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# STAGE 2 PRELIMINARY SITE INVESTIGATION

1005 Tillicum Road, Esquimalt, BC

PREPARED FOR

Estate of Isabelle Hartford 3175 Pine Valley Road, Williams Lake, BC V2G 5C3



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#### **EXECUTIVE SUMMARY**

Active Earth Engineering Ltd. (Active Earth) was retained by Estate of Isabelle Hartford (the Client) to complete a Stage 2 Preliminary Site Investigation (Stage 2) for the property located at 1005 Tillicum Road, Esquimalt, BC (herein referred to as the "Site"). This work was undertaken for due diligence purposes ahead of a potential property transaction involving the Site. The objective was to determine the presence or absence of contamination in soil, groundwater and soil vapour.

Active Earth completed a Stage 1 Preliminary Site Investigation (Stage 1) in March 2023 and identified the following Areas of Potential Environmental Concern (APECs) and associated Potential Contaminants of Concern (PCOCs) for the Site:

#### **SUMMARY OF APECS AND PCOCS**

APEC	PCOC
Off-Site	
APEC 1 — Current Service Station & Auto Repair (944 Craigflower Road)	Soil: LEPHs, HEPHs, PAHs, VOC, VPHs, Metals, Lead, Tetraethyl Lead Groundwater: LEPHw, EPHw <sub>10-19</sub> , PAHs, VOC, VPHw, VHw <sub>6-10</sub> , Dissolved Metals, Glycols Soil Vapour: Gasoline and Diesel Volatiles

A Stage 2 was undertaken to assess the presence/absence of contamination associated with the above APEC and consisted of advancing two boreholes, with both completed as groundwater monitoring wells. Representative soil and groundwater samples were collected for laboratory analysis of the identified PCOCs.

In soil, concentrations of LEPHs, HEPHs, PAHs VOCs, VPHs and metals and were within applicable BC Contaminated Sites Regulation (CSR) standards. Zinc initially exceeded the applicable standards at one location; however, this sample was re-analyzed and was ultimately found to be within the standards.

In groundwater, concentrations of all PCOCs were within the applicable standards.

Soil vapour quality was not directly assessed via sample collection and analysis. Rather, Active Earth predicted vapour quality via Ministry prescribed partitioning equations using the laboratory analytical results for volatile parameters that were detected in groundwater samples. Based on this assessment, no vapour contamination was identified.

No further assessment is currently recommended.



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#### 1 INTRODUCTION

Active Earth Engineering Ltd. (Active Earth) was retained by Estate of Isabelle Hartford (the Client) to complete a Stage 2 Preliminary Site Investigation (Stage 2) for the property located at 1005 Tillicum Road, Esquimalt, BC (the "Site"). This work was undertaken for due diligence purposes ahead of a potential property transaction involving the Site. The objective was to determine the presence or absence of contamination in soil, groundwater and/or soil vapour.

A number of acronyms and terms are used throughout. Definitions for these acronyms and terms are attached.

#### 2 SITE DETAILS

The general area of the Site is shown on Figure 1. The Site is located on the east side of Tillicum Road between Craigflower Road and Selkirk Avenue. The Site is currently occupied by a single-family home.

The following table summarizes the legal description and current zoning for the Site:

Address	Parcel Identifier (PID)	Legal Description	Zoning
1005 Tillicum Road, Esquimalt, BC	002-145-073	LOT 1, SECTION 10, ESQUIMALT DISTRIC, PLAN 27609	RD-3: Two family/Single Family Residential

The legal lot boundaries are approximated on the attached Figures as transcribed from base plans obtained from the City of Esquimalt online mapping application and the legal lot plans.

#### 3 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Active Earth reviewed the following reports, which were provided by the Client:

#### PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Report No.	Title	Date Issued	Author
1	Stage 1 Preliminary Site Investigation 1005 Tillicum Road, Esquimalt, BC	March 2023	Active Earth Engineering Ltd.

The Stage 1 completed by Active Earth Engineering Ltd. (Active Earth) in March 2023 is summarized below:

• The Site was occupied by a single-family home which had been built in 1954. Prior to development, the Site was undeveloped vacant land.



- No USTs were identified; however, a heating oil AST was observed in the basement of the on-site dwelling. It was situated over concrete, with no staining, pitting or cracking observed.
- One APEC was identified associated with the adjacent, up-gradient service station and auto repair operation at 955 Craigflower Road. This off-site activity had been present since approximately 1959.

A summary of the identified APECs and associated Potential Contaminants of Concern (PCOCs) is provided below:

#### **SUMMARY OF APECS AND PCOCS**

APEC	PCOC	
Off-Site		
APEC 1 – Current Service Station & Auto Repair (944 Craigflower Road)	Soil: LEPHs, HEPHs, PAHs, VOC, VPHs, Metals, Lead, Tetraethyl Lead Groundwater: LEPHw, EPHw <sub>10-19</sub> , PAHs, VOC, VPHw, VHw <sub>6-10</sub> , Dissolved Metals, Glycols Soil Vapour: Gasoline and Diesel Volatiles	

#### 4 WORK PLAN OVERVIEW

The Stage 2 included targeting the most likely contaminated areas for sampling and laboratory analysis. Laboratory analytical results were then compared to applicable numerical standards outlined in the BC Contaminated Sites Regulation (CSR).

For the Stage 2, Active Earth completed the following:

- Advanced 2 boreholes, with both locations completed with groundwater monitoring wells and nested soil vapour probes.
- Collected soil samples and field screened, and submitted, select samples for laboratory analysis of relevant PCOCs.
- Developed the monitoring wells and collected representative groundwater samples for laboratory analysis of relevant PCOCs.
- Assessed soil vapour quality via partitioning rather than direct soil vapour sampling and submitted samples for laboratory analysis of relevant PCOCs.
- Completed this Stage 2 PSI report.

Additional scope and methodology details are presented under Section 6 (Methodology).



#### 5 REGULATORY ASSESSMENT STANDARDS

In British Columbia, environmental matters pertaining to contaminated sites generally fall under the jurisdiction of the BC Ministry of Environment and Climate Change Strategy (BC ENV), pursuant to the *Environmental Management Act* (SBC 2003), including amendments.

The two key regulations under the *Environmental Management Act* relating to the assessment and remediation of contaminated sites are:

- Contaminated Sites Regulation (CSR, BC Reg. 375/96, including amendments effective to the date of this report); and,
- *Hazardous Waste Regulation* (HWR, BC Reg. 63/88, O.C. 268/88 including amendments effective to the date of this report).

#### 5.1 Soil Standards

The Site is currently zoned for low-density residential purposes. If rezoning or redevelopment is contemplated, then the future land use standards must also be considered for both soil and soil vapour. Soil standards for Residential Low-Density Land Use ( $RL_{LD}$ ) were considered to apply to the Site, including, the generic and matrix-based numerical standards listed in Schedule 3.1 (Parts 1, 2 and 3) of the CSR.

For the matrix-based numerical standards, the following site-specific factors were applied:

- Human Health Protection Intake of contaminated soils.
- Human Health Protection Groundwater used for drinking water.
- Environmental Protection Toxicity to soil invertebrates and plants.
- Environmental Protection Groundwater flow to surface water used by aquatic life.

Matrix-based numerical soil standards are dependent on groundwater use. The rationale for determining groundwater use is discussed in Section 1.2, below.

The standards that are applied to relocate contaminated soil depends on the land-use at the receiving site. When soil and soil vapour concentrations are within the CSR Standards applicable at the receiving site, they are not considered contaminated for the purpose of relocation.

#### 5.2 Groundwater Standards

Groundwater standards, listed in Schedule 3.2 of the CSR and the matrix-based soil standards listed in Schedule 3.1 (Part 1), depend on the following:

- The uses of groundwater or surface water at the Site or on neighboring properties; and,
- The potential for groundwater or surface water at the Site to flow to surface water bodies that support aquatic life.



#### 5.2.1 Aquatic Life Standards

The BC CSR Protocol 21 indicates that Aquatic Life (AW) standards generally apply to all groundwater located within 500m of a surface water body containing aquatic life. Investigations must show that groundwater containing substances at concentrations greater than the applicable aquatic life water use standards does not have the potential to migrate to within 500m of a surface water body used by aquatic life, considering preferential flow corridors.

Marine Aquatic Life (AWm) standards were considered to apply at the Site due to the proximity of the nearest surface water body (240m north of the Site).

#### 5.2.2 Drinking Water Standards

Protocol 21 further indicates that Drinking Water (DW) standards generally apply where current drinking water sources are within 500m of the outer extent of a groundwater contamination source. If the groundwater flow direction has been reliably determined, this distance is limited to 100m up-gradient (remaining at 500m down-gradient) of the outer extent of a contamination source.

Future drinking water use must also be considered in the evaluation of whether or not DW standards apply at a site. This includes evaluation of the underlying aquifer to assess hydraulic parameters including yield and hydraulic conductivity. If the aquifer underlying a site has a hydraulic conductivity greater than  $1X10^{-6}$  m/s, and a yield greater than or equal to 1.3 L/min, then DW are generally considered to apply. Future drinking water use is not considered to apply to confined aquifers with an average saturated thickness of 1m or less, or to unconfined aquifers that are only seasonally present, have an average saturated thickness of 2m or less, or are comprised entirely of imported fill.

Additional exceptions to the application of DW include situations where the natural groundwater quality is considered unsuitable for drinking water use based on elevated Total Dissolved Solids (TDS  $\geq$  4,000 mg/L); or where groundwater is contained within organic soils or muskeg. Also, in situations where a confining geological unit exists that adequately protects an aquifer, DW may not apply to the shallower unconfined aquifer.

The hydraulic conductivity of the aquifers underlying the Site was not assessed during the Stage 2. However, based on the lithology observed during drilling, and the groundwater response observed during well development and sampling, DW standards are likely to apply. Further hydrogeological assessment would be required to confirm the applicability of DW standards, if deemed necessary.

#### 5.2.3 Irrigation and Livestock Watering Standards

Irrigation (IW) and Livestock Watering (LW) uses are considered to apply where these resources are potentially present within 500m down-gradient or 100m up-gradient of the Site. Neither IW nor LW uses were identified near the Site, and therefore and these standards do not apply.



#### 5.2.4 Dissolved Iron and Manganese Standards

Footnotes 43, 44, 46 and 47 of Schedule 3.2 of the CSR specify CSR Schedule 2 activities for which dissolved Iron and Manganese standards are applicable. Since none of these Schedule 2 uses were identified in relation to the Site, these standards are not considered to apply.

#### **5.3 Vapour Standards**

The CSR provides Generic Numerical Standards (Schedule 3.3) for use in the assessment of vapour quality at sites subject to investigation and remediation. Vapour standards are divided into categories based on land use and include standards for Agricultural/ Urban Park/ Residential use (AL/PL/RL), Commercial Use (CL), Industrial Use (IL), and Parkade Use (PU).

Based on the current use and future development (likely commercial low-density residential use), RL standards were considered to apply to the current Site. The CL and PU standards were additionally considered for information purposes. The IL standards were considered to apply to adjacent off-Site City lands (streets and sidewalks).

#### 5.3.1 Conceptual Site Model and Attenuation

The Site is currently occupied by residential dwelling with a basement. Current adjacent land uses were identified as commercial or residential.

Under the current and potential future Site conditions, potential vapour exposure pathways were considered to include migration to the following receptors:

• Current and future (residential) receptors

Attenuation factors are used to predict vapour concentrations at the point of exposure for the identified receptors, as provided in ENV Protocol 22 (P22).

The applicable attenuation factors for the potential exposure pathways are shown on Table 7 and are based on the depths of the sampling probes (i.e. depth to top of sand pack).

#### 5.4 Hazardous Waste Regulation

The BC Hazardous Waste Regulation (HWR) provides standards to determine if material qualifies as Hazardous Waste based on toxicity equivalency (TEQ), concentration, leachability. The BC Hazardous Waste Regulation (HWR) Schedules 1 and 1.1 provide updated dioxin and furan Toxicity Equivalency Factors (TCDD-TEFs) and polycyclic aromatic hydrocarbon (PAH) Toxicity Equivalency Factors (BaP-TEFs) for use in calculating dioxin and furan Toxicity Equivalent Quotients (dioxin & furan TEQ) and PAH toxicity Equivalent Quotients (PAH TEQ). These calculated TEQ are used in determining when 'waste containing dioxin' and 'waste containing PAH' contain concentrations of dioxin or PAH that constitute hazardous waste and therefore must be managed according to the HWR.



We note that the standards provided in the HWR were not used to evaluate regulatory compliance of the on-Site soils. Rather, comparison to HWR standards may be used for off-Site soil disposal planning purposes.

#### 5.5 Regulatory Standards Summary

The following table summarizes applicable regulatory standards:

SUMMARY OF APPLICABLE REGULATORY ASSESSMENT CRITERIA

Media	Land Use	Source / Comments	
	High-Density Residential	CSR Schedule 3.1 (Parts 1, 2 and 3) — Generic Numerical	
		CSR Schedule 3.1 (Part 1) — Intake of Contaminated Soil	
Soil		CSR Schedule 3.1 (Part 1) – Toxicity to Soil Invertebrates and Plants	
		CSR Schedule 3.1 (Part 1) – Groundwater used for Drinking Water	
		CSR Schedule 3.1 (Part 1) – Groundwater flow to Surface Water used by Aquatic Life (marine)	
		CSR Schedule 3.2 – Drinking Water Standards	
Groundwater	-	CSR Schedule 3.2 – Aquatic Life (marine) Standards	
		CSR Schedule 3.2 – Standards that apply irrespective of water use	
	Residential (Current)		
Soil Vapour	Parkade (Current/Future)	CSR Schedule 3.3 – Generic Numerical	
	Industrial (Off-Site Streets)		

#### 6 METHODOLOGY

Field sampling methodology for all media followed Active Earth's standard practice and protocols. These are described briefly in the following sub-sections, and cover work completed during the Stage 2.

#### 6.1 Utility Locates

Prior to undertaking intrusive field investigations, standard utility location protocols were followed. This included contacting BC One Call, in order to obtain relevant utility information for the Site. A professional utility locate contractor (GeoScan Subsurface Surveys Inc.) was employed to identify and mark all underground services beneath the Site.



#### 6.2 Borehole Drilling and Monitoring/ Soil Vapour Well Installation

All borehole locations were advanced using a truck-mounted auger rig, operated by Drillwell Enterprises Ltd. of Duncan, BC.

All monitoring wells were constructed with 50mm schedule 40 PVC with a machine slotted screen section at the bottom (0.010-inch slot width) and solid pipe above the screen to ground surface. Generally, where monitoring wells were installed, the borehole annulus was backfilled as follows:

- Silica sand was placed from the bottom of the screened interval to 0.3 m above the screened interval to provide a sand-pack around the well screen.
- Bentonite was placed above the sand-pack to provide a hydraulic seal.

Well completion details are shown on the borehole logs attached as Appendix A.

#### 6.3 Soil Sampling

Soil samples were recovered during drilling from the auger flights at regular intervals, changes in stratigraphy or where other evidence of contamination was noted (odours, staining, elevated vapours).

All soil samples were immediately placed into laboratory supplied sample jars. The sample jars were completely filled with soil to minimize loss of volatile constituents. Samples submitted for analysis of select volatile parameters were field-preserved as required using laboratory-provided methanol preservation kits, in order to further prevent the loss of volatile contaminants.

To minimize the potential for cross-contamination, Active Earth's field representative wore fresh nitrile sampling gloves prior to collecting each soil sample. The sample jars were placed in a cooler, on ice, and delivered under the chain of custody protocol to ALS Laboratories in Burnaby, BC.

Headspace measurement samples were collected by filling sealable plastic bags approximately one-third full of soil and letting the soil and air within the bags reach equilibrium. The headspace of the resulting volatile organic vapour concentrations was then measured using a portable RKI Eagle® vapour analyzer. The monitoring equipment was calibrated before field use. Headspace vapour measurements are indicated on the borehole logs in Appendix A.

### 6.4 Groundwater Monitoring and Sampling

All monitoring wells were developed by removing up to five well volumes and monitoring baseline parameters including conductivity, temperature, and pH to ensure stable conditions had been reached. Where recovery rates were slow, this involved drying out the well over at least three successive development events. Development was completed using dedicated HDPE Waterra™ tubing and a compatible foot-valve.



The wells were left to recover prior to purging and sample collection. The depth to groundwater was measured in the monitoring wells prior to purging.

Groundwater samples were collected using a peristaltic pump and a micro-purge low-flow sampling technique. High-density polyethylene (HDPE) peristaltic tubing was placed at the approximate center of the well screen, and water was purged at a maximum rate of 400ml/min, while depth to groundwater was monitored to ensure that drawdown did not exceed 0.1m. Indicator parameters including pH, temperature and conductivity were monitored for stability during the micro-purge to ensure representative groundwater samples were collected. Once stable conditions were reached, groundwater samples were collected directly into laboratory supplied containers.

Samples were field filtered and/or preserved according to laboratory protocols. Sample containers were placed in a cooler, on ice, and delivered under the chain of custody protocol to ALS Laboratories in Burnaby, BC.

#### 6.5 Monitoring Well Compliance with ENV Guidance

As shown on the attached borehole logs, monitoring well screens were limited to a maximum of 1.8m (including sand pack) in accordance with ENV Technical Guidance Document 8 (TG8).

The wells were considered sufficient to assess the likely worst-case conditions associated with the identified APECs, and to check for Light Non-Aqueous Phase Liquid (LNAPL) presence based on the following:

- No evidence of significant hydrocarbon impacts was identified in the field (significant odours, staining, sheen, LNAPL in soil).
- Top of well screen (including sand pack) was located a maximum of 0.8m below the water table, within the same soil unit (native silt/clay).
- The wells were not screened across divergent native soil units, or across the fill/native interface.

Shallow groundwater at the Site was identified at approximately 2.2m below grade.

# 7 QUALITY ASSURANCE / QUALITY CONTROL

The Quality Assurance / Quality Control measures applicable to this report included:

- Use of a CALA (Canadian Association for Laboratory Accreditation Inc.) accredited laboratory;
- Use of electronically transferred data into tables to minimize manual entry;
- Use of unique sample identification for each sample;



- Recording of the date and time of sample collection;
- Recording the source of sample (including name, location, and sample type);
- Use of preservative as required;
- · Accurate completion of chain of custody forms;
- Submission of samples within recommended holding times; and
- Laboratory internal QA/QC.

A review of the QA/QC program completed by the laboratory indicated that the sample results are valid and did not identify any systemic issues that would compromise the dataset. The laboratory's internal sample replicate analysis results were within the acceptable limits, and the laboratory Quality Control assessment of Lab Control Samples, Method Blanks, Reference Materials and Reference Spikes were within the acceptable ranges.

No soil or groundwater samples duplicates were analyzed, due to the limited number of samples collected. No soil vapour samples were collected during the Stage 2.

Based on this assessment, the analytical results for soil and groundwater are considered to be valid. No systematic problems with the sampling and/or analysis of the soil and groundwater were identified that would compromise the dataset.

#### 8 RESULTS AND DISCUSSION

The Stage 2 results are summarized in the following sections. The investigation locations are shown on the attached Figures. The analytical results are summarized on the attached Tables and Figures. Borehole logs are included as Appendix A, while laboratory certificates are included as Appendix B.

## 8.1 Geology and Hydrogeology

#### 8.1.1 Geology

The on-Site stratigraphy generally consisted of the following:

- Topsoil, to a depth of 0.2m; overlying,
- Fill: Sandy silt, to a maximum depth of 0.8m; overlying,
- Clay, varying amounts of silt, brown to grey, to a maximum depth of 4.6m; overlying,
- Sand, with varying silt content to the maximum depth explored (7.6m).

#### 8.1.1 Hydrogeology

Groundwater was identified within the native silt/clay soils, at approximately 2.2m depth.



The groundwater flow regime could not be readily determined due to the positioning and limited number of monitoring wells (two wells). Groundwater is inferred to flow northwest, based on the topography at the Site, as discussed in the Stage 1 report. The depth to groundwater measurements are shown on the borehole logs in Appendix A.

#### 8.2 Field Evidence of Contamination

No hydrocarbon-like odours, staining or elevated headspace vapours (0 ppm for all samples) were observed in soil during sampling.

No odours or sheen associated with hydrocarbons were observed in ground water during sampling.

Mixed shallow fills were observed on-Site, including sandy silt beneath the topsoil.

#### 8.3 Soil Analytical Results

Concentrations of LEPHs, HEPHs, PAHs, VOC, VPHs, and metals in soil were within applicable standards.

The concentration of Zinc slightly exceeded the Residential standard in a shallow fill sample. This sample was re-analyzed from the second sample jar, and the Zinc concentration was found to be well below the Residential standard. The average of the two sample concentrations was 134.5 ug/kg, which was also below the applicable standard of 150 ug/kg. As such, no Zinc contamination is considered to be present.

Glycols were considered to be a secondary PCOC. Glycols contamination was considered unlikely unless significant primary PCOC contamination (hydrocarbons / VOCs) was identified. As no such contamination was identified, Glycols were not analyzed.

Soil analytical results are presented on Tables 1 to 3, and Figure 4.

#### 8.4 Groundwater Analytical Results

In groundwater, concentrations of LEPHw, EPHw $_{10-19}$ , PAH, VPHw, VHw6-10, and VOC were within the applicable BC CSR Drinking Water (DW) and Marine Aquatic Life (AWm) standards. Concentrations of dissolved Magnesium exceeded the DW standards at one location (AE23-MW102) but was within the applicable Regional Background Concentration.

Groundwater analytical results are presented on Tables 4 to 6, and Figure 5.

#### 8.5 Soil Vapour Analytical Results

Soil vapour quality was not directly assessed via sample collection and analysis. Rather, Active Earth predicted vapour quality via Ministry prescribed partitioning equations and the



groundwater analytical for the volatile parameters that were detected. Based on this assessment, no vapour contamination was identified.

Soil vapour partitioning calculations are presented on Table 7.

# 9 SUMMARY AND CONCLUSIONS

Active Earth was retained by the Estate of Isabelle Hartford to complete a Stage 2 for the Site. This work was undertaken to assess the presence or absence of contamination and following the Stage 1 PSI completed in March 2023.

The Site is currently used for residential purposes. Historically, the Site has been a single-family residence since initial development in the 1950s.

The Active Earth Stage 1 identified one off-site APEC as follows:

#### SUMMARY OF APECS AND PCOCS

APEC	PCOC
Off-Site	
APEC 1 — Current Service Station & Auto Repair (944 Craigflower Road)	Soil: LEPHs, HEPHs, PAHs, VOC, VPHs, Metals, Lead, Tetraethyl Lead Groundwater: LEPHw, EPHw <sub>10-19</sub> , PAHs, VOC, VPHw, VHw <sub>6-10</sub> , Dissolved Metals, Glycols Soil Vapour: Gasoline and Diesel Volatiles

The Stage 2 consisted of advancing two boreholes, with both completed as groundwater monitoring wells. Representative soil and groundwater samples were collected for laboratory analysis of the identified PCOCs.

In soil, concentrations of LEPHs, HEPHs, PAHs VOCs, VPHs and metals and were within applicable CSR standards. Zinc initially exceeded the applicable standards at one location; however, this sample was re-analyzed and was ultimately found to be within the standards.

In groundwater, concentrations of all PCOCs were within the applicable standards.

Soil vapour quality was not directly assessed via sample collection and analysis. Rather, Active Earth predicted vapour quality via Ministry prescribed partitioning equations using the laboratory analytical results for volatile parameters that were detected in groundwater samples. Based on this assessment, no vapour contamination was identified.

#### 10 RECOMMENDATIONS AND NEXT STEPS

Based on these results, no further assessment is currently recommended.



#### 11 PROFESSIONAL STATEMENT

All documentation contained in this report has been prepared in accordance with all requirements of the BC Environmental Management Act and its regulations. The persons signing this report have demonstrable experience in assessment and remediation of the type of contamination associated with this type of property to which this report and statement apply.

#### 12 LIMITATIONS

The use of this report by anyone is subject to the following conditions and limitations:

- 1. This report has been prepared at the request of the client and for the specific use referred to herein. The client and the local government may rely on this report. The BC Ministry of Environment and Climate Change Strategy (ENV) may also rely on this report, provided Active Earth has been engaged to support an application to ENV on behalf of our client. It is not reasonable for any other party to rely on the contents of this report without first obtaining written authorization from the client and Active Earth Engineering Ltd.
- 2. Liability is expressly denied to any person other than the parties indicated above and those who obtain written consent. Accordingly, Active Earth Engineering Ltd. does not accept responsibility for any damage suffered by any such person as a result of decisions made or actions based on this report. Diligence by all intended users is assumed.
- 3. This report is believed to provide a reasonable representation of the general environmental condition at the Site as of the date of this report. The conclusions made in this report reflect Active Earth's best judgment in light of the information available at the time of reporting. Should additional information become available or Site conditions change, the conclusions and recommendations of this report may be subject to change. For any party to rely on this report in the future, supplemental investigation may be necessary to verify the Site conditions at that time.
- 4. Active Earth Engineering Ltd. has agreed to conduct an assessment and prepare this report as requested by the client named in the report for the use specified by the client, which is stated in the report. The client has agreed that the performance of this work and the report format are appropriate for the intended use.
- 5. Written consent from Active Earth Engineering Ltd. must be obtained before any part of the report can be used for any purpose by anyone other than the client and other intended users identified in the report. Liability to any other party or for any other use is expressly denied regardless of who pays Active Earth Engineering Ltd.'s fee. Written consent and approval of Active Earth Engineering Ltd. must also be obtained before the report (or any part of it) can be altered or conveyed to other parties or the public through prospectus, offering memoranda, advertising, public relations, news, sales or other media.

