit	ALS ID / Sampled Date / Sampled Time / Sample ID: L1672015-9 / 08-SEP-15 / - / BH15-04 SS1	L1672015-10 / 08-SEP-15 / - / BH15-04 SS2	L1672015-11 / 08-SEP-15 / - / BH15-05 SS1	L1672015-13 / 08-SEP-15 / - / BH15-05 SS3	L1672015-14 / 04-SEP-15 / - / BH15-06 SS1	L1672015-16 / 04-SEP-15 / - / BH15-06 SS3
Aldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
g-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDD	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
o,p-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDE	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
op-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDT	ug/g	1.4	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Dieldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan I	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan II	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Endrin	ug/g	0.04	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	93.8	94.9	99.7	96.9	92.7	97.6
Surrogate: d14-Terphenyl	%	-	99.3	99.0	104.0	101.4	104.7	98.9

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

Analyte	Unit	**Guide Limit	ALS ID: L1672015-18 Sampled Date: 04-SEP-15 Sampled Time: - Sample ID: BH15-07 SS1	L1672015-19 04-SEP-15 - BH15-07 SS2	L1672015-21 03-SEP-15 - BH15-08 SS1	L1672015-23 03-SEP-15 - BH15-08 SS3	L1672015-24 03-SEP-15 - BH15-09 SS1	L1672015-26 03-SEP-15 - BH15-09 SS3
Aldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
g-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDD	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
o,p-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDE	ug/g	-	0.033	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDE	ug/g	0.05	0.033	<0.028	<0.028	<0.028	<0.028	<0.028
op-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDT	ug/g	-	0.027	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDT	ug/g	1.4	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Dieldrin	ug/g	0.05	0.063	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan I	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.045 DLUI	<0.020
Endosulfan II	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	<0.028	<0.028	<0.028	<0.028	<0.049	<0.028
Endrin	ug/g	0.04	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	93.7	94.7	92.8	89.7	93.4	91.4
Surrogate: d14-Terphenyl	%	-	93.2	94.8	92.2	93.8	89.8	98.1

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

	ALS ID	L1672015-28	L1672015-29	L1672015-30	L1672015-32	L1672015-34	L1672015-36
	Sampled Date	03-SEP-15	03-SEP-15	09-SEP-15	09-SEP-15	09-SEP-15	09-SEP-15
	Sampled Time	12:00	12:00	-	-	-	-
	Sample ID	**BH15-10 SS1**	**BH15-10 SS2**	**BH15-12 SS1**	**BH15-12 SS3**	**DUP1**	**DUP3**
Analyte	Unit	**Guide Limit					
Aldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
g-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDD	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
o,p-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDE	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
op-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDT	ug/g	1.4	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Dieldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	0.025	<0.020
Endosulfan I	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan II	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Endrin	ug/g	0.04	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	92.8	100.6	93.1	94.8	95.5	93.4
Surrogate: d14-Terphenyl	%	-	94.3	102.9	99.5	103.3	100.6	93.9

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

	ALS ID	L1672015-37	L1672015-38
	Sampled Date	09-SEP-15	09-SEP-15
	Sampled Time	-	-
	Sample ID	**DUP4**	**DUP5**
Analyte	Unit	**Guide Limit	
Aldrin	ug/g	0.05	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-	<0.010	<0.010
a-chlordane	ug/g	-	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	<0.028	<0.028
g-chlordane	ug/g	-	<0.020	<0.020
op-DDD	ug/g	-	<0.020	<0.020
pp-DDD	ug/g	-	<0.020	<0.020
Total DDD	ug/g	0.05	<0.028	<0.028
o,p-DDE	ug/g	-	<0.020	<0.020
pp-DDE	ug/g	-	<0.020	<0.020
Total DDE	ug/g	0.05	<0.028	<0.028
op-DDT	ug/g	-	<0.020	<0.020
pp-DDT	ug/g	-	<0.020	<0.020
Total DDT	ug/g	1.4	<0.028	<0.028
Dieldrin	ug/g	0.05	<0.020	<0.020
Endosulfan I	ug/g	-	<0.020	<0.020
Endosulfan II	ug/g	-	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	<0.028	<0.028
Endrin	ug/g	0.04	<0.020	<0.020
Heptachlor	ug/g	0.05	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	<0.010	<0.010
Hexachloroethane	ug/g	0.01	<0.010	<0.010
Methoxychlor	ug/g	0.05	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	93.0	96.9
Surrogate: d14-Terphenyl	%	-	98.2	100.9

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
SAR:Q	Qualified SAR value: actual SAR is lower but is incalculable due to Na, Ca or Mg below detection limit.

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).

CHLORDANE-T-CALC-WT	Soil	Chlordane Total sums	CALCULATION

Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

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-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

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).

DDD-DDE-DDT-CALC-WT	Soil	DDD, DDE, DDT sums	CALCULATION

Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

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).

ENDOSULFAN-T-CALC-WT	Soil	Endosulfan Total sums	CALCULATION

Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-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,

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

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).

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).

HG-200.2-CVAA-WT Soil Mercury in Soil by CVAAS EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis 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-200.2-CCMS-WT Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

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).

MOISTURE-WT Soil % Moisture Gravimetric: Oven Dried

PEST-OC-511-WT Soil OC Pesticides-O.Reg 153/04 (July 2011) SW846 8270 (511)

Soil sample is extracted in a solvent, after extraction a number of clean up techniques may be applied, depending on the sample matrix and analyzed by 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), 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).

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)

Soil and sediment samples are extracted in methanol and analyzed 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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

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:

14-465016 14-465017 14-465018 14-465019

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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

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: L1672015 Report Date: 22-SEP-15

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	Soil							
Batch R3267134								
WG2171575-3 DUP		**L1672107-1**						
Boron (B), Hot Water Ext.		0.48	0.47		ug/g	1.1	40	16-SEP-15
WG2171575-2 IRM		**SALINITY_SOIL4**						
Boron (B), Hot Water Ext.			83.0		%		70-130	16-SEP-15
WG2171575-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	16-SEP-15
WG2171575-4 MS		**L1672107-1**						
Boron (B), Hot Water Ext.			87.2		%		60-140	16-SEP-15
CN-WAD-R511-WT	Soil							
Batch R3267097								
WG2171216-3 DUP		**L1672015-12**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	16-SEP-15
WG2171216-2 LCS								
Cyanide, Weak Acid Diss			94.1		%		80-120	16-SEP-15
WG2171216-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	16-SEP-15
WG2171216-4 MS		**L1672015-12**						
Cyanide, Weak Acid Diss			93.7		%		70-130	16-SEP-15
Batch R3268457								
WG2170709-3 DUP		**L1671979-1**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	17-SEP-15
WG2170709-2 LCS								
Cyanide, Weak Acid Diss			100.3		%		80-120	17-SEP-15
WG2170709-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	17-SEP-15
WG2170709-4 MS		**L1671979-1**						
Cyanide, Weak Acid Diss			91.4		%		70-130	17-SEP-15
CR-CR6-IC-WT	Soil							
Batch R3267157								
WG2171215-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			85.0		%		70-130	16-SEP-15
WG2171215-3 DUP		**L1672015-2**						
Chromium, Hexavalent		<0.20	<0.20	RPD-NA	ug/g	N/A	35	16-SEP-15
WG2171215-2 LCS								
Chromium, Hexavalent			87.8		%		80-120	16-SEP-15
WG2171215-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	16-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-R511-WT	Soil							
Batch R3267005								
WG2171578-4 DUP		**WG2171578-3**						
Conductivity		0.0593	0.0681		mS/cm	14	20	16-SEP-15
WG2171760-1 LCS								
Conductivity			98.9		%		90-110	16-SEP-15
WG2171578-1 MB								
Conductivity			<0.0040		mS/cm		0.044	16-SEP-15
F1-HS-511-WT	Soil							
Batch R3266043								
WG2169950-4 DUP		**WG2169950-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	50	15-SEP-15
WG2169950-2 LCS								
F1 (C6-C10)			89.9		%		80-120	15-SEP-15
WG2169950-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	15-SEP-15
Surrogate: 3,4-Dichlorotoluene			82.9		%		60-140	15-SEP-15
WG2169950-7 MS		**WG2169950-6**						
F1 (C6-C10)			96.8		%		60-140	15-SEP-15
Batch R3266448								
WG2170539-4 DUP		**WG2170539-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	50	15-SEP-15
WG2170539-2 LCS								
F1 (C6-C10)			100.4		%		80-120	15-SEP-15
WG2170539-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	15-SEP-15
Surrogate: 3,4-Dichlorotoluene			84.9		%		60-140	15-SEP-15
WG2170539-7 MS		**WG2170539-6**						
F1 (C6-C10)			93.0		%		60-140	15-SEP-15
F2-F4-511-WT	Soil							
Batch R3267561								
WG2170737-3 CRM		**ALS PHC2 IRM**						
F2 (C10-C16)			103.8		%		70-130	16-SEP-15
F3 (C16-C34)			118.4		%		70-130	16-SEP-15
F4 (C34-C50)			123.5		%		70-130	16-SEP-15
WG2170737-5 DUP		**WG2170737-4**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	40	16-SEP-15
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	40	16-SEP-15
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	40	16-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	Soil							
Batch R3267561								
WG2170737-2 LCS								
F2 (C10-C16)			93.8		%		80-120	16-SEP-15
F3 (C16-C34)			107.4		%		80-120	16-SEP-15
F4 (C34-C50)			108.6		%		80-120	16-SEP-15
WG2170737-1 MB								
F2 (C10-C16)			<10		ug/g		10	16-SEP-15
F3 (C16-C34)			<50		ug/g		50	16-SEP-15
F4 (C34-C50)			<50		ug/g		50	16-SEP-15
Surrogate: 2-Bromobenzotrifluoride			84.9		%		60-140	16-SEP-15
WG2170737-6 MS		**WG2170737-4**						
F2 (C10-C16)			89.5		%		60-140	16-SEP-15
F3 (C16-C34)			105.3		%		60-140	16-SEP-15
F4 (C34-C50)			110.5		%		60-140	16-SEP-15
Batch R3269040								
WG2169937-3 CRM		**ALS PHC2 IRM**						
F2 (C10-C16)			87.7		%		70-130	16-SEP-15
F3 (C16-C34)			109.2		%		70-130	16-SEP-15
F4 (C34-C50)			111.1		%		70-130	16-SEP-15
WG2169937-8 DUP		**WG2169937-7**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	40	16-SEP-15
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	40	16-SEP-15
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	40	16-SEP-15
WG2169937-2 LCS								
F2 (C10-C16)			84.4		%		80-120	16-SEP-15
F3 (C16-C34)			108.3		%		80-120	16-SEP-15
F4 (C34-C50)			113.1		%		80-120	16-SEP-15
WG2169937-1 MB								
F2 (C10-C16)			<10		ug/g		10	16-SEP-15
F3 (C16-C34)			<50		ug/g		50	16-SEP-15
F4 (C34-C50)			<50		ug/g		50	16-SEP-15
Surrogate: 2-Bromobenzotrifluoride			87.0		%		60-140	16-SEP-15
WG2169937-9 MS		**WG2169937-7**						
F2 (C10-C16)			92.9		%		60-140	16-SEP-15
F3 (C16-C34)			111.9		%		60-140	16-SEP-15
F4 (C34-C50)			125.2		%		60-140	16-SEP-15
HG-200.2-CVAA-WT	Soil							

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-WT	Soil							
Batch R3267026								
WG2171581-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			90.6		%		70-130	16-SEP-15
WG2171581-6 DUP		**WG2171581-5**						
Mercury (Hg)		<0.0050	<0.0050	RPD-NA	ug/g	N/A	40	16-SEP-15
WG2171581-4 LCS								
Mercury (Hg)			96.6		%		80-120	16-SEP-15
WG2171581-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	16-SEP-15
MET-200.2-CCMS-WT	Soil							
Batch R3268559								
WG2171581-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			114.6		%		70-130	16-SEP-15
Arsenic (As)			119.7		%		70-130	16-SEP-15
Barium (Ba)			122.1		%		70-130	16-SEP-15
Beryllium (Be)			113.2		%		70-130	16-SEP-15
Cadmium (Cd)			116.3		%		70-130	16-SEP-15
Chromium (Cr)			122.6		%		70-130	16-SEP-15
Cobalt (Co)			117.4		%		70-130	16-SEP-15
Copper (Cu)			113.9		%		70-130	16-SEP-15
Lead (Pb)			107.1		%		70-130	16-SEP-15
Molybdenum (Mo)			109.6		%		70-130	16-SEP-15
Nickel (Ni)			117.5		%		70-130	16-SEP-15
Selenium (Se)			102.6		%		70-130	16-SEP-15
Silver (Ag)			118.2		%		70-130	16-SEP-15
Thallium (Tl)			121.1		%		70-130	16-SEP-15
Uranium (U)			129.8		%		70-130	16-SEP-15
Vanadium (V)			125.1		%		70-130	16-SEP-15
Zinc (Zn)			115.8		%		70-130	16-SEP-15
WG2171581-6 DUP		**WG2171581-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	16-SEP-15
Arsenic (As)		0.62	0.51		ug/g	21	30	16-SEP-15
Barium (Ba)		8.83	7.28		ug/g	19	40	16-SEP-15
Beryllium (Be)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	16-SEP-15
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	16-SEP-15
Cadmium (Cd)		<0.020	<0.020	RPD-NA	ug/g	N/A	30	16-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R3268559								
WG2171581-6 DUP		**WG2171581-5**						
Chromium (Cr)		5.09	4.05		ug/g	23	30	16-SEP-15
Cobalt (Co)		1.30	1.14		ug/g	13	30	16-SEP-15
Copper (Cu)		1.13	1.01		ug/g	11	30	16-SEP-15
Lead (Pb)		1.18	0.77	J	ug/g	0.41	1	16-SEP-15
Molybdenum (Mo)		0.14	<0.10	RPD-NA	ug/g	N/A	40	16-SEP-15
Nickel (Ni)		3.65	3.10		ug/g	16	30	16-SEP-15
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	16-SEP-15
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	16-SEP-15
Thallium (Tl)		<0.050	<0.050	RPD-NA	ug/g	N/A	30	16-SEP-15
Uranium (U)		0.453	0.309	DUP-H	ug/g	38	30	16-SEP-15
Vanadium (V)		14.1	11.0		ug/g	25	30	16-SEP-15
Zinc (Zn)		4.8	4.4		ug/g	7.9	30	16-SEP-15
WG2171581-3 LCS								
Antimony (Sb)			115.3		%		80-120	16-SEP-15
Arsenic (As)			109.6		%		80-120	16-SEP-15
Barium (Ba)			111.5		%		80-120	16-SEP-15
Beryllium (Be)			110.7		%		80-120	16-SEP-15
Boron (B)			104.2		%		80-120	16-SEP-15
Cadmium (Cd)			113.7		%		80-120	16-SEP-15
Chromium (Cr)			107.7		%		80-120	16-SEP-15
Cobalt (Co)			108.4		%		80-120	16-SEP-15
Copper (Cu)			106.3		%		80-120	16-SEP-15
Lead (Pb)			111.3		%		80-120	16-SEP-15
Molybdenum (Mo)			112.5		%		80-120	16-SEP-15
Nickel (Ni)			107.0		%		80-120	16-SEP-15
Selenium (Se)			108.4		%		80-120	16-SEP-15
Silver (Ag)			116.4		%		80-120	16-SEP-15
Thallium (Tl)			114.3		%		80-120	16-SEP-15
Uranium (U)			113.6		%		80-120	16-SEP-15
Vanadium (V)			110.4		%		80-120	16-SEP-15
Zinc (Zn)			103.7		%		80-120	16-SEP-15
WG2171581-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	16-SEP-15
Arsenic (As)			<0.10				0.1	

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch R3268559								
WG2171581-1 MB								
Arsenic (As)			<0.10		mg/kg		0.1	16-SEP-15
Barium (Ba)			<0.50		mg/kg		0.5	16-SEP-15
Beryllium (Be)			<0.10		mg/kg		0.1	16-SEP-15
Boron (B)			<5.0		mg/kg		5	16-SEP-15
Cadmium (Cd)			<0.020		mg/kg		0.02	16-SEP-15
Chromium (Cr)			<0.50		mg/kg		0.5	16-SEP-15
Cobalt (Co)			<0.10		mg/kg		0.1	16-SEP-15
Copper (Cu)			<0.50		mg/kg		0.5	16-SEP-15
Lead (Pb)			<0.50		mg/kg		0.5	16-SEP-15
Molybdenum (Mo)			<0.10		mg/kg		0.1	16-SEP-15
Nickel (Ni)			<0.50		mg/kg		0.5	16-SEP-15
Selenium (Se)			<0.20		mg/kg		0.2	16-SEP-15
Silver (Ag)			<0.10		mg/kg		0.1	16-SEP-15
Thallium (Tl)			<0.050		mg/kg		0.05	16-SEP-15
Uranium (U)			<0.050		mg/kg		0.05	16-SEP-15
Vanadium (V)			<0.20		mg/kg		0.2	16-SEP-15
Zinc (Zn)			<2.0		mg/kg		2	16-SEP-15
MOISTURE-WT	Soil							
Batch R3265992								
WG2170362-3 DUP		**L1672015-8**						
% Moisture		19.7	19.3		%	2.2	20	15-SEP-15
WG2170362-2 LCS								
% Moisture			97.2		%		90-110	15-SEP-15
WG2170362-1 MB								
% Moisture			<0.10		%		0.1	15-SEP-15
Batch R3266783								
WG2170782-3 DUP		**L1672015-25**						
% Moisture		17.3	17.8		%	2.8	20	16-SEP-15
WG2170782-2 LCS								
% Moisture			104.1		%		90-110	16-SEP-15
WG2170782-1 MB								
% Moisture			<0.10		%		0.1	16-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	Soil							
Batch R3266786								
WG2170740-3 DUP		**L1672015-27**						
% Moisture		21.4	21.5		%	0.8	20	16-SEP-15
WG2170740-2 LCS								
% Moisture			102.0		%		90-110	16-SEP-15
WG2170740-1 MB								
% Moisture			<0.10		%		0.1	16-SEP-15
Batch R3266788								
WG2171157-3 DUP		**L1672015-1**						
% Moisture		17.0	16.3		%	3.8	20	16-SEP-15
WG2171157-2 LCS								
% Moisture			96.2		%		90-110	16-SEP-15
WG2171157-1 MB								
% Moisture			<0.10		%		0.1	16-SEP-15
Batch R3271950								
WG2175261-2 LCS								
% Moisture			95.7		%		90-110	22-SEP-15
WG2175261-1 MB								
% Moisture			<0.10		%		0.1	22-SEP-15
PEST-OC-511-WT	Soil							
Batch R3269371								
WG2170719-4 DUP		**WG2170719-3**						
Aldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
a-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
g-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
op-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
pp-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
o,p-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
pp-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
op-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
pp-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Dieldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Endosulfan I		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Endosulfan II		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Endrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
gamma-hexachlorocyclohexane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-SEP-15
Heptachlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	Soil							
Batch R3269371								
WG2170719-4 DUP		**WG2170719-3**						
Heptachlor Epoxide		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Hexachlorobenzene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-SEP-15
Hexachlorobutadiene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-SEP-15
Hexachloroethane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-SEP-15
Methoxychlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
WG2170719-2 LCS								
Aldrin			106.1		%		50-140	18-SEP-15
a-chlordane			98.0		%		50-140	18-SEP-15
g-chlordane			101.1		%		50-140	18-SEP-15
op-DDD			88.4		%		50-140	18-SEP-15
pp-DDD			87.4		%		50-140	18-SEP-15
o,p-DDE			91.2		%		50-140	18-SEP-15
pp-DDE			89.1		%		50-140	18-SEP-15
op-DDT			100.6		%		50-140	18-SEP-15
pp-DDT			96.4		%		50-140	18-SEP-15
Dieldrin			91.8		%		50-140	18-SEP-15
Endosulfan I			94.2		%		50-140	18-SEP-15
Endosulfan II			96.6		%		50-140	18-SEP-15
Endrin			89.0		%		50-140	18-SEP-15
gamma-hexachlorocyclohexane			90.5		%		50-140	18-SEP-15
Heptachlor			91.2		%		50-140	18-SEP-15
Heptachlor Epoxide			93.9		%		50-140	18-SEP-15
Hexachlorobenzene			88.2		%		50-140	18-SEP-15
Hexachlorobutadiene			93.2		%		50-140	18-SEP-15
Hexachloroethane			90.9		%		50-140	18-SEP-15
Methoxychlor			87.4		%		50-140	18-SEP-15
WG2170719-1 MB								
Aldrin			<0.020		ug/g		0.02	18-SEP-15
a-chlordane			<0.020		ug/g		0.02	18-SEP-15
g-chlordane			<0.020		ug/g		0.02	18-SEP-15
op-DDD			<0.020		ug/g		0.02	18-SEP-15
pp-DDD			<0.020		ug/g		0.02	18-SEP-15
o,p-DDE			<0.020		ug/g		0.02	18-SEP-15
pp-DDE			<0.020		ug/g		0.02	18-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
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Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	Soil							
Batch	**R3269371**							
WG2170719-1	**MB**							
op-DDT			<0.020		ug/g		0.02	18-SEP-15
pp-DDT			<0.020		ug/g		0.02	18-SEP-15
Dieldrin			<0.020		ug/g		0.02	18-SEP-15
Endosulfan I			<0.020		ug/g		0.02	18-SEP-15
Endosulfan II			<0.020		ug/g		0.02	18-SEP-15
Endrin			<0.020		ug/g		0.02	18-SEP-15
gamma-hexachlorocyclohexane			<0.010		ug/g		0.01	18-SEP-15
Heptachlor			<0.020		ug/g		0.02	18-SEP-15
Heptachlor Epoxide			<0.020		ug/g		0.02	18-SEP-15
Hexachlorobenzene			<0.010		ug/g		0.01	18-SEP-15
Hexachlorobutadiene			<0.010		ug/g		0.01	18-SEP-15
Hexachloroethane			<0.010		ug/g		0.01	18-SEP-15
Methoxychlor			<0.020		ug/g		0.02	18-SEP-15
Surrogate: 2-Fluorobiphenyl			101.0		%		50-140	18-SEP-15
Surrogate: d14-Terphenyl			101.9		%		50-140	18-SEP-15
WG2170719-5	**MS**	**WG2170719-3**						
Aldrin			101.0		%		50-140	18-SEP-15
a-chlordane			101.3		%		50-140	18-SEP-15
g-chlordane			111.9		%		50-140	18-SEP-15
op-DDD			96.7		%		50-140	18-SEP-15
pp-DDD			94.6		%		50-140	18-SEP-15
o,p-DDE			102.4		%		50-140	18-SEP-15
pp-DDE			97.8		%		50-140	18-SEP-15
op-DDT			110.1		%		50-140	18-SEP-15
pp-DDT			104.0		%		50-140	18-SEP-15
Dieldrin			92.2		%		50-140	18-SEP-15
Endosulfan I			98.1		%		50-140	18-SEP-15
Endosulfan II			90.3		%		50-140	18-SEP-15
Endrin			106.8		%		50-150	18-SEP-15
gamma-hexachlorocyclohexane			87.6		%		50-140	18-SEP-15
Heptachlor			95.8		%		50-140	18-SEP-15
Heptachlor Epoxide			99.7		%		50-140	18-SEP-15
Hexachlorobenzene			86.5		%		50-140	18-SEP-15
Hexachlorobutadiene			93.3		%		50-140	18-SEP-15

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	Soil							
Batch R3269371								
WG2170719-5 MS		WG2170719-3						
Hexachloroethane			91.3		%		50-140	18-SEP-15
Methoxychlor			95.3		%		50-140	18-SEP-15
Batch R3270747								
WG2170866-4 DUP		WG2170866-3						
Aldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
a-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
g-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
op-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
pp-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
o,p-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
pp-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
op-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
pp-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Dieldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Endosulfan I		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Endosulfan II		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Endrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
gamma-hexachlorocyclohexane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	21-SEP-15
Heptachlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Heptachlor Epoxide		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Hexachlorobenzene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	21-SEP-15
Hexachlorobutadiene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	21-SEP-15
Hexachloroethane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	21-SEP-15
Methoxychlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
WG2170866-2 LCS								
Aldrin			95.4		%		50-140	21-SEP-15
a-chlordane			97.2		%		50-140	21-SEP-15
g-chlordane			101.1		%		50-140	21-SEP-15
op-DDD			90.6		%		50-140	21-SEP-15
pp-DDD			93.6		%		50-140	21-SEP-15
o,p-DDE			86.4		%		50-140	21-SEP-15
pp-DDE			92.9		%		50-140	21-SEP-15
op-DDT			98.5		%		50-140	21-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
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Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	Soil							
Batch	**R3270747**							
WG2170866-2	**LCS**							
pp-DDT			95.7		%		50-140	21-SEP-15
Dieldrin			87.4		%		50-140	21-SEP-15
Endosulfan I			89.0		%		50-140	21-SEP-15
Endosulfan II			92.4		%		50-140	21-SEP-15
Endrin			122.0		%		50-140	21-SEP-15
gamma-hexachlorocyclohexane			92.6		%		50-140	21-SEP-15
Heptachlor			92.7		%		50-140	21-SEP-15
Heptachlor Epoxide			95.7		%		50-140	21-SEP-15
Hexachlorobenzene			89.9		%		50-140	21-SEP-15
Hexachlorobutadiene			95.7		%		50-140	21-SEP-15
Hexachloroethane			95.2		%		50-140	21-SEP-15
Methoxychlor			101.0		%		50-140	21-SEP-15
WG2170866-1	**MB**							
Aldrin			<0.020		ug/g		0.02	21-SEP-15
a-chlordane			<0.020		ug/g		0.02	21-SEP-15
g-chlordane			<0.020		ug/g		0.02	21-SEP-15
op-DDD			<0.020		ug/g		0.02	21-SEP-15
pp-DDD			<0.020		ug/g		0.02	21-SEP-15
o,p-DDE			<0.020		ug/g		0.02	21-SEP-15
pp-DDE			<0.020		ug/g		0.02	21-SEP-15
op-DDT			<0.020		ug/g		0.02	21-SEP-15
pp-DDT			<0.020		ug/g		0.02	21-SEP-15
Dieldrin			<0.020		ug/g		0.02	21-SEP-15
Endosulfan I			<0.020		ug/g		0.02	21-SEP-15
Endosulfan II			<0.020		ug/g		0.02	21-SEP-15
Endrin			<0.020		ug/g		0.02	21-SEP-15
gamma-hexachlorocyclohexane			<0.010		ug/g		0.01	21-SEP-15
Heptachlor			<0.020		ug/g		0.02	21-SEP-15
Heptachlor Epoxide			<0.020		ug/g		0.02	21-SEP-15
Hexachlorobenzene			<0.010		ug/g		0.01	21-SEP-15
Hexachlorobutadiene			<0.010		ug/g		0.01	21-SEP-15
Hexachloroethane			<0.010		ug/g		0.01	21-SEP-15
Methoxychlor			<0.020		ug/g		0.02	21-SEP-15
Surrogate: 2-Fluorobiphenyl			91.9		%		50-140	21-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
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Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	Soil							
Batch R3270747								
WG2170866-1 MB								
Surrogate: d14-Terphenyl			93.1		%		50-140	21-SEP-15
WG2170866-5 MS		**WG2170866-3**						
Aldrin			94.6		%		50-140	21-SEP-15
a-chlordane			96.5		%		50-140	21-SEP-15
g-chlordane			101.8		%		50-140	21-SEP-15
op-DDD			92.8		%		50-140	21-SEP-15
pp-DDD			96.8		%		50-140	21-SEP-15
o,p-DDE			89.7		%		50-140	21-SEP-15
pp-DDE			94.7		%		50-140	21-SEP-15
op-DDT			92.1		%		50-140	21-SEP-15
pp-DDT			89.4		%		50-140	21-SEP-15
Dieldrin			94.1		%		50-140	21-SEP-15
Endosulfan I			80.8		%		50-140	21-SEP-15
Endosulfan II			97.3		%		50-140	21-SEP-15
Endrin			107.2		%		50-150	21-SEP-15
gamma-hexachlorocyclohexane			87.7		%		50-140	21-SEP-15
Heptachlor			82.4		%		50-140	21-SEP-15
Heptachlor Epoxide			97.7		%		50-140	21-SEP-15
Hexachlorobenzene			83.8		%		50-140	21-SEP-15
Hexachlorobutadiene			88.1		%		50-140	21-SEP-15
Hexachloroethane			86.0		%		50-140	21-SEP-15
Methoxychlor			93.8		%		50-140	21-SEP-15
PH-R511-WT	Soil							
Batch R3267065								
WG2171079-1 DUP		**L1672015-2**						
pH		7.96	7.95	J	pH units	0.01	0.3	16-SEP-15
WG2171755-2 LCS								
pH			7.05		pH units		6.7-7.3	16-SEP-15
Batch R3269545								
WG2171253-1 DUP		**L1672015-10**						
pH		7.67	7.70	J	pH units	0.03	0.3	18-SEP-15
WG2173681-1 LCS								
pH			6.97		pH units		6.7-7.3	18-SEP-15
SAR-R511-WT	Soil							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	Soil							
Batch R3267169								
WG2171578-4 DUP		**WG2171578-3**						
Calcium (Ca)		20.1	18.4		mg/L	8.6	40	16-SEP-15
Sodium (Na)		<1.0	<1.0	RPD-NA	mg/L	N/A	40	16-SEP-15
Magnesium (Mg)		<1.0	<1.0	RPD-NA	mg/L	N/A	40	16-SEP-15
WG2171578-2 IRM		**WT SAR1**						
Calcium (Ca)			97.0		%		70-130	16-SEP-15
Sodium (Na)			98.5		%		70-130	16-SEP-15
Magnesium (Mg)			95.6		%		70-130	16-SEP-15
WG2171578-1 MB								
Calcium (Ca)			<1.0		mg/L		1	16-SEP-15
Sodium (Na)			<1.0		mg/L		1	16-SEP-15
Magnesium (Mg)			<1.0		mg/L		1	16-SEP-15
VOC-511-HS-WT	Soil							
Batch R3266043								
WG2169950-4 DUP		**WG2169950-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	17-SEP-15
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	17-SEP-15
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
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Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R3266043								
WG2169950-4 DUP		**WG2169950-3**						
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	17-SEP-15
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	17-SEP-15
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	17-SEP-15
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	17-SEP-15
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	17-SEP-15
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	17-SEP-15
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	17-SEP-15
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	17-SEP-15
Trichloroethylene		0.032	0.033		ug/g	3.5	40	17-SEP-15
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	17-SEP-15
WG2169950-2 LCS								
1,1,1,2-Tetrachloroethane			96.3		%		60-130	15-SEP-15
1,1,2,2-Tetrachloroethane			99.5		%		60-130	15-SEP-15
1,1,1-Trichloroethane			98.3		%		60-130	15-SEP-15
1,1,2-Trichloroethane			98.8		%		60-130	15-SEP-15
1,1-Dichloroethane			96.9		%		60-130	15-SEP-15
1,1-Dichloroethylene			91.0		%		60-130	15-SEP-15
1,2-Dibromoethane			97.4		%		70-130	15-SEP-15
1,2-Dichlorobenzene			100.6		%		70-130	15-SEP-15
1,2-Dichloroethane			98.3		%		60-130	15-SEP-15
1,2-Dichloropropane			99.5		%		70-130	15-SEP-15
1,3-Dichlorobenzene			98.9		%		70-130	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R3266043								
WG2169950-2 LCS								
1,4-Dichlorobenzene			101.9		%		70-130	15-SEP-15
Acetone			115.0		%		60-140	15-SEP-15
Benzene			98.7		%		70-130	15-SEP-15
Bromodichloromethane			96.1		%		50-140	15-SEP-15
Bromoform			96.6		%		70-130	15-SEP-15
Bromomethane			85.7		%		50-140	15-SEP-15
Carbon tetrachloride			96.2		%		70-130	15-SEP-15
Chlorobenzene			99.2		%		70-130	15-SEP-15
Chloroform			98.9		%		70-130	15-SEP-15
cis-1,2-Dichloroethylene			98.1		%		70-130	15-SEP-15
cis-1,3-Dichloropropene			97.1		%		70-130	15-SEP-15
Dibromochloromethane			100.9		%		60-130	15-SEP-15
Dichlorodifluoromethane			49.5	MES	%		50-140	15-SEP-15
Ethylbenzene			93.4		%		70-130	15-SEP-15
n-Hexane			100.2		%		70-130	15-SEP-15
Methylene Chloride			98.8		%		70-130	15-SEP-15
MTBE			95.8		%		70-130	15-SEP-15
m+p-Xylenes			95.4		%		70-130	15-SEP-15
Methyl Ethyl Ketone			110.7		%		60-140	15-SEP-15
Methyl Isobutyl Ketone			104.1		%		60-140	15-SEP-15
o-Xylene			93.7		%		70-130	15-SEP-15
Styrene			93.4		%		70-130	15-SEP-15
Tetrachloroethylene			95.6		%		60-130	15-SEP-15
Toluene			96.1		%		70-130	15-SEP-15
trans-1,2-Dichloroethylene			98.3		%		60-130	15-SEP-15
trans-1,3-Dichloropropene			93.2		%		70-130	15-SEP-15
Trichloroethylene			97.0		%		60-130	15-SEP-15
Trichlorofluoromethane			91.5		%		50-140	15-SEP-15
Vinyl chloride			77.3		%		60-140	15-SEP-15
WG2169950-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,1-Trichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,2-Trichloroethane			<0.050		ug/g		0.05	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R3266043								
WG2169950-1 MB								
1,1-Dichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
1,2-Dibromoethane			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichloropropane			<0.050		ug/g		0.05	15-SEP-15
1,3-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
1,4-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
Acetone			<0.50		ug/g		0.5	15-SEP-15
Benzene			<0.0068		ug/g		0.0068	15-SEP-15
Bromodichloromethane			<0.050		ug/g		0.05	15-SEP-15
Bromoform			<0.050		ug/g		0.05	15-SEP-15
Bromomethane			<0.050		ug/g		0.05	15-SEP-15
Carbon tetrachloride			<0.050		ug/g		0.05	15-SEP-15
Chlorobenzene			<0.050		ug/g		0.05	15-SEP-15
Chloroform			<0.050		ug/g		0.05	15-SEP-15
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	15-SEP-15
Dibromochloromethane			<0.050		ug/g		0.05	15-SEP-15
Dichlorodifluoromethane			<0.050		ug/g		0.05	15-SEP-15
Ethylbenzene			<0.018		ug/g		0.018	15-SEP-15
n-Hexane			<0.050		ug/g		0.05	15-SEP-15
Methylene Chloride			<0.050		ug/g		0.05	15-SEP-15
MTBE			<0.050		ug/g		0.05	15-SEP-15
m+p-Xylenes			<0.030		ug/g		0.03	15-SEP-15
Methyl Ethyl Ketone			<0.50		ug/g		0.5	15-SEP-15
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	15-SEP-15
o-Xylene			<0.020		ug/g		0.02	15-SEP-15
Styrene			<0.050		ug/g		0.05	15-SEP-15
Tetrachloroethylene			<0.050		ug/g		0.05	15-SEP-15
Toluene			<0.080		ug/g		0.08	15-SEP-15
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch	**R3266043**							
WG2169950-1	**MB**							
Trichloroethylene			<0.010		ug/g		0.01	15-SEP-15
Trichlorofluoromethane			<0.050		ug/g		0.05	15-SEP-15
Vinyl chloride			<0.020		ug/g		0.02	15-SEP-15
Surrogate: 1,4-Difluorobenzene			106.6		%		70-130	15-SEP-15
Surrogate: 4-Bromofluorobenzene			103.3		%		70-130	15-SEP-15
WG2169950-5	**MS**	**WG2169950-3**						
1,1,1,2-Tetrachloroethane			104.1		%		50-140	17-SEP-15
1,1,2,2-Tetrachloroethane			106.5		%		50-140	17-SEP-15
1,1,1-Trichloroethane			102.9		%		50-140	17-SEP-15
1,1,2-Trichloroethane			109.3		%		50-140	17-SEP-15
1,1-Dichloroethane			102.5		%		50-140	17-SEP-15
1,1-Dichloroethylene			94.4		%		50-140	17-SEP-15
1,2-Dibromoethane			105.1		%		50-140	17-SEP-15
1,2-Dichlorobenzene			98.2		%		50-140	17-SEP-15
1,2-Dichloroethane			101.9		%		50-140	17-SEP-15
1,2-Dichloropropane			102.7		%		50-140	17-SEP-15
1,3-Dichlorobenzene			92.9		%		50-140	17-SEP-15
1,4-Dichlorobenzene			95.5		%		50-140	17-SEP-15
Acetone			126.7		%		50-140	17-SEP-15
Benzene			103.2		%		50-140	17-SEP-15
Bromodichloromethane			104.0		%		50-140	17-SEP-15
Bromoform			101.9		%		50-140	17-SEP-15
Bromomethane			86.9		%		50-140	17-SEP-15
Carbon tetrachloride			99.5		%		50-140	17-SEP-15
Chlorobenzene			101.7		%		50-140	17-SEP-15
Chloroform			103.9		%		50-140	17-SEP-15
cis-1,2-Dichloroethylene			100.4		%		50-140	17-SEP-15
cis-1,3-Dichloropropene			89.1		%		50-140	17-SEP-15
Dibromochloromethane			108.5		%		50-140	17-SEP-15
Dichlorodifluoromethane			44.6	MES	%		50-140	17-SEP-15
Ethylbenzene			92.0		%		50-140	17-SEP-15
n-Hexane			103.2		%		50-140	17-SEP-15
Methylene Chloride			104.8		%		50-140	17-SEP-15
MTBE			97.3		%		50-140	17-SEP-15

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R3266043								
WG2169950-5 MS		**WG2169950-3**						
m+p-Xylenes			94.3		%		50-140	17-SEP-15
Methyl Ethyl Ketone			102.1		%		50-140	17-SEP-15
Methyl Isobutyl Ketone			95.3		%		50-140	17-SEP-15
o-Xylene			91.9		%		50-140	17-SEP-15
Styrene			87.5		%		50-140	17-SEP-15
Tetrachloroethylene			94.7		%		50-140	17-SEP-15
Toluene			95.5		%		50-140	17-SEP-15
trans-1,2-Dichloroethylene			102.6		%		50-140	17-SEP-15
trans-1,3-Dichloropropene			87.4		%		50-140	17-SEP-15
Trichloroethylene			98.2		%		50-140	17-SEP-15
Trichlorofluoromethane			95.4		%		50-140	17-SEP-15
Vinyl chloride			78.9		%		50-140	17-SEP-15
Batch R3266448								
WG2170539-4 DUP		**WG2170539-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	15-SEP-15
Benzene		<0.020	<0.0068	RPD-NA	ug/g	N/A	40	15-SEP-15
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R3266448								
WG2170539-4 DUP		**WG2170539-3**						
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	15-SEP-15
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Ethylbenzene		<0.050	<0.018	RPD-NA	ug/g	N/A	40	15-SEP-15
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	15-SEP-15
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	15-SEP-15
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	15-SEP-15
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	15-SEP-15
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Toluene		<0.20	<0.080	RPD-NA	ug/g	N/A	40	15-SEP-15
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	15-SEP-15
Trichloroethylene		<0.050	<0.010	RPD-NA	ug/g	N/A	40	15-SEP-15
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	15-SEP-15
WG2170539-2 LCS								
1,1,1,2-Tetrachloroethane			100.3		%		60-130	15-SEP-15
1,1,2,2-Tetrachloroethane			105.7		%		60-130	15-SEP-15
1,1,1-Trichloroethane			103.5		%		60-130	15-SEP-15
1,1,2-Trichloroethane			104.0		%		60-130	15-SEP-15
1,1-Dichloroethane			101.2		%		60-130	15-SEP-15
1,1-Dichloroethylene			88.9		%		60-130	15-SEP-15
1,2-Dibromoethane			99.7		%		70-130	15-SEP-15
1,2-Dichlorobenzene			97.8		%		70-130	15-SEP-15
1,2-Dichloroethane			120.3		%		60-130	15-SEP-15
1,2-Dichloropropane			103.0		%		70-130	15-SEP-15
1,3-Dichlorobenzene			93.3		%		70-130	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch	**R3266448**							
WG2170539-2	**LCS**							
1,4-Dichlorobenzene			98.3		%		70-130	15-SEP-15
Acetone			121.9		%		60-140	15-SEP-15
Benzene			97.9		%		70-130	15-SEP-15
Bromodichloromethane			106.5		%		50-140	15-SEP-15
Bromoform			107.1		%		70-130	15-SEP-15
Bromomethane			87.0		%		50-140	15-SEP-15
Carbon tetrachloride			100.0		%		70-130	15-SEP-15
Chlorobenzene			96.7		%		70-130	15-SEP-15
Chloroform			107.5		%		70-130	15-SEP-15
cis-1,2-Dichloroethylene			98.7		%		70-130	15-SEP-15
cis-1,3-Dichloropropene			115.7		%		70-130	15-SEP-15
Dibromochloromethane			106.3		%		60-130	15-SEP-15
Dichlorodifluoromethane			33.8	RRQC	%		50-140	15-SEP-15
Ethylbenzene			79.7		%		70-130	15-SEP-15
n-Hexane			89.0		%		70-130	15-SEP-15
Methylene Chloride			101.2		%		70-130	15-SEP-15
MTBE			89.0		%		70-130	15-SEP-15
m+p-Xylenes			85.4		%		70-130	15-SEP-15
Methyl Ethyl Ketone			108.7		%		60-140	15-SEP-15
Methyl Isobutyl Ketone			89.6		%		60-140	15-SEP-15
o-Xylene			83.4		%		70-130	15-SEP-15
Styrene			89.0		%		70-130	15-SEP-15
Tetrachloroethylene			90.0		%		60-130	15-SEP-15
Toluene			83.6		%		70-130	15-SEP-15
trans-1,2-Dichloroethylene			98.3		%		60-130	15-SEP-15
trans-1,3-Dichloropropene			95.5		%		70-130	15-SEP-15
Trichloroethylene			95.8		%		60-130	15-SEP-15
Trichlorofluoromethane			91.1		%		50-140	15-SEP-15
Vinyl chloride			66.9		%		60-140	15-SEP-15
COMMENTS: RRQC-Although recoveries failed to meet ALS DQO's samples are believed to be unaffected.								
WG2170539-1	**MB**							
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,1-Trichloroethane			<0.050		ug/g		0.05	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R3266448								
WG2170539-1 MB								
1,1,2-Trichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1-Dichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
1,2-Dibromoethane			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichloropropane			<0.050		ug/g		0.05	15-SEP-15
1,3-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
1,4-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
Acetone			<0.50		ug/g		0.5	15-SEP-15
Benzene			<0.0068		ug/g		0.0068	15-SEP-15
Bromodichloromethane			<0.050		ug/g		0.05	15-SEP-15
Bromoform			<0.050		ug/g		0.05	15-SEP-15
Bromomethane			<0.050		ug/g		0.05	15-SEP-15
Carbon tetrachloride			<0.050		ug/g		0.05	15-SEP-15
Chlorobenzene			<0.050		ug/g		0.05	15-SEP-15
Chloroform			<0.050		ug/g		0.05	15-SEP-15
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	15-SEP-15
Dibromochloromethane			<0.050		ug/g		0.05	15-SEP-15
Dichlorodifluoromethane			<0.050		ug/g		0.05	15-SEP-15
Ethylbenzene			<0.018		ug/g		0.018	15-SEP-15
n-Hexane			<0.050		ug/g		0.05	15-SEP-15
Methylene Chloride			<0.050		ug/g		0.05	15-SEP-15
MTBE			<0.050		ug/g		0.05	15-SEP-15
m+p-Xylenes			<0.030		ug/g		0.03	15-SEP-15
Methyl Ethyl Ketone			<0.50		ug/g		0.5	15-SEP-15
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	15-SEP-15
o-Xylene			<0.020		ug/g		0.02	15-SEP-15
Styrene			<0.050		ug/g		0.05	15-SEP-15
Tetrachloroethylene			<0.050		ug/g		0.05	15-SEP-15
Toluene			<0.080		ug/g		0.08	15-SEP-15
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch	**R3266448**							
WG2170539-1	**MB**							
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	15-SEP-15
Trichloroethylene			<0.010		ug/g		0.01	15-SEP-15
Trichlorofluoromethane			<0.050		ug/g		0.05	15-SEP-15
Vinyl chloride			<0.020		ug/g		0.02	15-SEP-15
Surrogate: 1,4-Difluorobenzene			110.9		%		70-130	15-SEP-15
Surrogate: 4-Bromofluorobenzene			108.9		%		70-130	15-SEP-15
WG2170539-5	**MS**	**WG2170539-3**						
1,1,1,2-Tetrachloroethane			94.4		%		50-140	15-SEP-15
1,1,2,2-Tetrachloroethane			99.0		%		50-140	15-SEP-15
1,1,1-Trichloroethane			90.2		%		50-140	15-SEP-15
1,1,2-Trichloroethane			100.3		%		50-140	15-SEP-15
1,1-Dichloroethane			89.8		%		50-140	15-SEP-15
1,1-Dichloroethylene			81.6		%		50-140	15-SEP-15
1,2-Dibromoethane			97.9		%		50-140	15-SEP-15
1,2-Dichlorobenzene			92.6		%		50-140	15-SEP-15
1,2-Dichloroethane			100.6		%		50-140	15-SEP-15
1,2-Dichloropropane			93.6		%		50-140	15-SEP-15
1,3-Dichlorobenzene			87.9		%		50-140	15-SEP-15
1,4-Dichlorobenzene			88.2		%		50-140	15-SEP-15
Acetone			117.5		%		50-140	15-SEP-15
Benzene			89.6		%		50-140	15-SEP-15
Bromodichloromethane			91.8		%		50-140	15-SEP-15
Bromoform			96.8		%		50-140	15-SEP-15
Bromomethane			81.5		%		50-140	15-SEP-15
Carbon tetrachloride			86.0		%		50-140	15-SEP-15
Chlorobenzene			92.7		%		50-140	15-SEP-15
Chloroform			92.6		%		50-140	15-SEP-15
cis-1,2-Dichloroethylene			90.4		%		50-140	15-SEP-15
cis-1,3-Dichloropropene			102.2		%		50-140	15-SEP-15
Dibromochloromethane			100.1		%		50-140	15-SEP-15
Dichlorodifluoromethane			28.3	RRQC	%		50-140	15-SEP-15
Ethylbenzene			84.9		%		50-140	15-SEP-15
n-Hexane			84.4		%		50-140	15-SEP-15
Methylene Chloride			91.7		%		50-140	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch R3266448								
WG2170539-5 MS		**WG2170539-3**						
MTBE			85.2		%		50-140	15-SEP-15
m+p-Xylenes			84.8		%		50-140	15-SEP-15
Methyl Ethyl Ketone			98.2		%		50-140	15-SEP-15
Methyl Isobutyl Ketone			81.8		%		50-140	15-SEP-15
o-Xylene			88.0		%		50-140	15-SEP-15
Styrene			91.1		%		50-140	15-SEP-15
Tetrachloroethylene			90.5		%		50-140	15-SEP-15
Toluene			86.7		%		50-140	15-SEP-15
trans-1,2-Dichloroethylene			90.4		%		50-140	15-SEP-15
trans-1,3-Dichloropropene			93.5		%		50-140	15-SEP-15
Trichloroethylene			87.6		%		50-140	15-SEP-15
Trichlorofluoromethane			82.1		%		50-140	15-SEP-15
Vinyl chloride			67.1		%		50-140	15-SEP-15

COMMENTS: RRQC-Although recoveries failed to meet ALS DQO's samples are believed to be unaffected.

Quality Control Report

Workorder: L1672015 Report Date: 22-SEP-15

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

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
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
RRQC	Refer to report remarks for information regarding this QC result.

Hold Time Exceedances:

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

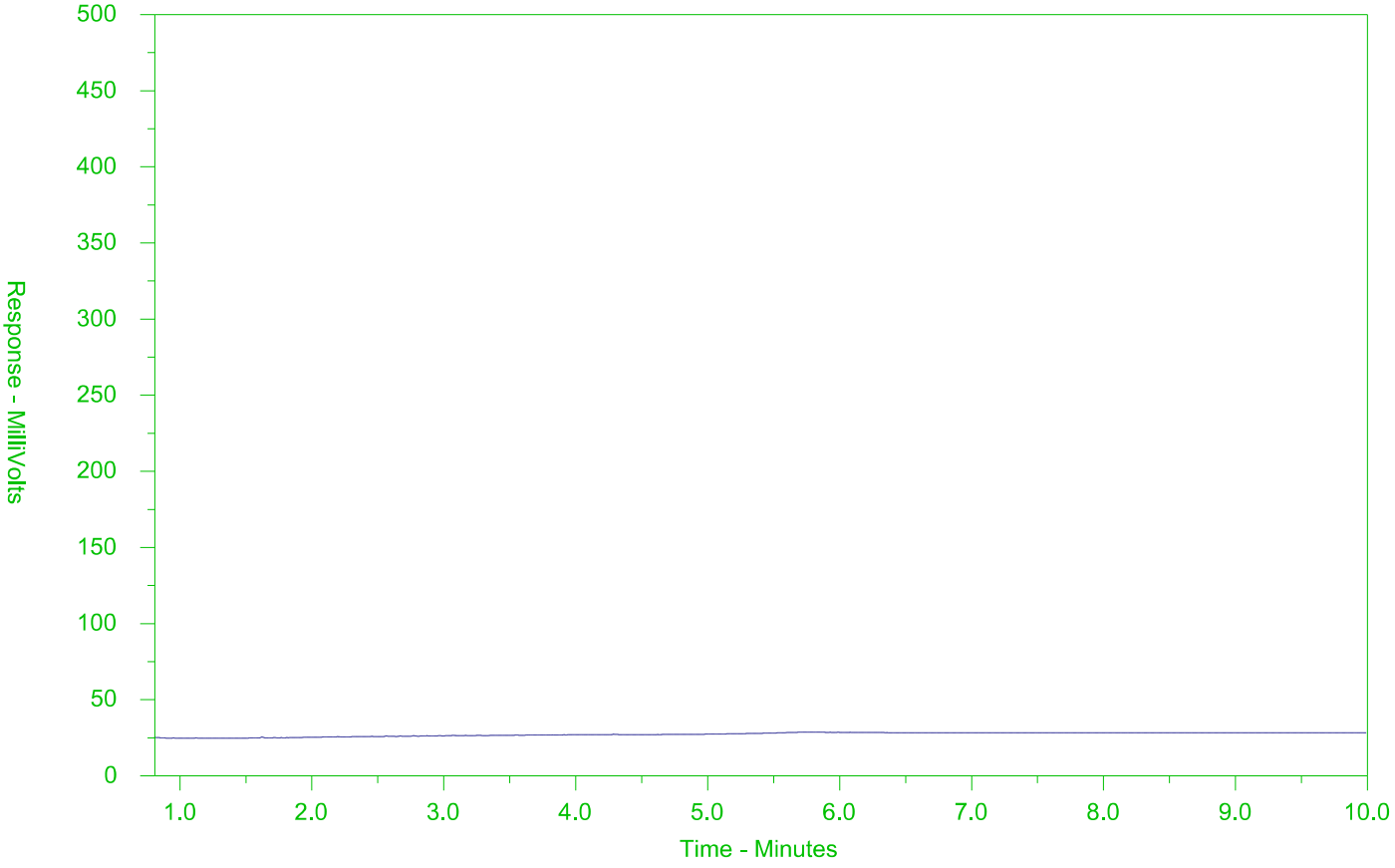
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-3
Client Sample ID: BH15-01 SS5



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

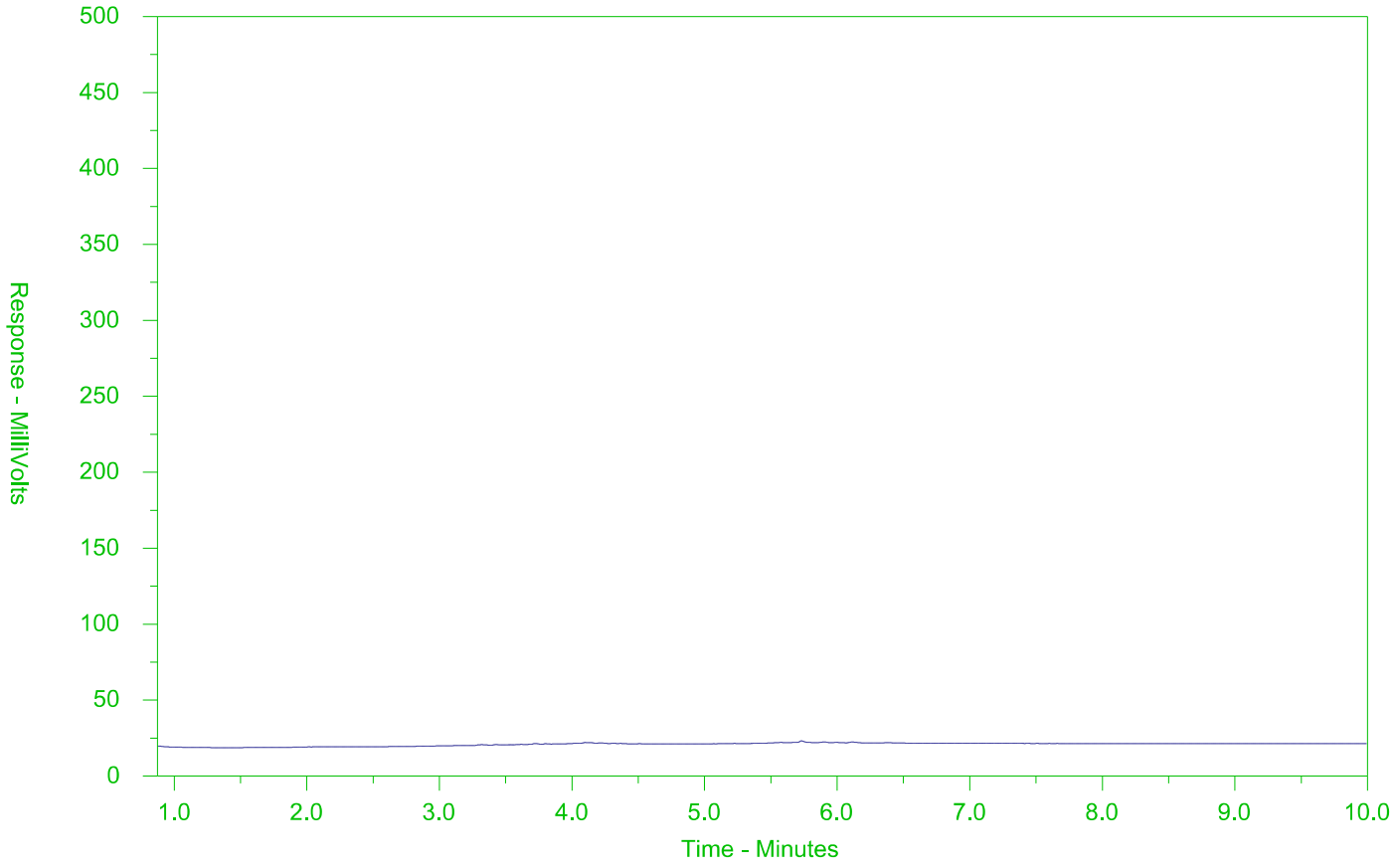
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-8
Client Sample ID: BH15-03 SS8



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

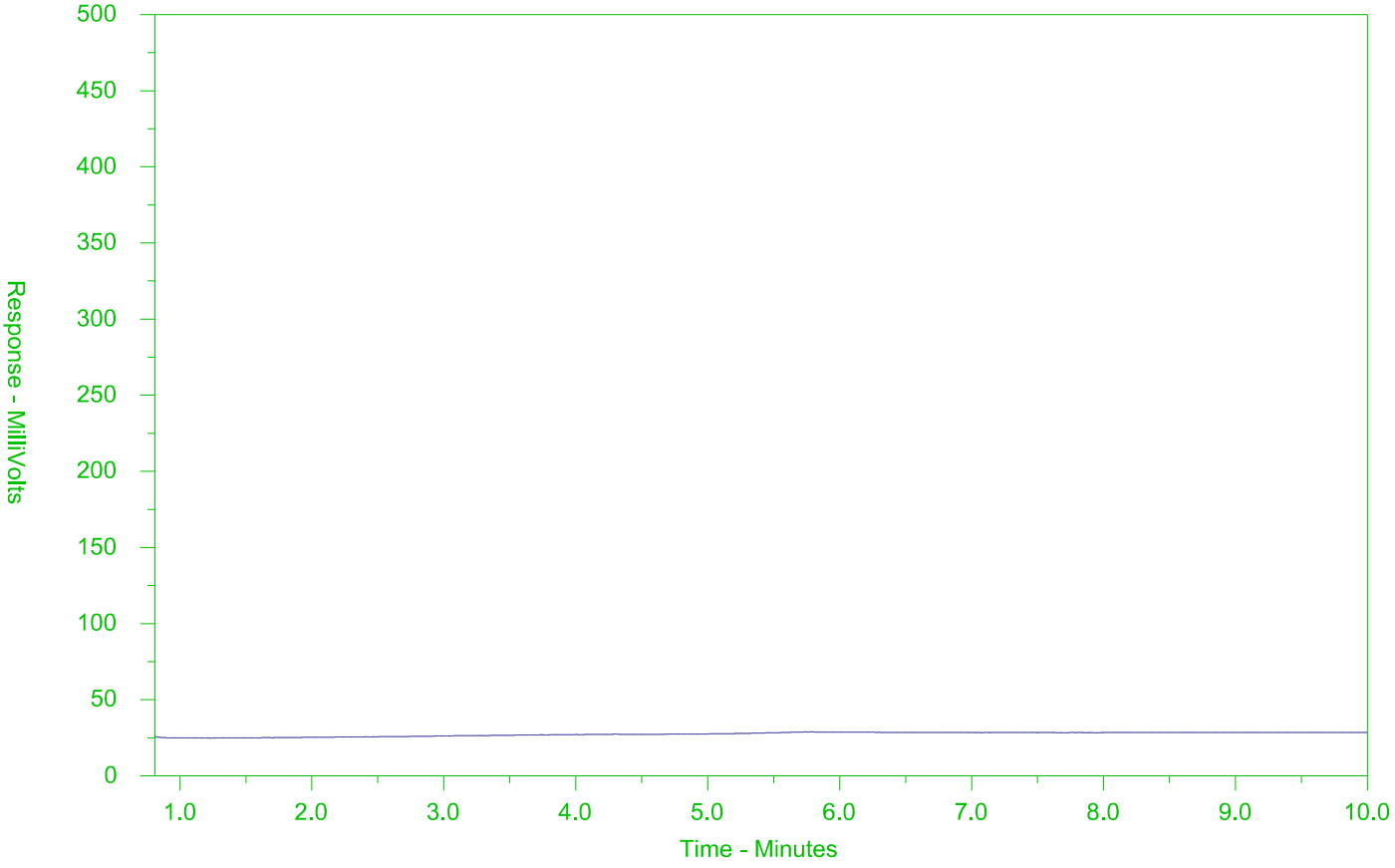
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-17
Client Sample ID: BH15-06 SS4



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

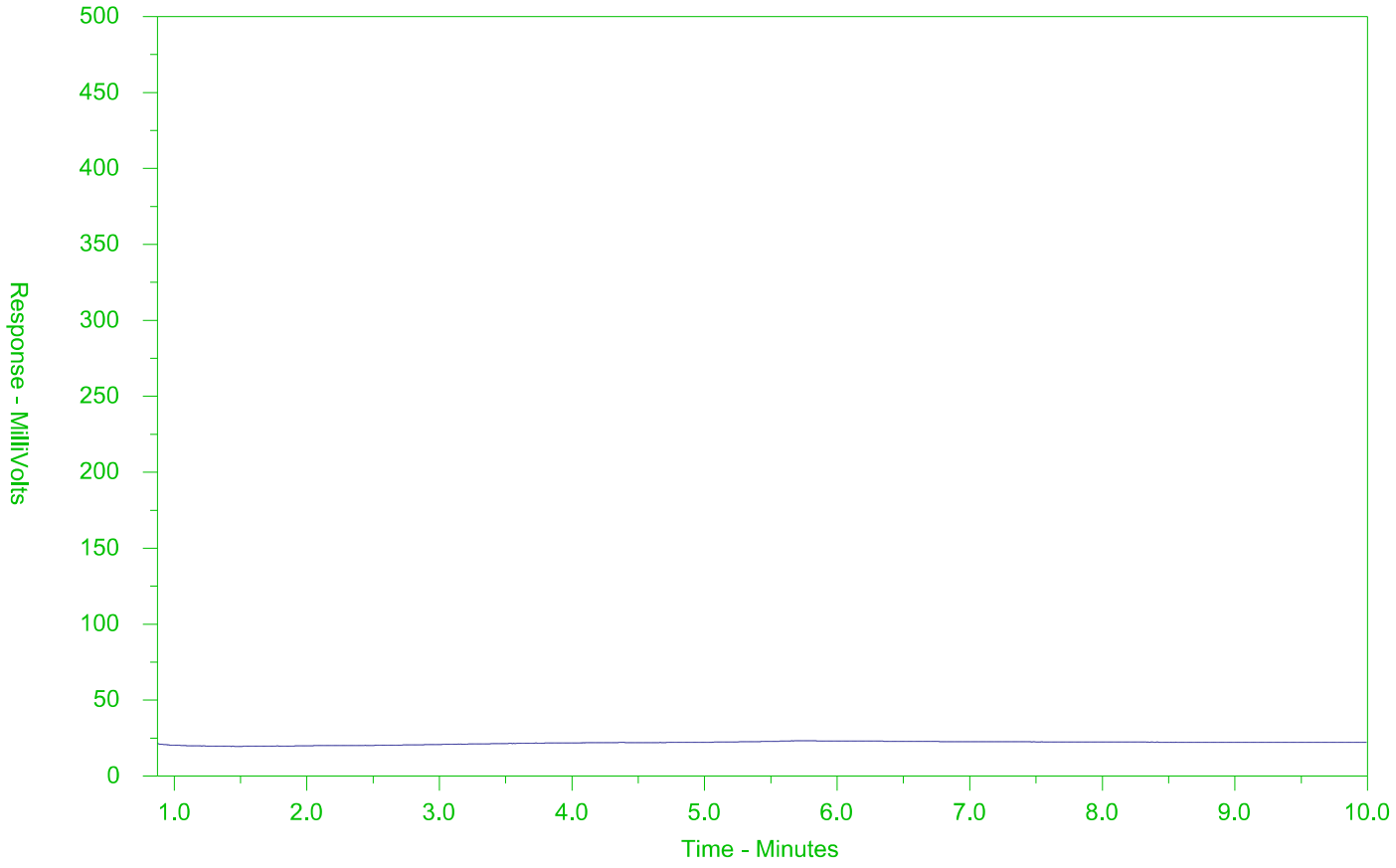
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-20
Client Sample ID: BH15-07 SS5



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

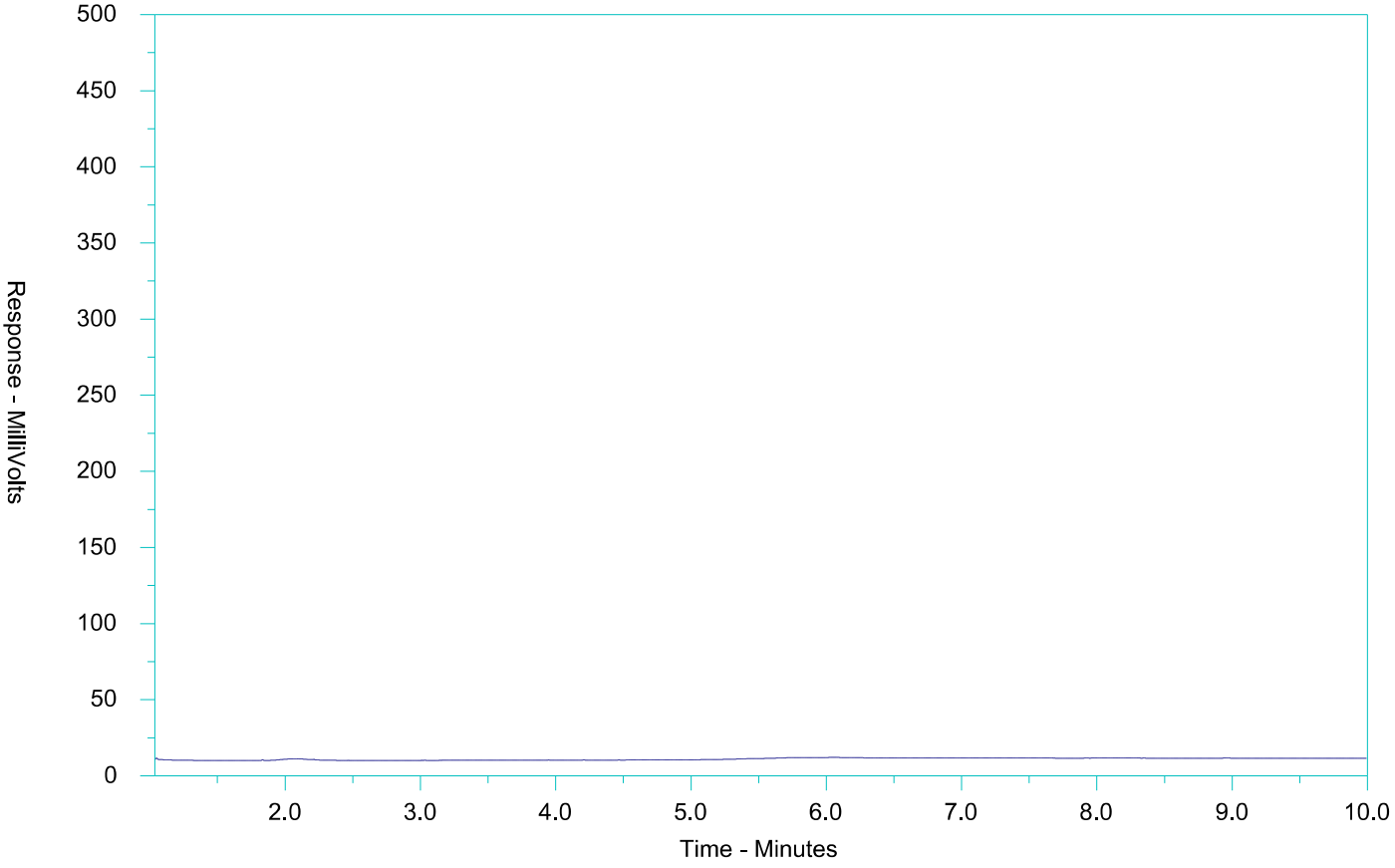
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-27
Client Sample ID: BH15-09 SS6



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

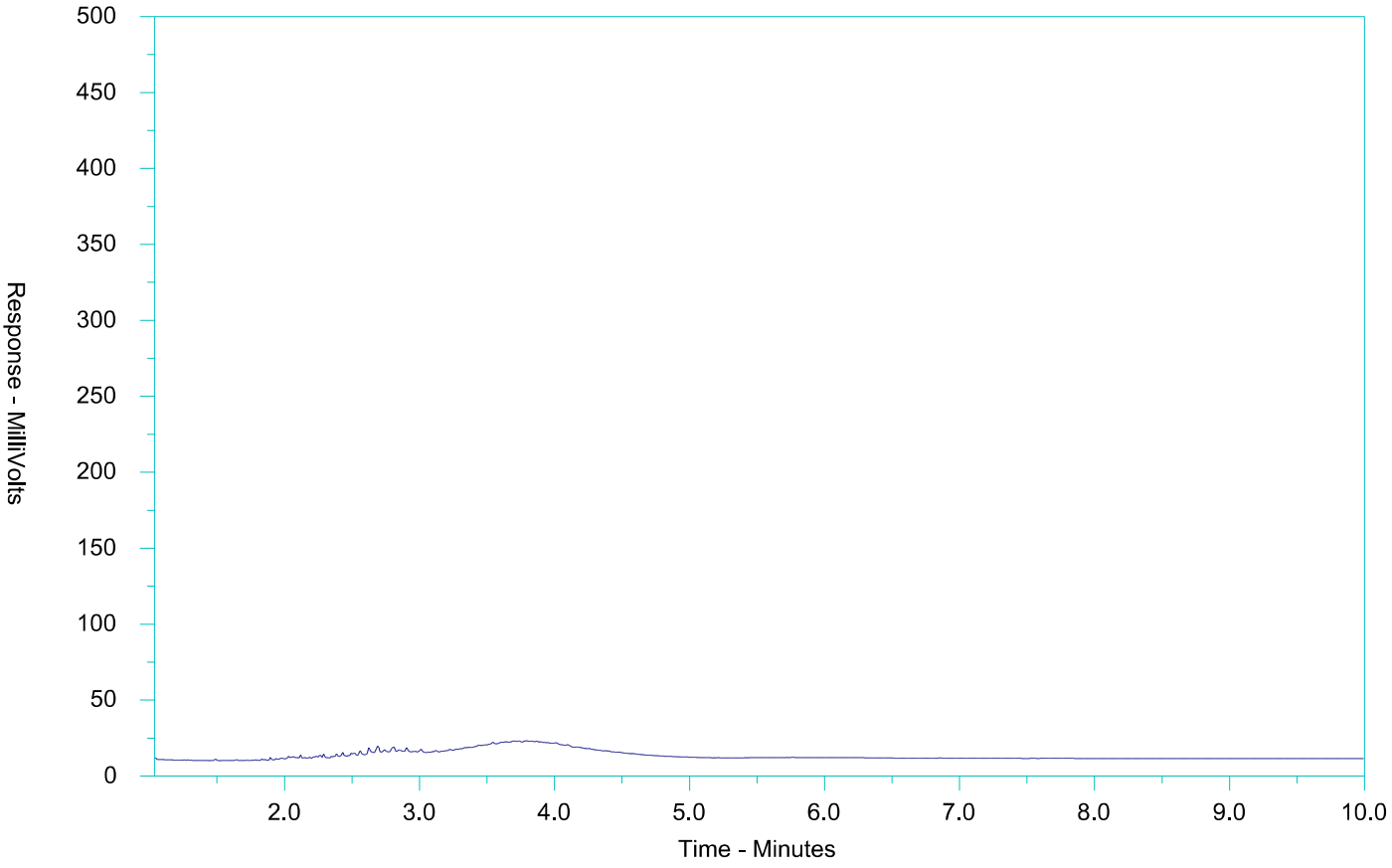
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

ALS Sample ID: L1672015-33
Client Sample ID: BH15-12 SS5



ALS www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1672015-COFC

COC Number: 14 - 465018

Page 1 of 4

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SPL Consultants Limited	Select Report Format:	☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)	R ☒ Regular (Standard TAT if received by 3pm)
Contact:	Nicole Collins	Quality Control (QC) Report with Report	☒ Yes ☐ No	P ☐ Priority (2-4 business days if received by 3pm)
Address:	14 Ronell Cres. Unit 1 Collingwood, ON	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 business days if received by 3pm)
Phone:	(705) 445-0064	Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency if received by 10am – contact ALS for surcharge.
		Email 1 or Fax	ncollins@splconsultants.ca	Specify Date Required for E2,E or P:
		Email 2	gjarvis@splconsultants.ca	

Invoice To		Invoice Distribution	
	Same as Report To ☐ Yes ☒ No	Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☐ Yes ☐ No	Email 1 or Fax	accounts@splconsultants.ca
Company:	SPL Consultants Limited	Email 2	
Contact:	Saren Jensen		

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	10002397	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact: Emerson Perez	Sampler: NC

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Metals	OC Pest	PHCs	VOCs	Number of Containers
1	BH15-01 SS1	09/09/15	AM	Soil		X			
2	BH15-01 SS2	↓	↓		X	X			
3	BH15-01 SS5	↓	↓				X	X	
4	BH15-02 SS1	09/08/15	PM			X			
5	BH15-02 SS2	↓	↓		X	X			
6	BH15-03 SS1	09/08/15	PM			X			
7	BH15-03 SS2	↓	↓		X	X			
8	BH15-03 SS8	↓	↓				X	X	
9	BH15-04 SS1	09/08/15	AM			X			
10	BH15-04 SS2	↓	↓		X	X			
11	BH15-05 SS1	09/08/15	AM			X			
12	BH15-05 SS2	↓	↓	↓	X				

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☒ No	Please compare to Table 9 for residential
Are samples for human drinking water use? ☐ Yes ☒ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐
Ice packs	Yes ☒	No ☐	Custody seal intact	Yes ☒ No ☐
Cooling Initiated	☐			

INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C			
8.1			4.9		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Nicole Collins	Date: 09/10/15	Time: 1:00pm	Received by:	Date: 11-SEP-15	Time: 12:10	Received by:	Date: 11/9/15	Time: 18:05

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

PUROLATOR 330531533595

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1672015-COFC

COC Number: 14 - 465019

Page 2 of 4

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SPL Consultants Limited	Select Report Format:	PDF EXCEL EDD (DIGITAL)	R Regular (Standard TAT if received by 3pm)
Contact:	Nicole Collins	Quality Control (QC) Report with Report	Yes No	P Priority (2-4 business days if received by 3pm)
Address:	14 Ronell Cres. Unit 1 Collingwood, ON	Criteria on Report - provide details below if box checked		E Emergency (1-2 business days if received by 3pm)
Phone:		Select Distribution:	EMAIL MAIL FAX	E2 Same day or weekend emergency if received by 10am – contact ALS for surcharge.
		Email 1 or Fax		Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To	Yes No	Invoice Distribution	
	Copy of Invoice with Report	Yes No	Select Invoice Distribution:	EMAIL MAIL FAX
Company:			Email 1 or Fax	
Contact:			Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	10062397	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Metals	OC Pest	PHCs	VOCs									Number of Containers
13	BH15-05 SS3	09/08/15	AM	Soil		X											
14	BH15-06 SS1	09/04/15	AM			X											
15	BH15-06 SS2	↓	↓		X												
16	BH15-06 SS3					X											
17	BH15-06 SS4						X	X									
18	BH15-07 SS1	09/04/15	AM			X											
19	BH15-07 SS2	↓	↓		X	X											
20	BH15-07 SS5						X	X									
21	BH15-08 SS1	09/03/15	AM			X											
22	BH15-08 SS2	↓	↓		X												
23	BH15-08 ~~SS5~~ SS3					X											
24	BH15-09 SS1	09/03/15	AM	↓		X											

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? Yes No	Please compere to Table 9 residential
Are samples for human drinking water use? Yes No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen		SIF Observations	Yes	No	
Ice packs	Yes No	Custody seal intact	Yes	No	
Cooling Initiated					

INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	
8.1		4.9	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Nicole Collins	09/10/15	1:00pm		11-SEP-15	12:10		11/9/15	18:05

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS FM-0326r v09 Front04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1672015-COFC

COC Number: 14 - 465017

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SPL Consultants Limited	Select Report Format:	PDF EXCEL EDD (DIGITAL)	R Regular (Standard TAT if received by 3pm)
Contact:	Nicole Collins	Quality Control (QC) Report with Report	Yes No	P Priority (2-4 business days if received by 3pm)
Address:	14 Ronell Cres, Unit 1 Collingwood, ON	Criteria on Report - provide details below if box checked		E Emergency (1-2 business days if received by 3pm)
Phone:	(705)445-0064	Select Distribution:	EMAIL MAIL FAX	E2 Same day or weekend emergency if received by 10am - contact ALS for surcharge.
		Email 1 or Fax	ncollins@splconsultants.ca	Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To	Yes No	Invoice Distribution	
	Copy of Invoice with Report	Yes No	Select Invoice Distribution:	EMAIL MAIL FAX
Company:			Email 1 or Fax	
Contact:			Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MHIS	OC Pest	PHCs	VOCs	Number of Containers
25	BHIS-09 SS2	09/03/15	AM	Soil	X	X			
26	BHIS-09 SS3	↓	↓		X	X			
27	BHIS-09 SS6	↓	↓				X	X	
28	BHIS-10 SS1	09/03/15	PM			X			
29	BHIS-10 SS2	↓	↓		X	X			
30	BHIS-12 SS1	09/09/15	AM			X			
31	BHIS-12 SS2	↓	↓		X				
32	BHIS-12 SS3	↓	↓			X			
33	BHIS-12 SS5	↓	↓				X	X	
34	DUP 1					X			
35	DUP 2							X	
36	DUP 3			↓		X			

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? Yes No	Please compare to Table 9 residential
Are samples for human drinking water use? Yes No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen		SIF Observations	Yes	No	
Ice packs	Yes X	No	Custody seal intact	Yes X	No
Cooling Initiated					

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
8.1			4.1		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Nicole Collins	09/10/15	1:00pm		11-SEP-15	12:10		11/9/15	15:05

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1672015-COFC

COC Number: 14 - 465016

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Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SPL Consultants Limited	Select Report Format:	☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)	R ☒ Regular (Standard TAT if received by 3pm)
Contact:	Nicole Collins	Quality Control (QC) Report with Report	☐ Yes ☐ No	P ☐ Priority (2-4 business days if received by 3pm)
Address:	14 Ronell Cres, Unit 7 Collingwood, ON	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 business days if received by 3pm)
Phone:	(705) 445-0064	Select Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency if received by 10am – contact ALS for surcharge.
		Email 1 or Fax	ncollins@splconsultants.ca	Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To ☐ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	OC Pest	Number of Containers
37	DUP 4			soil	X	
38	DUP 5			↓	X	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☒ No	Please compare to Table 9 residential
Are samples for human drinking water use? ☐ Yes ☒ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐		SIF Observations	Yes	☐	No	☐
Ice packs	Yes ☒	No ☐	Custody seal intact	Yes	☐	No	☐
Cooling Initiated	☐						

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
8.1			4.9		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Nicole Collins	09/10/15	1:00pm	[illegible]	11-SEP-15	12:10	[illegible]	11/9/15	15:05

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.