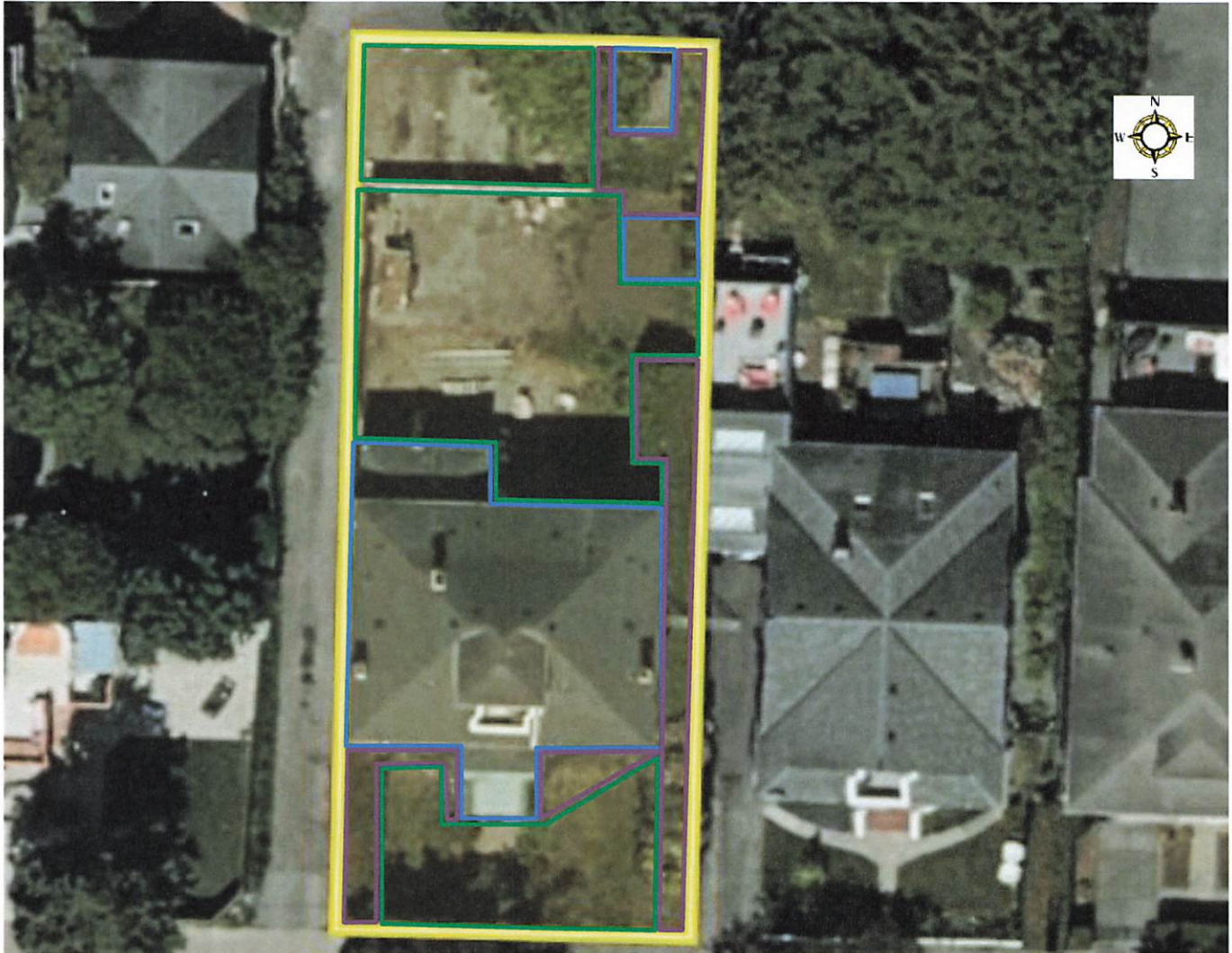




ScanPlus
Locating 2024 Ltd.

Office: 778-352-4770
Toll Free: 884-480-7226
Email: info@scanplus.ca

1012 Oliphant Ave Victoria, BC
Ground Penetrating Radar Locate Map



Legend:

Area(s) Scanned w/GPR ——— Site Boundary ——— Area of Concern ———
Area(s) Not Scanned ——— Area(s) Scanned w/Metal Detection ———

Disclaimer: The location of the marked utility is approximate only. This locate is **valid for up to 10 business days so long as the markings are visible**. All ground disturbances in proximity to buried utilities must follow WorkSafe BC regulation 20.79 Excavations, Underground Utilities. ScanPlus Locating Ltd will not accept any liability for damages incurred as a result of this locate

You are responsible for any damages caused to the facility by your operations

Locate Technician: Rick James	Locate Date: 2024-08-07
Client: Stephen Goring	Comments: See attached report



Specializing in locating and mapping the subsurface

Non-intrusive remote sensing technology

Non-Destructive Testing (NDT)

Electromagnetic (EM)

Ground Penetrating Radar (GPR)

Ferrous Metal Detection

3D Time Slice Mapping

Locally owned and operated.

Fully Certified Mobile Service

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Underground Oil Storage Tank Investigation



SITE ADDRESS: 1012 Oliphant Ave, Victoria, BC

CLIENT NAME: Stephen Goring

INVESTIGATION DATE: August 7, 2024

INVESTIGATION COMPLETED BY: Rick James





August 7, 2024

Remote Sensing Property Scan

Attn: Stephen Goring
stephen.goring@gmail.com
416-535-3512

Re: Remote Sensing Property Scan at 1012 Oliphant Ave, Victoria, BC

ScanPlus completed a non-intrusive, subsurface remote sensing scan of the above described property, dated August 7, 2024 using a combination of ground penetrating radar, radio detection, and ferrous metal detection.

This Remote Sensing Property Scan was designed to target and locate potential underground heating oil storage tanks (UST), and/or a UST nest (the remnant hole where a UST was previously buried). A visual inspection for clues of potential UST's was completed prior to scanning. Some of the indicators the technician looked for include, existing fill and vent pipes, evidence of previous fill and vent pipes, current and/or previous boilers/furnaces, chimneys, existing above ground storage tanks (AST), staining, depressions in the ground, and concrete/asphalt patches. It should be noted, Remote Sensing is not 100% effective in all situations, but ScanPlus provides the best non-intrusive means of subsurface detection available in the market today. See the attached, ***Understanding Concepts and Limitations***, for further details.

ScanPlus completed an onsite investigation to determine the potential for a UST to have been installed on the subject site. The Victoria Fire Department list the following permit records for the subject home:

- Underground storage tank removed 2002-03-14

It is the understanding of ScanPlus that the home, built in 1912, is currently heated by electric baseboard heaters and two wood burning fireplaces. ScanPlus has been made aware of, or noted the following changes that have been made to the house and or property:

- The shingles have been replaced on an unknown date.
- The stucco has been painted on an unknown date.
- Interior renovations have been conducted on an unknown date.

- A furnace and/or boiler system has been removed and/or replaced on unknown dates. An addition has been added on to the structure on an unknown date.

Note: changes or upgrades to the interior or the exterior of the subject home may cover up or conceal historical evidence of a UST such as subsurface copper fuel supply lines, vent pipes or fill pipes.

A visual inspection was completed of the interior of the subject home. There were twin sub surface copper fuel supply line coming out of the floor in the furnace – boiler room area approximately 1m South and 1m East of the SE base of the middle chimney. ScanPlus traced these lines via electromagnetic induction and found them to head North towards the North exterior wall. Approximately 1m South of the North exterior wall these lines turn East. In this Northernmost area, West of the staircase the lines both appear to be broken before departing the concrete floor and continuing North in the open towards the North exterior wall. These lines exit the North exterior wall of the subject home approximately 0.6m high off of the ground. ScanPlus conducted an electromagnetic trace, these new sections of the lines outside and they are terminated immediately North of the North exterior wall at an approximate depth of 0.6m.

A visual inspection was completed of the exterior of the subject home. There are three single flue chimneys. The East and West outside wall chimneys are for wood burning fireplaces. The interior chimney is for a historic oil burning heat source in the basement that was fed by the sub surface copper fuel supply lines as explained above. There is no visible evidence of a vent pipe or a fill pipe that would be associated with a UST.

A GPR and ferrous metal detection scan was completed on the subject property. ScanPlus found no visible or scanned evidence of an anomaly. An anomaly is something that deviates from what is standard, normal, or expected. When investigating a tank using GPR, an anomaly is visible on the monitor as it has a density that is different from the surrounding subsurface. Ground conditions on the day of the scan allowed the GPR to receive imagery to a depth of 1.6 meters.

Due to site specific limitations, such as BBQ's, utility trailer, firepit, patio furniture, lawn furniture, detached wood shed, detached wood framed poly greenhouse, wood fencing, raised flower beds, misc. tools and personal items, trees and shrubs, some areas within the subject site boundaries were not accessible or feasible for GPR scanning.

Following the subsurface remote sensing scan, we can certify as follows:

That ScanPlus has inspected the property, to the best of our ability, for the presence/absence of a UST. See the attached map for an overview.

That ScanPlus has no past, present, or contemplated interest in the property.

ScanPlus has taken into consideration, fire department records for the Victoria. See above comments.

ScanPlus did not locate visual evidence or remote scanned evidence, of a UST on the above mentioned subject site.

If there are any questions or concerns regarding the site scan please contact us at 778-352-4770.

Rick James

GPR Technician
rick.james@scanplus.ca

Site Photos

Captured on: August 7, 2024



Figure 1-
Tanks, BBQ and firepit: limitation
for GPR.



Figure 2-
BBQ and lawn furniture: limitation
for GPR.



Figure 3-
Utility trailer: limitation for GPR.



Figure 4-
Shed and greenhouse: limitation
for GPR.

Understanding Concepts and Limitations

GPR Concept

The Ground Penetrating Radar (GPR) uses high-frequency-pulsed EM waves (from 10 to 3000 MHz) to acquire subsurface information. Energy is propagated downward into the ground from a transmitting antenna and is reflected back to a receiving antenna from subsurface boundaries between media possessing different EM properties. The reflected signals are recorded to produce a scan or trace of radar data. Typically, scans obtained as the antenna(s) are moved over the ground surface are placed side by side to produce a radar profile. Objects within the earth reflect the EM wave at different rates thereby creating an image on the monitor which is then interpreted by the certified operator.

General Limitations Inherent to Geophysical Methods (GPR)

A fundamental limitation of all geophysical methods lies in the fact that a given set of data cannot always be associated with a unique set of subsurface conditions. In most situations, surface geophysical measurements alone cannot resolve all ambiguities, and some additional information is required. As a result of this inherent limitation in the geophysical methods, a GPR survey alone can not be considered a complete assessment of subsurface conditions. Properly integrated with other sources of knowledge or geophysical methods, GPR can be a highly effective, accurate, and cost-effective method of obtaining subsurface information. Soil types, groundwater/saturation of soils and limited area for completing two directional scans are a few of the typical limitations.

Increasing Accuracy During a Survey

ScanPlus engages two other electronic instruments in order to increase the volume of information collected. The first instrument engaged is a pin locator, or ferrous metal detector, that primarily detects magnetic fields such as iron pipes, tanks, etc. There are limitations when using ferrous metal detection that may lead to inconclusive results. These include, but are not limited to: rebar in concrete, metal fencing, metal mesh in stucco, vehicles in driveways, waste bins, scrap metal piles, naturally occurring metals in rocks and landscaping. Any of these may return a false positive or mask the location of a UST.

This is followed by a radio detection unit (EM), which can further define things like steel pipes, hydro/power lines and gas lines which were installed with a trace wire. Limitations also exist with the EM, poor ground connections may require a higher frequency in order to effectively locate a fuel line. The draw back of using a higher frequency is that the signal may "bleed off" into other buried utilities such as copper water lines, buried power or communication lines. Additionally, fuel supply lines that have been severed from the tank may result in an incomplete trace. All information gathered from these instruments assist in the GPR operator's investigation. The collaboration of these instruments and the resulting collection of information can increase the accuracy of locating underground utilities.

Site Limitations

The GPR unit requires a relatively flat surface to operate with adequate travel distance. Decks which are off the ground less than three feet are not accessible with the traditional GPR unit therefore the area would not be surveyed under a basic contract. If the area is of concern modifications can be made to the instrument to complete such surveys. A minimum of 18 inches is still required even with modifications. Soil type, both at surface and subsurface, seasonal changes that effect soil moisture content, surface contours and field obstructions (ex. Garden beds, shrubs, fencing or junk piles) can also be substantial limiting factors.

For further clarification or examples of limitations, please contact one of our technicians at 778-352-4770.