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Hunt Club Valley

465 Briadean Road
Cambridge, Ontario
N3H 4R6

Attention: Mr. Ms. Terri Johns,

**Re: Limited Phase 2 Soil Sampling Program – Maple Grove Road & Speedsville Road
(Southeast Corner Area) Cambridge, ON**

INTRODUCTION

Landtek Limited is pleased to submit the findings of the soil sampling program that was to assess the potential impacts to surface soil from the historical spill at the northwest corner area of the intersection of Speedsville Road and Maple Grove Road, and on Speedsville Road; and a metal products company at the northeast corner area of the intersection of Speedsville Road and Maple Grove Road. The work was initiated following authorization to proceed from Ms. Terri Johns of Hunt Club Valley.

Landtek recently completed a Phase 1 Environment Site Assessment (ESA) for the Land (Property) located at the southeast corner area of the intersection of Maple Grove Road & Speedsville Road, Cambridge in June, 2018. Based on the findings of this Phase 1 ESA, it was the opinion of Landtek Limited that there was need to undertake further environmental evaluation of the site at this time.

The soil sampling program was completed in general accordance with CSA Standard Z769-00 as well as current guidelines described in Ontario Regulation 153/04. The soil and groundwater quality standards and regulations came into effect in 2011 (Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, April 15, 2011).

It is understood that the information obtained as part of this program may be used for due diligence purposes and that the future use of the site will be for residential purposes.

METHODOLOGY

The objectives of the soil sampling was to assess the quality of the overburden (sand/silty sand) on site; (1) undertake sampling of subsurface soils by means of hand augured boreholes; (2) carry out chemical testing of soil to assist in the assessment of existing conditions; and, (3) evaluate and report on the findings to present the existing environmental conditions of the site.

Sample locations were marked out in the field prior to completing intrusive investigative fieldwork. Underground utilities in the test areas were located by public and private utility locating services by the client. Samples locations were augured on July 14, 2018 under the supervision of a representative of Landtek Limited.

Samples were obtained at regular intervals and the sample equipment was washed with phosphate free detergent and rinsed between samples to avoid cross contamination. Soil conditions were logged and soil samples were taken following protocols outlined in CSA Z769-00 as well as the Ministry of Environment and Climate Change (MOE) Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario', dated May, 1996. Screening for Total Combustible Vapours (TCV) and volatile organic compounds were performed on all samples using a Gastechtor 1238ME.

The soil samples were transported to Landtek Limited's laboratory in a cooled insulated container. Soil samples were visually examined to determine the textural classification, and samples were selected for chemical analyses based on visual and olfactory indicators as well as TCV and VOC readings.

Soil samples were submitted for chemical analyses to ALS Laboratories Limited (Canadian Accredited Environmental Laboratory). Soil sample characterization testing included metals and inorganics (M&I), petroleum hydrocarbons (PHC) and volatile organic compounds (VOCs).

SITE DESCRIPTION

The municipal address of the Site is 800 Briardean Road and the legal description of the Site is legally described as Part of Lot 11, Concession 1, BEASLEY'S LOWER BLK TWP OF WATERLOO AS IN WS650024 EXCEPT PTS 10 & 14 67R2769; CAMBRIDGE. The total size of the Site is approximately 13.88 hectares (34.30 acres).

The Site is approximately rectangular in shape and is bound by Maple Grove Road to the north, Briardean Road to the east, Speedsville Road to the west, and undeveloped land to the south. Vacant agricultural lands occupy the south and west adjacent properties, residential developments occupy the east adjacent properties, and vacant agricultural land occupy the north adjacent properties with the exception of a school and building located at the northwest area across Maple Grove Road. The Site is as shown on Figure 1 on the following page.

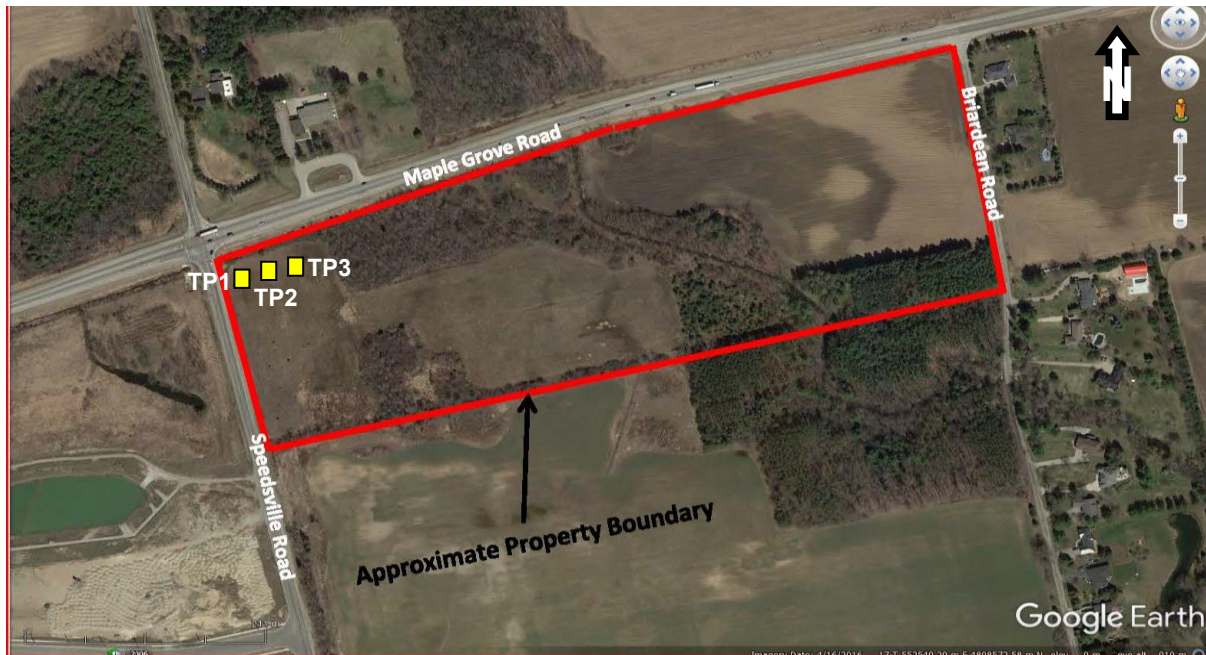


FIGURE 1 – Sample Locations

Legend

- TP1 Sample Locations

SUBSURFACE CONDITIONS

The soil conditions are presented in the following sections. Fill was encountered in all boreholes at the subject site. A description of borehole logs is presented in **Attachment 1**.

Top soil

Topsoil was encountered to a depth of approximately 175 mm below ground surface (bgs).

Silty Sand

Silty clay was encountered in all test location underlying the fill and extended to the full depth of the investigated sample locations at 1.0 m bgs. TCV and VOC readings taken on the native soil samples indicate that the vapour concentrations are less than 5 ppm.

Groundwater

Water seepage was not encountered during the excavating activities. The groundwater conditions are expected to vary according to the time of the year and seasonal changes in precipitation.

SAMPLING METHODOLOGIES

Soil Sampling

Soil sample collection was taken according to field/laboratory screening results where there was visual, olfactory, or vapour detection of potential impact. Soil conditions were logged and soil samples were taken following protocols outlined in accordance with the MOE Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, and generally accepted industry methods.

Samples obtained for analyses of petroleum hydrocarbons F2-F4 (PHC), were performed by removing a portion of the soil sample and placing it into a sealable container (ie. glass jar). Samples obtained for PHC Fraction 1, VOCs were sampled using a plastic syringe sampling device that allows the measurement of a precise amount of soil sample from the undisturbed soil to be placed and field preserved in a methanol vial. All samples were placed and stored in a cooler with an ice pack for transportation to the analytical laboratory.

Field Screening Measurements

Field screening tests included the following:

- Determining the textural classification of the sample and, where feasible, its geologic description based on visual and manual inspection.
- Visual observation for evidence of chemical staining or free product.
- Determination of olfactory evidence of impact.
- Measurement of the headspace Total Combustible Vapour (TCV) and VOC concentrations.

During sampling, headspace soil samples were screened for undifferentiated VOC vapour readings using a Gastechtor 1238ME. Prior to screening, the Gastechtor was inspected and calibrated according to the manufacturer's recommendations.

RESULTS OF CHEMICAL TESTING

The analytical results for soil samples have been compared to Table 2 of the MOECC *Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 15, 2011* for Residential/Parkland/Institutional (RPI) land uses and coarse textured soils.

Soil samples were submitted for chemical analyses to ALS Laboratories Limited (Canadian Accredited Environmental Laboratory). Soil sample characterization testing included metals, petroleum hydrocarbon compounds Fractions F1 to F4 and VOC parameters. The schedule of chemical testing and the summary of test results for soils are shown in **Table 1**. Samples were selected based on location and depth of potential areas of concern as well as olfactory or vapour reading indicators, where possible.

Certificates of analysis for the chemical testing including laboratory quality control data are presented in **Attachment 2**. The chemical test result summary indicates the following:

- Soil samples tested for metals and inorganics, PHC F1 to F4 and PAHs were below the MOECC Table 2 standards for RPI land uses and coarse textured soils in a potable groundwater condition in accordance with Ontario Regulation 153/04, with exception of exceedance of sodium adsorption ratio (SAR) in test pit TP1 at 0.0-0.3 mbgs.

Table 1: Schedule of Chemical Analyses and Summary of Results for Soil

Sample ID	Depth	Analyses Completed	Exceedances (ppm)		
			Parameter	Sample Results	Table 2 RPI **
TP1-SS1	0.0 -0.3m	PHCs F2-F4 -VOCs -metals	--	No exceedances	--
TP2-SS1	0.0-0.3 m	PHCs F2-F4 -VOCs -metals	--	No exceedances	--
TP3-SS1	0.0-0.3 m	PHCs F2-F4 -VOCs -metals	--	No exceedances	--

** Sample results compared with *Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, April 2011. Table 2 Residential/Parkland/Institutional land use standards (coarse texture soil).

The SAR parameter exceeding the 2011 MOE Table 2 Standards in soil sample from test pit TP1 is determined by the QP to be attributable to the de-icing activities on the neighbouring roadways (Speedsville Road and Maple Grove Road), and pursuant to O.Reg. 153/04, Section 48(3), is deemed not to exceed the Standards for the purposes of Part XV.1 of the Environmental Protection Act. All other groundwater samples and parameters met the 2011 MOE Table 2 Standards.

SUMMARY OF FINDINGS

Based on the available background information and testing completed during the course of this investigation, the findings and recommendations are summarized as follows:

- Soil samples tested for metals & inorganics, BTEX &PHC F1 to F4 and VOCs were below the MOECC Table 2 standards for RPI land uses in a potable groundwater condition in accordance with O.Reg.153/04, with the exception of SAR at test pit TP1. However, this exceedance is deemed not to exceed the Standards for the purposes of Part XV.1 of the Environmental Protection Act, as it was determined by the QP to be attributable to the de-icing activities on the neighbouring roadways

CONCLUSIONS

Based on the findings of the soil sampling program, soil met the applicable MOE Table 2 standards for RPI land use.

No additional environmental work is required based on the residential land use at this time.

CLOSURE AND LIMITATIONS

This report relies on information obtained during this investigation as well as data established by others. Landtek Limited assumes that information provided by others is factual and accurate, and accepts no responsibility for any deficiency, misstatement, or inaccuracy in this report from information provided by others.

The Limitations of the Report, as stated in Enclosure 1, are an integral part of this report.

We trust this report is satisfactory for your purposes at this time. Should you have any questions, please do not hesitate to contact our office.

Yours very truly,

LANDTEK LIMITED



Henry Efebor, M.Sc., P.Geol.



Paul Blunt, P.Eng., QP_{ESA}

Attachment 1: Borehole Logs

Attachment 2: Laboratory Certificates of Analysis

ENCLOSURE 1

LIMITATIONS OF THE REPORT

This report was prepared for the sole use of the Client and their legal counsel, and is intended to provide an evaluation of the current environmental conditions at the subject site. Any use that a third party makes of this report, or decisions made based on it, are the responsibility of the third party. Landtek Limited accepts no responsibility for damages of any type suffered by the third party as a result of actions or decisions made based on this report.

The conclusions and recommendations given in this report are based on information determined at the borehole locations. Subsurface conditions, ground water conditions and contaminant concentrations between and beyond the boreholes may be different from those encountered at the borehole locations, and conditions may become apparent during construction that could not be detected or anticipated at the time of the subsurface investigation. It is recommended practice that Landtek be retained during construction to confirm that the subsurface conditions throughout the site are consistent with the conditions encountered in the boreholes.

The conclusions and recommendations given in this report are based on information obtained from various sources noted, subsurface investigation, and a visual examination of the site. It is based on the conditions of the subject property at the time of the field investigation supplemented by a review of historical information to assess environmental conditions at the site reported. Landtek assumes that information provided by others is factual and accurate, and accepts no responsibility for any deficiency, misstatement, of inaccuracy in this report from information provided by others.

This assessment should not be considered a comprehensive audit that outlines all environmental liabilities or eliminates all risks of encountering environmental problems in some portions of the site. There is no warranty expressed or implied by this report concerning the status of the study site.

The report has been prepared in accordance with generally accepted environmental study and/or engineering practices. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.

The objective of this report was to assess the environmental conditions at the site, with respect to existing environmental regulations within the applicable jurisdiction. Compliance of past owners with applicable local, provincial and federal government laws and regulations was not included in our contract for services.

The site history performed herein relies on information supplied by others, such as local, provincial and federal agencies as other consultants. No attempt has been made to independently verify the accuracy of such information, unless specifically noted in our report.

Should the site conditions change or additional background data become available after this report has been issued, Landtek Limited should be made aware of the information and be given an opportunity to reassess the findings if it relates to environmental concerns.

ATTACHMENT 1

BOREHOLE LOGS

Logs – December 23, 2015

Location	Sample	Depth (mbg)	Lab Analysis	Soil Vapour (ppm)	Stratigraphy
TP1	SS1	0.0–0.3	-metals & inorganics	<5	Topsoil, organic, dark brown, wet
	SS2	0.3–0.6		<5	Silty clay, brown, moist
	SS3	0.6–1.0		<5	Silty clay, brown, moist
TP2	SS1	0.0–0.3	-PHCs F2-F4 -PAHs	<5	Topsoil, organic, dark brown, moist
	SS2	0.3–0.6		<5	Silty clay, brown, moist
	SS3	0.6–1.0		<5	Silty clay, brown, moist
TP3	SS1	0.0–0.3	-metals & inorganics	<5	Topsoil, organic, dark brown, moist
	SS2	0.3–0.6		<5	Silty clay, brown, moist
	SS3	0.6–1.0		<5	Silty clay, brown, moist
TP4	SS1	0.0–0.3	-PHCs F2-F4 -PAHs -metals & inorganics	<5	Topsoil, organic, dark brown, wet
	SS2	0.3–0.6		<5	Silty clay, brown, moist
	SS3	0.6–1.0		<5	Silty clay, brown, moist

Notes:

m bg: metres below grade

PAH: polycyclic aromatic hydrocarbons

PHC: Petroleum hydrocarbons

ppm: parts per million (vapour)

ATTACHMENT 2

**LABORATORY CERTIFICATES OF ANALYSES
Including Laboratory QA/QC Data**