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# STAGE 1 PRELIMINARY SITE INVESTIGATION

**1005 Tillicum Road, Esquimalt, BC**

PREPARED FOR

Estate of Isabelle Harford



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## EXECUTIVE SUMMARY

This report summarizes the results of a Stage 1 Preliminary Site Investigation (Stage 1) for the property located at 1005 Tillicum Road, Esquimalt, BC (the "Site").

The Stage 1 was prepared for Estate of Isabelle Harford by Active Earth Engineering Ltd. in order to assess the level of environmental risk associated with current or past uses of the Site and surrounding properties. The Stage 1 assessed the likelihood of soil, soil vapour and/or groundwater contamination based upon a review of readily accessible historical information and completion of a site visit. This work was requested for due diligence purposes prior to a potential property transaction involving the Site.

The Site is currently occupied by a single-family residential dwelling. Historically, this Site was used for residential purposes from the 1950's onwards.

The following Areas of Potential Environmental Concern (APECs) and Potential Contaminants of Concern (PCOCs) were identified for the Site:

### SUMMARY OF APECS AND PCOCS

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

The environmental risks associated with the above APECs were deemed to be moderate to high.

Further investigation in the form of a Stage 2 Preliminary Site Investigation is recommended to assess the presence/absence of on-Site contamination associated with the identified APECs.

Given the age of the on-Site building (constructed pre-1990), a Qualified Environmental Professional, such as Active Earth, should be engaged to conduct a detailed Hazardous Building Materials Investigation (HBMI) prior to demolition or renovation of the on-Site buildings. A limited HBMI may also be conducted at any time to support financing, or for general planning and liability estimating purposes.



## TABLE OF CONTENTS

|                                                |           |
|------------------------------------------------|-----------|
| <b>1 INTRODUCTION</b>                          | <b>2</b>  |
| <b>2 SITE DETAILS</b>                          | <b>2</b>  |
| 2.1 Current Facilities                         | 3         |
| 2.2 Current Surrounding Properties             | 4         |
| <b>3 PREVIOUS ENVIRONMENTAL INVESTIGATIONS</b> | <b>5</b>  |
| <b>4 PHYSICAL SETTING</b>                      | <b>5</b>  |
| <b>5 LAND USE STANDARDS</b>                    | <b>6</b>  |
| <b>6 LAND USE HISTORY</b>                      | <b>8</b>  |
| 6.1 Historical Site Uses                       | 8         |
| 6.2 Schedule 2 Activities                      | 8         |
| 6.3 Surrounding Properties                     | 9         |
| 6.4 BC Online Site Registry Records            | 9         |
| <b>7 STAGE 1 DISCUSSION</b>                    | <b>11</b> |
| 7.1 Site                                       | 11        |
| 7.2 Surrounding Properties                     | 11        |
| <b>8 CONCLUSIONS</b>                           | <b>13</b> |
| <b>9 LIMITATIONS</b>                           | <b>13</b> |

## ATTACHMENTS

### LIST OF ACRONYMS

### FIGURES

|          |                                           |
|----------|-------------------------------------------|
| Figure 1 | Location Plan & Surrounding Land Use Plan |
| Figure 2 | Site Plan                                 |
| Figure 3 | Environmental Context Plan                |

### PHOTOGRAPHS

|             |                |
|-------------|----------------|
| Photographs | Photos 1 to 10 |
|-------------|----------------|

### APPENDICES

|            |                                                      |
|------------|------------------------------------------------------|
| Appendix A | Current Legal Titles and Lot Plan                    |
| Appendix B | Aquifer Details and Well Logs                        |
| Appendix C | Air Photos                                           |
| Appendix D | BC Site Registry Search Results and Detailed Reports |
| Appendix E | Zoning Details                                       |
| Appendix F | Historical City Directories                          |



## 1 INTRODUCTION

Active Earth Engineering Ltd. (Active Earth) was retained by Estate of Isabelle Harford (the Client) to complete a Stage 1 Preliminary Site Investigation (Stage 1) at 1005 Tillicum Road, Esquimalt, BC (the "Site"). This work was requested for due diligence purposes prior to a potential property transaction involving the Site.

The objective of a Stage 1 is to assess the likelihood of soil, soil vapour, and/or water contamination based on a comprehensive review of accessible historical information, previous environmental reports as well as completion of a site visit. This Stage 1 generally complies with CSA Standard Z768-01 (R2022) – *Phase I Environmental Site Assessment* as well as the BC Ministry of Environment and Climate Change Strategy (ENV) Technical Guidance 10 – *Guidance for a Stage 1 Preliminary Site Investigation*.

Additional pertinent information regarding the Site has been appended to this report. In addition, 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 following table summarizes the location, and physical description for the Site:

### LOCATION AND PHYSICAL DESCRIPTION

|                         |                                 |                                                                                                                                      |
|-------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Address                 | Current Civic Address(es)       | 1005 Tillicum Road, Esquimalt, BC                                                                                                    |
|                         | Historical Civic Address(es)    | None identified.                                                                                                                     |
| Location and Dimensions | Location                        | East side of Tillicum Road, between Selkirk Avenue and Craigflower Road.                                                             |
|                         | Cartographic Coordinates        | 48° 26' 32.7" North<br>123° 24' 04.9" West                                                                                           |
|                         | Approximate Dimensions and Area | 21m fronting Tillicum Road<br>0.137 Ha (1,375 m <sup>2</sup> )                                                                       |
|                         | Approximate Surface Coverage    | 10% Residential building (120 m <sup>2</sup> )<br>5% asphalt parking (78 m <sup>2</sup> )<br>85% green space (1,177 m <sup>2</sup> ) |

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

## LEGAL DESCRIPTION AND ZONING

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

The current land titles and legal lot plan(s) are provided in Appendix A. An historical title search was not deemed to be necessary since past Site uses were well documented via historical directories and air photos.

Municipal zoning is presented on Figure 3 and the zoning definition is attached as Appendix E.

### 2.1 Current Facilities

On March 16, 2023, a representative from Active Earth completed a site visit to review current conditions. All details regarding the current use of the property were based on the site visit.

The following table(s) summarize the site visit findings:

#### CURRENT USAGE AND OBSERVATIONS – 1005 TILLICUM ROAD, ESQUIMALT, BC

|                                                 |                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description of Buildings                        | One single-story single family residential dwelling, constructed of timber framing over a concrete slab-on-grade. The concrete slab flooring was in generally good condition, with minimal cracking, pitting, or staining observed.                                                                                                              |
| Building Uses                                   | Residential.                                                                                                                                                                                                                                                                                                                                     |
| Heating/Cooling                                 | Heating likely provided primarily by electrical baseboard heaters. No air conditioning identified.                                                                                                                                                                                                                                               |
| Mechanical Rooms                                | None observed.                                                                                                                                                                                                                                                                                                                                   |
| Other Site Activities                           | An asphalt-surfaced parking lot was located in the northwest portion of the Site. The asphalt was in generally good condition, with minimal cracking, pitting, or staining observed.                                                                                                                                                             |
| Evidence of Fuel, Oil or other Chemical Storage | A heating oil AST was observed in the basement (see Photo 3 attached), it was situated over concrete, no staining or cracking was observed. No evidence of USTs observed such as vent pipes or brackets, fill caps, distribution lines, or suspect patches/depressions. No other chemical storage observed other than typical cleaning supplies. |
| Existing Boreholes or Monitoring Wells          | None observed.                                                                                                                                                                                                                                                                                                                                   |



## CURRENT USAGE AND OBSERVATIONS – 1005 TILLICUM ROAD, ESQUIMALT, BC

|                                      |                                                                         |
|--------------------------------------|-------------------------------------------------------------------------|
| <b>Sumps or Oil/Water Separators</b> | None observed.                                                          |
| <b>Evidence of Imported Fill</b>     | None observed based on surface grade of the Site and surrounding lands. |
| <b>Other Relevant Observations</b>   | None.                                                                   |

A discussion of the potential for current Site features to present an environmental risk is provided in Section 7.1. Relevant Site details are shown on Figure 2, attached. The legal lot boundaries are approximated on all attached Figures, as transcribed from the City of Victoria online mapping tool.

## 2.2 Current Surrounding Properties

During the site visit, Active Earth conducted a visual inspection of the surrounding properties from publicly accessible areas. The properties were inspected for potential sources of contamination, including heating oil tanks. The following table outlines our observations:

### CURRENT SURROUNDING LAND USE

| Direction<br>(Orientation <sup>1</sup> ) | Location                   | Current Usage / Observations                              |
|------------------------------------------|----------------------------|-----------------------------------------------------------|
| South<br>(up/cross-<br>gradient)         | 944 Craigflower Road       | <b>Petro Canada (Service Station &amp; Repair Garage)</b> |
|                                          | 955 Craigflower Road       | <b>Esso (Service Station)</b>                             |
|                                          | 1006 Craigflower Road      | Commercial Building/Residential                           |
|                                          | 1003 Craigflower Road      | Gorge Vale Golf Club                                      |
| North<br>(down-gradient)                 | 1007-1013 Tillicum Road    | Residential                                               |
|                                          | 965-960 Selkirk Avenue     | Residential                                               |
| East<br>(up/cross-<br>gradient)          | 956-929 Inskip Street      | Residential                                               |
| West<br>(down/cross-<br>gradient)        | 1008-1014 Tillicum Road    | Residential                                               |
|                                          | 1010 Craigflower Road      | Commercial                                                |
|                                          | 1022-1026 Craigflower Road | Residential                                               |
|                                          | 1001-1011 Gosper Crescent  | Residential                                               |

<sup>1</sup> Up-gradient refers to the direction from which groundwater would flow. Down-gradient refers to the direction toward which groundwater would flow. Cross-gradient refers to directions that are perpendicular to groundwater flow.

Based on the limited visual inspection, the surrounding buildings appear to be serviced by natural gas. No indications of current or historical heating oil USTs or ASTs were observed on surrounding properties.

Off-Site uses that were considered to be potential sources of contamination are presented **in bold** in the table above. The potential for these uses to have impacted the Site is discussed in Section 7.2.

### 3 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

No previous reports were made available for review by Active Earth. If any such reports become available, these should be provided so that we may review and amend this report, if warranted.

### 4 PHYSICAL SETTING

As part of the Stage 1, Active Earth assessed the surficial geology, topography, hydrogeology, area water uses and climate normals at the Site. The following table summarizes our findings. Additional information has been appended where noted below.

#### PHYSICAL SETTING DESCRIPTION

|                       |                                                                                             |                                                                                                                                                                                                                                                                                                                                |
|-----------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Geology               | Surficial Geology Map<br>Quaternary Geology Map of Greater Victoria (Geoscience Map 2000-2) | The Site was described as Unit C2.<br>Unit C2 - a thick, soft clay and is assigned to areas with more than 3m of the grey clay facies of the Victoria clay.<br>The clay and underlying bedrock units in the vicinity of the Site would have relatively low permeability and would likely limit the migration of contamination. |
|                       | Historical Streams (Figure 3)                                                               | A former stream was identified approximately 260m south of the Site, as shown on Figure 3.                                                                                                                                                                                                                                     |
| Topography (Figure 3) | Geodetic Elevation                                                                          | Approximately 11m.                                                                                                                                                                                                                                                                                                             |
|                       | Site Topography                                                                             | Gentle slope from the east (12m geodetic) to the west (9m geodetic).                                                                                                                                                                                                                                                           |
|                       | Regional Topography                                                                         | Local topography and regional topography slopes downward to the north to sea level (i.e. 0 m-geodetic) at the Gorge Waterway, located approximately 220m to the north of the Site.                                                                                                                                             |
| Hydrogeology          | Anticipated Depth to Groundwater                                                            | Shallow groundwater is likely present in the shallow soils at approximately 2-5m below grade and may rise closer to the ground surface during the wet winter months.                                                                                                                                                           |
|                       | Anticipated Regional Groundwater Flow (Figure 1)                                            | Generally northerly towards the Gorge Waterway. Shallow groundwater may be influenced by utility corridors and building foundation drains.                                                                                                                                                                                     |



## PHYSICAL SETTING DESCRIPTION

|                                  |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Area Water Uses<br>(Figure 3)    | Aquifer Description<br>(Appendix B)              | <p>Aquifer Location: South-Eastern Vancouver Island</p> <p>Aquifer Number: 0680</p> <p>Aquifer Geologic Formation: Wark-Colquitz Aquifer</p> <p>Confined / Unconfined: Partially Confined</p> <p>Vulnerability: Moderately vulnerable to contamination</p> <p>Productivity: Moderate</p> <p>Reliance on Source: Moderate Demand</p> <p>Quantity or Quality Concerns: None documented.</p> <p>Median Depth to Water Table: 17m</p> <p>Type of Water Use: Drinking water</p> |
|                                  | Surface Water                                    | The nearest surface water body is the Gorge Waterway, approximately 240m to the north (down-gradient).                                                                                                                                                                                                                                                                                                                                                                     |
|                                  | Drinking Water<br>(Appendix B)                   | No water wells were identified within 500m of the Site.                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                  | Irrigation and Livestock Watering                | No evidence of these uses within 500m of the Site.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Climate Normals and Infiltration | Local Weather Station                            | Victoria Francis Park weather station, approximately 6.5km to the northwest of the Site. Data collected from 1981 to 2010.                                                                                                                                                                                                                                                                                                                                                 |
|                                  | Annual Rainfall                                  | 984 mm (average).                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                  | Annual Snowfall                                  | 450 mm (average).                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                  | Anticipated Runoff and Infiltration <sup>2</sup> | <p>Based on the Site surface cover (see Section 2.0) and anticipated shallow soil type (see Geology discussion above), we anticipate the following:</p> <ul style="list-style-type: none"> <li>Runoff: 25% to 35%</li> <li>Infiltration: 65% to 75%</li> </ul>                                                                                                                                                                                                             |

## 5 LAND USE STANDARDS

The CSR provides numerical standards for soil, water, soil vapour, and sediment. These standards are outlined in Schedules 3.1, 3.2, 3.3 and 3.4 respectively.

<sup>2</sup> Runoff and Infiltration estimates based on the Rational Method and the runoff coefficients provided in: The Clean Water Team Guidance Compendium for Watershed Monitoring and Assessment State Water Resources Control Board 5.1.3 FS-(RC) 2011. Viewed at: [www.waterboards.ca.gov/water\\_issues/programs/swamp/docs/cwt/guidance/513.pdf](http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance/513.pdf)

For soil, the CSR standards are organized by the primary land-use at surface grade including Agricultural Land Use (AL), Low-Density Residential Land Use (RL<sub>LD</sub>), High-Density Residential Land Use (RL<sub>HD</sub>), Commercial Land Use (CL), Industrial Land Use (IL), and others.

For soil vapour, the standards are similarly organized based on land use including Agricultural/Urban Park/Residential (AL/UP/RL), Commercial (CL), Industrial (IL), and Parkade (PU).

If rezoning or redevelopment is contemplated, then the future land use standards must also be considered for both soil and soil vapour.

Water standards include those for Aquatic Life (AW), Irrigation (IW), Livestock (LW) and Drinking Water (DW). The application of specific standards at a site are discussed in ENV Protocol 21 – Water Use Determination (P-21). According to P-21:

- AW standards generally apply to all groundwater located within 500m of a surface water body containing aquatic life. Depending on the type of surface water body, the AWfw (freshwater) and/or AWm (marine) standards may apply.
- DW standards generally apply where current drinking water sources are within 500m of the outer extent of a groundwater contamination source. The potential for future drinking water use must also be considered. Typically, DW standards are considered apply unless proven otherwise through an assessment of the site-specific hydrogeology and/or natural groundwater quality.
- IW and LW standards are considered to apply where these resources are potentially present within 500m (down-gradient) or 100m (up-gradient) of the Site.

The following table summarizes the CSR standards that would likely apply to the Site:

#### ANTICIPATED CSR STANDARDS

| Media       | Applicable CSR Standards                                  | Comments                                                                                                                                                                            |
|-------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soil        | RL <sub>LD</sub>                                          | Site is currently used for Residential purposes.                                                                                                                                    |
| Soil Vapour | RL                                                        | As above.                                                                                                                                                                           |
| Water       | Standards that Apply Irrespective of Water Use<br>AWm, DW | AWm standards are likely to apply based on distance to the nearest surface water body (see Section 4).<br>DW standards are likely to apply.<br>IW and LW standards would not apply. |
| Sediment    | n/a                                                       | Sediment not present on-Site.                                                                                                                                                       |

Further investigation would be required to confirm the applicable CSR standards. In particular, a detailed hydrogeological assessment would be required to confirm the applicability of DW standards.

If contemplating relocation of soil from one site to another, the soil standards that apply for the land use at the receiver site must also be considered.

An Agricultural Land Reserve map is included on Figure 3. According to this figure, the Site is not located within the ALR.

## 6 LAND USE HISTORY

The history of the Site and surrounding lands was interpreted based on a review of the following available information:

- Historical Air Photos (Appendix C).
- Historical City Directories (Appendix F).

### 6.1 Historical Site Uses

Our review identified the following historical uses at the Site:

#### HISTORICAL SITE USES

| Address                           | Approximate Date Range | Land Use    | Source / Comments              |
|-----------------------------------|------------------------|-------------|--------------------------------|
| 1005 Tillicum Road, Esquimalt, BC | 1954 to Present        | Residential | City Directories<br>Air Photos |
|                                   | 1954 to 1928           | Undeveloped | City Directories<br>Air Photos |

None of the identified historical site uses were considered to be potential sources of contamination.

A heating oil AST was identified in the basement (see Section 2.1).

### 6.2 Schedule 2 Activities

Schedule 2 of the CSR lists a number of commercial and industrial activities that could result in contamination. Anywhere in BC (excluding federal lands), a Site Disclosure Statement must be provided when an application is made to local government for permits for zoning, subdivision, development, or building (where soil disturbance is likely to occur). The Site Disclosure Statement asks a number of questions about the history of a site, in particular Schedule 2 Activities. When such activities have occurred on a site, then ENV approval will be required to facilitate these permits, unless a valid exemption applies. Typical ENV approvals include Instruments (e.g. Certificates of Compliance, Determinations, or Approvals in Principle) and Releases.



No Schedule 2 Activities were identified at the Site, and therefore ENV approval should not be required to facilitate the indicated local government permits. Any future soil relocation from the Site will not be subject to the more stringent characterization requirements that will be introduced with the CSR Stage 14 Amendments, set to take effect on March 1, 2023.

We note that the current residential heating oil UST at 1005 Tillicum Road is not considered a Schedule 2 Activity<sup>3</sup>.

### 6.3 Surrounding Properties

The identified historical surrounding land uses that were considered to present a potential risk of contamination to the Site are summarized below. The potential for these uses to have impacted the Site is discussed in Section 7.2.

#### HISTORICAL OFF-SITE ACTIVITIES

| Direction (Orientation)       | Address                | Approximate Date Range | Historical Activity          |
|-------------------------------|------------------------|------------------------|------------------------------|
| West<br>(down/cross-gradient) | 1010 Craigflower Road  | 1964-1974              | White Swan Laundrette        |
|                               | 1008 Craigflower Road  | 1974-1989              | White Swan Laundrette        |
| North<br>(down-gradient)      | 316 Uganda Avenue      | 1959-1969              | Dry Cleaners                 |
| South<br>(up-gradient)        | 944 Craigflower Avenue | 1959-Present           | Petro Canada Service Station |
|                               | 955 Craigflower Avenue | 1949-Present           | Esso Service Station         |

Though no evidence of heating oil usage was observed on surrounding lands (see Section 2.2), it is possible that heating oil ASTs or USTs previously existed on surrounding properties, due to the age of the buildings.

### 6.4 BC Online Site Registry Records

BC Online maintains a Site Registry on behalf of ENV. Any sites that have had ENV involvement after 1988 are listed on the Site Registry. Not all sites listed in the Registry are considered to be contaminated; rather, some have only been investigated or have received ENV approvals for remediation. The Site Registry also includes sites for which a Site Profile or Site Disclosure Statement has been submitted to ENV, regardless of whether or not environmental concerns were subsequently identified.

A Site Registry search was completed by Active Earth on March 14, 2023 (see Appendix D).

<sup>3</sup> In accordance with ENV policy, previously documented in Administrative Guidance 13 – Guidance on Schedule 2 Purposes and Activities, which was rescinded in 2021.

The database was searched based on the Site PIDs, and identified the following:

#### SITE PID REGISTRY SEARCH

| Address            | PID         | Results     |
|--------------------|-------------|-------------|
| 1005 Tillicum Road | 002-145-073 | Not Listed. |

The database was also searched on the basis of geographic location within 0.5km radius of the centre of the Site (See Figure 3 for registered site locations). The area search identified 6 records, most of which were located a large distance from the Site (greater than 100m), and/or were situated down-gradient or cross-gradient with respect to the inferred direction of groundwater flow.

The following records were identified adjacent to the Site, or within 100m of the Site in an up-gradient orientation:

#### AREA-BASED REGISTRY SEARCH RESULTS

| Address              | Site ID No. | Location                                             | Direction (Orientation) | Distance from Site Boundary |
|----------------------|-------------|------------------------------------------------------|-------------------------|-----------------------------|
| 944 Craigflower Road | 1695        | Northeast corner of Craigflower Road & Tillicum Road | South (up-gradient)     | 2m                          |
| 955 Craigflower Road | 1926        | Southeast corner of Craigflower Road & Tillicum Road | South (up-gradient)     | 81m                         |

The Detailed Report for site ID 1695 indicated:

- The site was registered in 1997 and last updated in 2015.
- The site Status is indicated as "Not Assigned" and Category indicated as "Medium Site, Simple Contamination".

The Detailed Report for site ID 1926 indicated:

- The site was registered in 1998 and last updated in 2018.
- The site Status is indicated as "Active – Under Assessment".
- 2018 Site profile reviewed – Further investigation required by the Ministry.
- 2018 Site profile received.
- 2016 Site risk classified – Site is non-high risk.

The potential for these properties to have impacted the Site is discussed further in Section 7.2.

## 7 STAGE 1 DISCUSSION

This section discusses the findings of the Stage 1 and assesses the likelihood of soil, soil vapour and/or groundwater contamination at the Site.

Any issues considered to present a moderate or high risk of contamination to the Site are considered APECs. Further investigation in the form of a Stage 2 would be recommended for all APECs.

No further investigation would be recommended for issues considered to present a low risk of contamination to the Site.

### 7.1 Site

No on-Site issues were identified that were considered to present a moderate or high risk of contamination. As such, no on-Site APECs were identified.

The following table outlines the on-Site issues that were determined to present a low risk and were therefore not retained as APECs:

#### LOW RISK RATIONALE – ON-SITE ISSUES

| Issue                                  | Low Risk Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential Former Heating Oil USTs/ASTs | A heating oil AST was identified over the concrete slab in the basement and no indications of a former UST were identified. Any contamination due to historical leakage/spillage would likely be contained by the concrete floor. Any possible leakage/spillage penetrating the floor would likely be confined to the immediate vicinity of the spill based on the anticipated soil conditions. The risk of significant contamination associated with heating oil/storage use is therefore considered low. If a historical heating oil UST is identified in the future, a Qualified Environmental Professional should be retained to re-evaluate this issue. |

All other identified on-Site activities (current and historical) were considered to present a low risk of contamination to the Site.

### 7.2 Surrounding Properties

The following off-Site issues were considered to present a moderate or high risk of contamination to the Site, and were therefore retained as APECs:

## OFF-SITE APECS - DISCUSSION

| APEC                                                                  | Inferred Risk | Discussion                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| APEC 1 – Current Service Station & Auto Repair (944 Craigflower Road) | Moderate      | An automotive repair garage and service station operated adjacent to the south of the Site from approximately 1959 to Present. Based on the proximity to the Site and age/duration of the automotive repair activity, this issue was considered to present a moderate risk of contamination to the Site from leakage/spillage and migration of fuels, oils, solvents/degreasers, or other automotive fluids. |

The following table outlines the off-Site issues that were determined to present a low risk and were therefore not retained as APECs:

## LOW RISK RATIONALE – OFF-SITE ISSUES

| Issue                                          | Distance / (Orientation) | Low Risk Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential Former Heating Oil USTs/ASTs         | Various                  | Though no evidence of existing or former heating oil ASTs or USTs was identified off-Site, it is likely that heating oil was historically stored on surrounding lands given the age of the buildings. Any contamination due to historical leakage/spillage would likely be confined to the vicinity of the former tanks, based on the anticipated soil conditions. As such, the risk of off-Site heating oil contamination having migrated to the Site is considered low. |
| Current Service Station (955 Craigflower Road) | 82m South (up-gradient)  | An service station operated adjacent to the south of the Site from approximately 1949 to Present. The risk of contamination migrating from these potential off-Site sources to the Site is considered low. Regardless, any such contamination would be identified during the investigations for the identified APEC.                                                                                                                                                      |
| Various Dry Cleaners                           | (down/cross-gradient)    | This issue was considered to present a low risk to the Site based on distance and orientation relative to the Site.                                                                                                                                                                                                                                                                                                                                                       |

All other identified off-Site activities (current and historical) were considered to present a low risk of contamination to the Site, largely due to distance, orientation relative to the Site, and the low-permeability of the local clay soils that would likely inhibit contaminant migration.



## 8 CONCLUSIONS

The Stage 1 was conducted to assess the likelihood of soil, soil vapour and/or groundwater contamination based upon a review of readily accessible historical information and completion of a site visit.

The following APECs and associated PCOCs were identified for the Site:

### SUMMARY OF APECS AND PCOCS

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

The environmental risk associated with the above APEC was deemed to be *moderate*.

Further investigation in the form of a Stage 2 Preliminary Site Investigation is recommended to assess the presence/absence of on-Site contamination associated with the identified APEC.

Given the age of the on-Site building (constructed pre-1990), a Qualified Environmental Professional, such as Active Earth, should be engaged to conduct a detailed Hazardous Building Materials Investigation (HBMI) prior to demolition or renovation of the on-Site buildings. A limited HBMI may also be conducted at any time to support financing, or for general planning and liability estimating purposes.

## 9 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 Estate of Isabelle Harford 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.