Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

Sampling and Analysis Plan - REVISED

Soil and Groundwater Sampling

Lots 25 and 26
Seitz Property
Brian Lane NW
Silverdale Washington

Facility /Site No.: 6865393
Cleanup Site ID No.: 1472
VCP Project No.: NW3213

June 10, 2021

Prepared for:

Mr. Blaise Hilton, Principal
Russell Square Consulting
4857 W 147th Street, Suite D
Vancouver, WA 98660

Prepared by
Krazan & Associates, Inc.
1230 NW Finn Hill Road, #A
Poulsbo, WA 98370

Shawn E. Williams, L. G.
Senior Geologist

TABLE OF CONTENTS

1. INTRODUCTION 1

1.1 Site Setting 1
1.2 Site History 1
1.3 Sources of Contamination 2
1.3.2 Previous Environmental Investigations 2

2. INVESTIGATION OBJECTIVE 5

3. CONCEPTUAL SITE MODEL 5

3.1 Source Areas 6
3.2 Contaminants of Potential Concern 6
3.3 Contaminant migration and extent 6
3.4 Current and Future Site Use 7
3.5 Potential Exposure Pathways 7

4. PURPOSE, SCOPE, AND RATIONALE 7

5. PROPOSED CLEANUP STANDARDS 9

5.1 Soil Cleanup Standards 9
5.2 Groundwater Cleanup Standards 2

6. SAMPLING OBJECTIVES AND DESIGN 2

6.1 Chemical Analysis 2
6.2 Field Sampling Methods 2
6.3 Monitoring Well Construction 3
6.4 Sampling Locations 3
6.5 Decontamination Procedures 4
6.6 Sample Containers and Labels 4
6.7 Field Documentation 4
6.8 Investigation-Derived Waste 5
6.9 Utility Locations 5

7. SAMPLE HANDLING PROCEDURES 5

7.1 Field Quality Control Samples 5
7.2 Sample Storage 6
7.3 Chain-of-Custody Procedures 6
7.4 Deliver of Samples to Analytical Laboratory 6

8. LABORATORY ANALYTICAL METHODS 7

8.1 Sample Quantitation Limits 7

9. REPORTING 7

10. REFERENCES 12

TABLES

Table 1 - Purpose, Scope, and Rationale 8
Table 2 - Ecological Soil Screening Levels 10
Table 3 - Sample Collection Summary 8

FIGURES – end of report

Figure 1. Vicinity Map
Figure 2. Site Map
Figure 3. Site Map – Previous Sampling Locations
Figure 4. Site Map – Previous Sampling Locations
Figure 5. Site Map – Proposed Sampling Locations
Figure 5. Monitoring Well Construction Diagram

Appendix A –Laboratory Methods and Specifications

ACRONYMS

µg/L	Micrograms per liter
AEG	Associated Environmental Group, LLC
ASTM	American Society for Testing and Materials
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylenes
COC	Chain-of-custody
COPC	Contaminants of potential concern
cPAHs	Carcinogenic polycyclic aromatic hydrocarbons
CSCSL	Confirmed and Suspected Contaminated Sites List
CSM	Conceptual site model
DP	Debris piles
DSA	Drum storage area
E&E	Ecology and Environment, Inc.
Ecology	Washington Department of Ecology
EnviroSound	EnviroSound Consulting, Inc.
EPA	United States Environmental Protection Agency
FA	Further Action
HASP	Health and Safety Plan
HSL	Hazardous Sites List
IDW	Investigation-derived waste
KCHD	Kitsap County Health District
Krazan	Krazan and Associates
mg/kg	milligrams per kilogram
MS/MSD	matrix spike and matrix spike duplicate
MTCA	Model Toxics Control Act
NFA	No further action
NW	Northwest
NWTPH	Northwest Total Petroleum Hydrocarbons
PCB	Polychlorinated biphenyls
PQL	Project quantitation limit
QC	Quality Control
SAP	Sampling and Analysis Plan
SHA	Site Hazard Assessment
TEE	Terrestrial Ecological Evaluation
TEQ	Toxicity equivalents
TPH (g, d, or o)	Total Petroleum Hydrocarbons (gasoline, diesel, or heavy oil)
USEPA	U.S. Environmental Protection Agency
VCP	Voluntary Cleanup Program
VOCs	Volatile Organic Compounds
WAC	Washington Administrative Code

1. INTRODUCTION

On behalf of Russell Square Consulting, Krazan and Associates (Krazan) has prepared this Soil and Groundwater Sampling and Analysis Plan (SAP) for the site located at Brian Lane NW in Silverdale, Washington. The Site consists of two contiguous rectangular-shaped Kitsap County tax parcels. Parcel A is the north parcel, with parcel number 08250140262000; Parcel B is the south parcel, with parcel number 08250140252001 (Figure 1). The two parcels are referred to as the Property in this SAP. The two parcels, which cover approximately 9.78 acres of undeveloped land, are located east of Brian Lane NW in central Kitsap County, northwest of Silverdale, Washington. No street number has been assigned to the Property. For the purposes of investigation, cleanup, and request for opinion, the Department of Ecology (Ecology) defines the site as impacted by carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and arsenic released to soil.

1.1 SITE SETTING

The Property is heavily vegetated with overgrown blackberry bushes, weeds, tall grasses, and other underbrush. An approximately 1-acre area on the western portion of the Property was cleared. A primitive road crosses the Property tracking southwest tonortheast. Access to the Property is via a 30-foot-wide easement from Brian Lane NW, which is located west of the Property. No utilities are provided to the Property. The Property is bounded with undeveloped land to the north, south, and west, and single-family residences to the east and southwest.

1.2 SITE HISTORY

The Property was undeveloped land since as early as 1891. An aerial photograph in 1981 shows that the central portion of the Property was cleared at the time, with a building structure and a primitive road entering from the west; aerial photographs from 1990 to present show that the southwestern portion of the Property was cleared (AEG 2020). A historic report indicated that three abandoned building structures were present on the Property in 1997 (E&E 1997). Other historic reports indicated that the abandoned building structures were a house, a chicken coop, and a shed. The building structures were reportedly removed from the Property (decayed at the time) in June 2005 (EnviroSound 2015). The Property has been vacant and undeveloped since that time. The locations of the former building structures are depicted on Figure 2.

1.3 SOURCES OF CONTAMINATION

Contamination appears to be associated with wastes that were historically disposed of at the Site. One 55-gallon drum was discovered on Parcel B in 1997 which contained petroleum product (E&E 1997) (Figure 2). A total of eighteen 55-gallon drums were discovered by the property owner on Parcel A in 2005 (Figure 2). Several of these drums were labeled with "Roybond Primer"; but the exact contents of the drums were unknown. A few debris piles were also discovered on Property (Figure 2). These debris piles appeared to contain solid waste such as tires, trash, vehicles, etc. The contaminants of potential concern (COPCs) identified to date include arsenic and cPAHs in soil.

1.3.2 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Environmental assessments have been conducted at the Site since 1997. The list below is from the Site Description in the March 9, 2021 Ecology Further Action (FA) Opinion letter outlining site investigations and regulatory history in chronological order:

- In 1985 and 1986, complaints were made by a neighboring property owner to the Kitsap County Health District (KCHD) alleging that illegal dumping was being conducted on the Property. KCHD was unable to substantiate the claims of illegal burial of drums and cylinders at the time.
- In August 1997, the current Property owner was notified by the U.S. Environmental Protection Agency (EPA) that there were allegations of illegal dumping on the Site, presumably from the same neighbor. As a result of the allegation, a Site investigation was conducted on behalf of the EPA.
- The investigation included clearing brush and debris, conducting a geophysical survey, and digging three trenches to a maximum depth of 11 feet below ground surface (bgs) on the Site. The locations of the trenches are depicted as "E&E 1997 Trench #1, 2, and 3" on Figure 2.
- One 55-gallon drum discovered west of the former house was reportedly approximately ¼ full (Figure 2). One sample was collected from the drum. The analytical results were consistent with a diesel or heating oil type of petroleum product. The drum was emptied and recycled at the time.
- In March and April 2005, Ecology and KCHD conducted an initial Site investigation.
    - On March 14, 2005, KCHD received complaints from a neighbor that solid waste was uncovered at the Site due to land-clearing activities. KCHD visited the Site on March 18 and confirmed the presence of several piles of trash and rubbish. KCHD contacted the current owner to inquire about the status of the waste; the owner related that he was planning on developing the Property and cleaning up the solid waste.

- On March 25, 2005, the current owner informed KCHD that additional brush-clearing activities revealed a 10-foot by 10-foot area where 18 55-gallon drums were discovered. The area is depicted as "Former Drum Storage Area" on Figure 2. KCHD inspected the drums on March 28; all drums were full or close to full. Four of the drums reportedly showed signs of leakage or spillage. Several drums were labeled with "Roybond Primer." The area around the drums reportedly smelled of solvents. KCHD provided the information to Ecology.
- On March 29, 2005, a nearby property owner contacted Ecology reporting the drums found by the current owner and alleged additional drums (dumped in 1985 to 1986) were still buried on the Site. The complaint suggested that the 1997 trenching area was not in the alleged dumping area.
- As a result of the initial investigation, Ecology listed the Site on the Confirmed and Suspected Contaminated Sites List (CSCSL) in April 2005 and requested that KCHD conduct a Site Hazard Assessment (SHA).

- KCHD conducted the Site Hazard Assessment (SHA) from August 2005 to February 2006.
  - During the time of the SHA, the current owner demolished the building structures in June 2005 and removed the 18 drums on August 17, 2005.
  - A ground-penetrating radar and magnetic survey was conducted in August 2005 in areas that were not covered by the 1997 survey and trenching. No buried metallic objects and no signs of excavation were found. The 2005 survey area is depicted on Figure 2.
  - Five soil samples (SP1 through SP5) were collected from the cleared areas of the Site from ground surface to 1-foot bgs (Figure 3). Two of the soil samples were collected from the former drum storage area; two were from the areas of the debris piles; and one was from the former house area. One soil sample, SP2, contained a cPAHs TEQ concentration above the Model Toxics Control Act (MTCA) Method A soil cleanup level.
  - Two groundwater samples were collected from the two closest drinking water wells, respectively (Figure 1). The water sample collected from the Landsworth Creek water system well (east of the Site) contained an arsenic concentration and a cPAHs TEQ above the MTCA Method A groundwater cleanup levels. The cPAHs TEQ in a blank water sample also exceeded the MTCA Method A groundwater cleanup level.
  - As a result of the SHA, Ecology listed the Site on the Hazardous Sites List (HSL) in February

2006, with a hazard ranking of 2 (moderate to high risk).

- In June to October 2015, soil sampling and excavation were conducted at the Site by EnviroSound Consulting (EnviroSound).
  - In June and July 2015, seven soil samples were collected at five locations (SL-1, S1-SL-1.5, SL-2, SL-3, and SL-4) within or near the former drum storage area from the ground surface to 1.5 feet bgs (Figures 3 and 4). The soil samples collected at the ground surface from locations SL-1 and SL-2 contained arsenic concentrations above the MTCA Method A soil cleanup level.
  - Two soil samples (DP1-S5-SL-09 and DP2-S6-SL-11) were collected from the areas of the two debris piles, respectively. One soil boing (SP5-S7-SL-13) was collected near the former house. All three soil samples were collected at the ground surface, and all contained arsenic concentrations above the MTCA Method A soil cleanup level. The areas where these samples were collected are depicted on Figure 4.
  - In October 2015, approximately 5.5 cubic yards of contaminated soil were removed from the former drum storage area. The excavation was completed to a size of 10-foot by 10- foot, and to a depth of 1.5 feet bgs. The excavation was not backfilled.
  - Two confirmation soil samples (DSA-S5 and DSA-S6) were collected by EnviroSound at the bottom of the excavation at 1.5 feet bgs (Figure 3). The soil samples did not contain detectable cPAHs. No arsenic analysis was conducted on these confirmation samples.
  - The current owner submitted the investigation results and entered the Site in Ecology's Voluntary Cleanup Program (VCP) on March 7, 2016. The Site was assigned a VCP project number of #NW3037. Ecology issued a *Further Action opinion letter* on June 22, 2016 to request additional work. This VCP agreement was terminated on December 3, 2018 due to lack of active cleanup activities.
  - In March 2018, a direct-push soil boring was advanced to 20 feet bgs at the east side of the former drum storage area by Mr. Seitz. One groundwater sample was collected from the soil boring. The groundwater sample contained concentrations of TPHg and BTEX above the laboratory PQL but below the MTCA Method A groundwater cleanup levels. Concentrations of TPHd, TPHo, cPAHs, and arsenic were below the laboratory PQL. However, the PQL for TPHd plus TPHo (750 µg/L) was above the MTCA Method A groundwater cleanup level (500 µg/L).
- In June to September 2020, a Phase I Environmental Site Assessment was conducted for the Site by

Associated Environmental Group, LLC (AEG), and a letter report was prepared to summarize Site data. The Site re-entered Ecology's VCP on October 1, 2020 and was assigned a VCP project number of #NW3293.

- In October 2020, exploratory test pits were excavated on the subject property as part of a Geotechnical Engineering Investigation by N. L. Olsen & Associates, Inc. A representative of Krazan observed the majority of the test pits on the subject parcels as part of a Phase I ESA for the property. No visible evidence of contamination was observed in the test pits and no visible evidence of drums were noted. Test pit locations are shown on Figure 4.
- In November 2020, nine soil samples (CS-1 through CS-9) were collected by Krista Webb Consulting in the former drum storage area at ground surface to 1.5 feet bgs (Figure 3). None of the soil samples contained detectable arsenic concentrations above MTCA soil cleanup levels.

2. INVESTIGATION OBJECTIVE

The objective of the work described in this plan is to complete characterization of the site based on the March 9, 2021 FA opinion letter from Ecology. Site characterization data collected will be used to determine if any remedial action is required to meet substantive requirements of MTCA, Chapter 70A.305 RCW. If contamination is identified in soil or groundwater above applicable cleanup standards, a feasibility study will be prepared to select the appropriate actions required to obtain a no further action (NFA) for unrestricted use.

3. CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is used to identify contaminants of potential concern (COPCs), affected media, potential migration routes, and exposure pathways by which human and ecological receptors may be exposed to hazardous substances (WAC 173-340- 708[3][e]).

An exposure pathway consists of four main parts (WAC 173-340-200), listed below:

- Source of contamination (e.g., primary sources, such as spills and leaks, and secondary sources, such as impacted soil or groundwater)
- Transport or exposure medium (e.g., a solute moving with groundwater flow and contamination present in soil)
- Point of exposure (e.g., an open excavation)

- Route of exposure (e.g., inhalation and dermal contact).

When all of these parts are present, connecting the source of contamination to a receptor and result in an unacceptable health risk, the exposure pathway is considered complete. If one or more parts are not present, the pathway is incomplete, and exposure does not occur. It is also possible to have a potentially complete exposure pathway without health risk if chemicals are not detected or chemical concentrations are within an acceptable range.

Potential human receptors were identified for the Property based on current and reasonable future land use.

3.1 SOURCE AREAS

Soil and groundwater are potentially contaminated as a result of leaking from wastes that were historically disposed of at the Site. Wastes include:

- One 55-gallon drum was discovered on Parcel B in 1997 which contained petroleum product (E&E 1997) (Figure 3). It is not known to have leaked.
- Eighteen 55-gallon drums were discovered by the property owner on Parcel A in 2005 (Figure 2). Several of these drums were labeled with "Roybond Primer"; but the exact contents of the drums were unknown.
- Two debris piles discovered on the Property (Figure 2). These debris piles appeared to contain solid waste such as tires, trash, vehicles, etc.

3.2 CONTAMINANTS OF POTENTIAL CONCERN

The contaminants of potential concern (COPCs) identified to date include arsenic and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in soil. Additional COPCs, such as lead, gasoline, diesel, or heavy-oil range petroleum hydrocarbons, volatile organic carbons (VOCs) such as benzene, ethylbenzene, toluene, and xylenes (BTEX), other PAHs, or polychlorinated biphenyls (PCBs), may be identified on soil and groundwater upon further site characterization.

3.3 CONTAMINANT MIGRATION AND EXTENT

Contamination is potentially present in surface and subsurface soil between 0 and 15 feet bgs. It is believed that most or all the contamination present was removed during the excavation of the shallow soils near the drum storage area from 0 to 5 feet in depth. This sampling will confirm the presence or

absence of residuals post removal, as well as evaluate other areas identified as being of concern by Ecology. This sampling will also evaluate the potential for contamination migrating to groundwater prior to the removal action, as well as evaluate groundwater at two other potential source areas (Debris Piles 1 and 2) to determine if any contamination has migrated to groundwater from soil. If contamination is identified and extent cannot be determined during the initial sampling event, additional sampling will be proposed to complete site characterization prior to proceeding to the RI/FS Report (see section 9 below). Sampling rationale to meet this evaluation are described in Section 4.

3.4 CURRENT AND FUTURE SITE USE

The property is currently undeveloped. The property is bounded with undeveloped land to the north, south, and west, and single-family residences to the east and southwest. The property is zoned for commercial use with the Kitsap County comprehensive plan land use designation of Urban High Intensity Commercial. Future receptors may be residents, workers, or construction workers.

3.5 POTENTIAL EXPOSURE PATHWAYS

Depending on the COPCs detected during this site characterization, future receptors may be exposed to surface and subsurface soil by incidental ingestion, dermal contact, and inhalation of soil particulates and VOCs. Future receptors may also be exposed to contaminants in subsurface soil and groundwater by inhalation of VOCs in indoor (e.g., inhalation of off-gassing VOCs from shallow groundwater or soil) or outdoor air. Receptors could be exposed to groundwater contaminants (if present) in drinking water by ingestion, dermal exposure, or inhalation of volatiles from tap water.

4. PURPOSE, SCOPE, AND RATIONALE

Several items were identified by Ecology that require additional characterization to meet the objective of this project. This work plan will identify the sampling and analysis requirements to complete characterization of the site. The results of the site characterization will be used to determine if any remediation is required to meet the overall objective of no further action (NFA) for unrestricted use.

Table 1 - Purpose, Scope, and Rationale

PURPOSE	SCOPE	RATIONALE
Evaluate the former debris piles for the nature and extent of arsenic in soil	Collect three (3) discrete surface soil samples at each of the two (2) former debris piles and test for lead and arsenic. Collect one field duplicate.	Data obtained will quantify presence or absence of arsenic above MTCA cleanup levels in vicinity of former debris piles.
Evaluate the vicinity of the former house for the presence of contamination in surface soil.	Collect three (3) discrete surface soil samples and analyze for petroleum hydrocarbons (gasoline, diesel, and lube oil) (TPH g/d/o), polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene, and xylenes (BTEX), arsenic, and lead. Collect one field duplicate sample.	Data obtained will quantify presence or absence of petroleum hydrocarbons above MTCA cleanup levels in vicinity of a 55- gallon drum previously observed in vicinity of former house.
Confirm cleanup in surface soils in former drum storage area.	One (1) discrete soil sample will be collected from 0-6 inches bgs from the sides and center of the former drum storage area and analyzed for lead, arsenic, TPHg/d/o and BTEX.	Data obtained will confirm removal of petroleum hydrocarbon in near surface soils of former drum storage area.
Evaluate groundwater in former drum storage area to determine if contamination transported to groundwater.	Three (3) monitoring wells will be installed near the former drum storage area. One (1) well will be installed within footprint of former drum storage area. Two (2) additional wells will be installed to the northeast and northwest, downgradient of the former drum storage area. One (1) additional well may be used to evaluate conditions if deemed necessary. One field duplicate sample will be collected during each round of groundwater sampling.	Placement of three (3) or possibly four (4) wells will maximize the confidence that we have assessed direction and flow of groundwater and identified any potential contamination in shallow groundwater.

PURPOSE	SCOPE	RATIONALE
Evaluate subsurface soil in vicinity of former debris piles.	Collect soil samples during monitoring well installation at 5-foot intervals during drilling Analyze soil samples for lead, arsenic, polychlorinated biphenyls (PCBs), petroleum hydrocarbons (gasoline, diesel, and lube oil) (TPH g/d/o), PAHs and BTEX. One field duplicate sample will be collected from one boring.	Results of subsurface soil samples will indicate if any residual contamination from former debris piles have impacted subsurface soil.
Evaluate groundwater in vicinity of the two former debris piles to determine if contamination transported to groundwater..	Install one (1) monitoring well each within the footprints of the two former debris piles. If contamination is identified in groundwater or subsurface soil associated with former debris piles, additional wells will be installed downgradient.	Placement of monitoring wells in vicinity of the 2 former debris piles will determine if there are any impacts to groundwater from the former debris piles.
Evaluate whether groundwater contamination exists and if so, nature and extent of contamination.	Wells will be screened from three feet above top of water table to 7-feet below top of water table. Collect groundwater samples from all installed monitoring wells and analyze for arsenic, lead, PCBs, petroleum hydrocarbons (gasoline, diesel, and lube oil) (TPH g/d/o), PAHs and BTEX. One field duplicate sample will be collected during each round of groundwater sampling.	Setting the screens above the water table should provide information on seasonal fluctuation of water levels and identify contamination in any potential smear zone in soil column above water table.

5. PROPOSED CLEANUP STANDARDS

5.1 Soil Cleanup Standards

The cleanup levels for soil are the Method A soil cleanup levels based on protection of ground water. In addition, preparation of a simplified Terrestrial Ecological Evaluation (TEE) was recommended by Ecology in their March 9, 2021 letter. In accordance with WAC 173- 360-900,

screening levels for the upper 15 feet of soil need to be adjusted as per Table 749-2. Applicable soil levels for contaminants detected at this site are provided in Table 2.

Table 2 - Soil Screening Levels

Potential Contaminants of Concern (COC)	Soil Cleanup Levels (0 to 15 feet bgs)	Soil Cleanup Levels (below 15 feet bgs)
Gasoline-range petroleum hydrocarbons (TPHg)	30/100 mg/kg [d]	30/100 mg/kg
Diesel- and heavy oil-rangepetroleum hydrocarbons (TPHd and TPHo) [a]	460 mg/kg	2,000 mg/kg
Benzene	0.03 mg/kg	0.03 mg/kg
Toluene	7 mg/kg	7 mg/kg
Ethylbenzene	6 mg/kg	6 mg/kg
Total Xylenes	9 mg/kg	9 mg/kg
cPAHs [b]	0.1 mg/kg	0.1 mg/kg
Arsenic	20 mg/kg	20 mg/kg
Lead	220 mg/kg	250 mg/kg
Polychlorinated Biphenyls(PCBs) [c]	1 mg/kg	1 mg/kg

Notes:
[a]: The cleanup levels should be compared with the sum of TPHd and TPHo concentrations, in accordance with Ecology's guidance[3,4].
[b]: This is the total toxic equivalent concentration (TEQ) of all cPAHs. See Ecology's guidance[5] on calculating cPAHs Total TEQ.
[c]: This is the total value of all PCBs in the PCB mixture.
[d]: The lower value applies when BTEX is detected in soil; the higher value applies when BTEX is not detected.

To protect terrestrial ecological receptors, a revised simplified TEE will be provided with the site characterization report.

For soil cleanup levels based on the protection of ground water, the point of compliance is defined as Site-wide throughout the soil profile and may extend below the water table. For soil cleanup levels based on protection of terrestrial ecological receptors, the point of compliance is defined as Site-wide from the ground surface to 15 feet bgs.

5.2 Groundwater Cleanup Standards

The groundwater cleanup levels are the MTCA Method A cleanup levels for drinking water. The point of compliance for groundwater is throughout the Site, from the uppermost level of the saturated zone extending vertically to the lowest depth which could potentially be affected.

6. SAMPLING OBJECTIVES AND DESIGN

6.1 CHEMICAL ANALYSIS

All chemical analyses will include practical quantitation limits (if possible) that meet the lower of the MTCA Method A Levels or the Ecological Screening Levels based on the TEE.

6.2 FIELD SAMPLING METHODS

All samples planned for collection (including QC samples) are specified in Table 3. Locations planned for sample collection are shown in Figure 5. This Table details each location, analyses to be performed, and projected QC samples for 5 events. Events are defined as follows:

- Event 1 is the initial field work, including all drilling and soil sample collection.
- Event 2 is the first round of quarterly groundwater sampling.
- Event 3 is the second round of quarterly groundwater sampling.
- Event 4 is the third round of quarterly groundwater sampling.
- Event 5 is the fourth round of quarterly groundwater sampling.

If additional collection of samples is required, additional events will be added.

Soil will be collected using hand tools for surface samples and split spoon samplers for subsurface soil samples. Samples will be collected using a clean stainless sampling implement and placed in clean sample containers provided by the laboratory. Data pertinent to the sample (e.g., date, sample number, analysis) will be recorded on a field data sheet and a laboratory chain-of-custody prior to shipment to the approved laboratory.

Groundwater samples will be collected using a peristaltic pump. Disposable 1-use tubing will be used to fill clean sample containers provided by the laboratory. Data pertinent to the sample (e.g., date, sample number, analysis) will be recorded on a field data sheet and a laboratory chain-of-custody form prior to shipment to the approved laboratory.

6.3 MONITORING WELL CONSTRUCTION

The monitoring wells will be installed with a drill rig using 4-inch inside-diameter (I.D.) hollow-stem auger under the direction of Krazan's geologist, who will obtain and log the soil samples as drilling progresses. During drilling, soil samples will be taken at five-foot intervals, using a 2.0-inch diameter split-spoon sampler. The samples will be visually described using the Unified Soil Classification System (ASTM C2488-69) and placed in appropriate containers. The collected soil samples will be field-screened using a RAE System Toxi-RAE Photo-Ionization Detector (PID) for the presence of volatile organic compounds. Select soil samples from each borehole will be collected for chemical analysis. These samples will be directly placed in clean 4-ounce glass jars provided by the laboratory using disposable spoons.

On completion of drilling, the monitoring well will be installed in the borehole to Washington State resource protection well standards (Department of Ecology Minimum Standards for Construction and Maintenance of Wells, Chapter 173-160 WAC). The wells will be constructed with 2-inch I.D. Schedule 40 PVC well screen and riser pipe. The well screen, a 5-foot section of 10-slot (0.010-inch) PVC screen, will be placed at a depth of approximately 15 to 20 feet. A diagram showing monitoring well construction is provided as Figure 6.

The annular space between the well screen and borehole wall will be backfilled with Colorado 10-20 silica sand. A bentonite chip seal will be placed above the sand pack to one foot below the ground surface. The top of the monitoring well will be completed with a steel flush-mount monument cover, cemented in place. Each monitoring well will be developed using a downhole submersible pump to remove sediment from the well.

Soil from the drilling cuttings will be placed into steel, 55-gallon drums, which will remain on-site until proper disposal is arranged.

Monitoring wells will be advanced until either: a) groundwater is encountered, b) an aquitard (e.g. Vashon Till) is encountered, or c) 50 ft bgs.

6.4 SAMPLING LOCATIONS

The horizontal locations of all sample locations will be marked in the field and surveyed by a licensed surveyor. The measuring point elevations of the monitoring wells will be surveyed using the North American Vertical Datum of 1988 by a Washington-state licensed land surveyor, in accordance with WAC 173-340-840(4)(e). Depths to groundwater will be measured to the nearest 0.01 foot and elevations will be contoured to determine the predominant groundwater flow direction at the Site.

6.5 DECONTAMINATION PROCEDURES

Disposable sampling equipment will be used and discarded after single use. Split spoon samplers will be decontaminated after each use using a detergent solution followed by a clean water rinse.

6.6 SAMPLE CONTAINERS AND LABELS

Sample containers and preservatives will be provided by the analytical laboratory. The analytical laboratory will maintain documentation certifying the cleanliness of the sample containers and the purity of preservatives provided. Specific container requirements will be determined by the analytical laboratory.

Each sample will have an adhesive plastic or waterproof paper label affixed to the container and will be labeled at the time of collection. The following information will be recorded on the container label at the time of collection:

- Project name
- Sample identification
- Date and time of sample collection
- Preservative type (if applicable)

Samples will be uniquely identified with a sample identification that, at a minimum, specifies sample number and sample location.

6.7 FIELD DOCUMENTATION

After sample collection, the following information will be recorded in the project field notebook:

- The date, the time, and the name of person logging sample
- Weather conditions
- Sample location number
- Soil type
- Depth of water at the location
- Blow counts for drilling

Each sample will be photographed. Soil will be described in the field, using the visual-manual description procedure (Method ASTM [American Society for Testing and Materials] D-2488 modified). This information will also be recorded in the field notebook. Visual-manual characterization includes the following:

- Grain size distribution

- Density/consistency
- Plasticity
- Color and moisture content
- Biological structures
- Presence of debris and quantitative estimate (e.g., wood chips or fibers, paint chips, concrete, sandblast grit, metal debris)
- Presence of oily sheen
- Odor
- PID reading

6.8 INVESTIGATION-DERIVED WASTE

Investigation-derived waste (IDW) will consist of will consist of soil, water, and used sampling equipment. IDW will be stored on site until appropriate disposal is arranged. .

6.9 UTILITY LOCATIONS

Buried underground utilities present a unique hazard for subsurface sampling. Private and public utility location services will be utilized to identify locatable utilities in the sampling area before field sampling activities begin, however, the presence of any utilities at the site is highly unlikely.

7. SAMPLE HANDLING PROCEDURES

Procedures for collecting, storing, and handling samples are described in this section.

7.1 FIELD QUALITY CONTROL SAMPLES

Field quality control (QC) samples will be collected to improve the reliability of the data. Krazan will collect each of the following types of samples:

- Field Duplicate: collected at a minimum of 1/10 ratio for each media sampled with a minimum of 1/ sampling event (e.g. one each quarter for groundwater monitoring) to assess the homogeneity of the samples and the precision of the sampling process.
- Equipment Blank: All equipment used in the field except the split spoon sampler with the drill rig and the sample cone with the AMS surface soil sampler, will be disposable. One equipment blank per day will be collected on all non-disposable equipment (e.g. split spoon and cone).
- Temperature Blank: A temperature blank will be collected for each sample shipment and are used to verify that adequate sample storage temperature was maintained.

- Matrix Spike Duplicate (MSD): A matrix spike duplicate is an additional replicate of the matrix spike sample following the same sample preparation and analytical testing as the original sample. MSDs are used to document the precision and bias of a method for a specific sample matrix. In addition, 2 extra volumes of a groundwater sample for laboratory matrix spike and matrix spike duplicate (MS/MSD) analysis will be collected.
- Trip Blank: One sample will be collected per day if VOCs or BTEX samples are collected and shipped in the same cooler with all VOC/BTEX samples. A trip blank is used with samples collected for volatile organic compound (VOC) testing, and its purpose is to detect and identify any VOC contaminant of the samples from travelling to and from the lab.

7.2 SAMPLE STORAGE

To maintain sample integrity, sample containers will be placed in coolers filled with ice or equivalent immediately after being filled. Samples will be maintained at approximately 4°C.

7.3 CHAIN-OF-CUSTODY PROCEDURES

Samples in the custodian's possession, in a secured location (under lock) with restricted access or in a container that is secured with official seals such that the sample cannot be reached without breaking the seals, are considered to be under custody. Chain-of-custody (COC) procedures will be followed for all samples throughout the collection, handling, and analysis process. The principal document used to track possession and transfer of samples is the COC form supplied by the analytical laboratory. Each sample will be represented on the COC form. All data entries will be made with an ink pen.

7.4 DELIVER OF SAMPLES TO ANALYTICAL LABORATORY

All samples will be shipped or hand delivered under COC procedures to the analytical laboratory no later than the day after collection. If samples are collected on Friday, they may be held until the following Monday for shipment, provided that this does not adversely impact holding time requirements. Sample containers will be placed in a sealable plastic bag, packed to prevent breakage, and transported in a sealed ice chest containing ice or equivalent.

Upon transfer of sample possession to the analytical laboratory, the persons transferring custody of the sample container will sign the COC form. Upon receipt of samples at the laboratory, the shipping container seal will be broken and the receiver will record the condition of the samples on a sample receipt form. COC forms will be used internally in the lab to track sample handling and final disposition.

8. LABORATORY ANALYTICAL METHODS

Samples will be analyzed for Total Petroleum Hydrocarbons in the gasoline, diesel and heavy oil ranges (NWTPH-G/D/O), VOCs (BTEX), Metals (Lead and Arsenic), Polychlorinated biphenyls (PCBs), and Semi Volatile Organic Compounds (SVOCs), as shown in Table 3. All laboratory quality assurance and quality control checks will be implemented per EPA and Ecology method instructions.

The analytical data will receive a level QA1 quality assurance review. The analytical results will be tabulated and compared to Ecological Screening levels and MTCA method A cleanup levels. Sample methods and practical quantitation limits for each analyte are provided in Appendix A.

8.1 SAMPLE QUANTITATION LIMITS

Effort will be made to ensure that sample quantitation limits will be below the levels specified in WAC 173-340-900, Table 740-1 and WAC 173-360-900, Table 749-2. Unforeseen matrix interference could cause elevated quantitation limits for some compounds. All reasonable means, including additional cleanup steps and method modifications, will be used to bring sample quantitation limits below the screening levels.

9. REPORTING

Following each sampling event, a data report will be provided summarizing results. Following the second round of quarterly monitoring, an RI/FS report will be provided detailing proposed treatment or removal, if necessary. Reports will include:

- Site Investigation Data Summary
- First Quarterly Groundwater Monitoring Data Summary
- Second Quarterly Groundwater Monitoring Data Summary
- RI/FS Report
- Third Quarterly Groundwater Monitoring Data Summary (if needed)
- Fourth Quarterly Groundwater Monitoring Data Summary (if needed)

Table 3 - Sample Collection Summary

Sample Number	Sample ID	Matrix	Location	Depth bgs	Event	Type	Method TPH G/D/X	BTEX	Lead/ Arsenic	PAHs	PCBs
1	2021-SS-1	surface soil	Debris Pile 1	0-1	1	DS			X		
2	2021-SS-2	surface soil	Debris Pile 1	0-1	1	DS			X		
3	2021-SS-3	surface soil	Debris Pile 1	0-1	1	DS			X		
4	2021-SS-4	surface soil	Debris Pile 2	0-1	1	DS			X		
5	2021-SS-5	surface soil	Debris Pile 2	0-1	1	DS			X		
6	2021-SS-6	surface soil	Debris Pile 2	0-1	1	DS			X		
7	2021-SS-7	surface soil	Debris Pile 2	0-1	1	FD			X		
8	2021-SS-8	surface soil	Former House and Drum Area	0-1	1	DS	X	X	X	X	
9	2021-SS-9	surface soil	Former House and Drum Area	0-1	1	DS	X	X	X	X	
10	2021-SS-10	surface soil	Former House and Drum Area	0-1	1	DS	X	X	X	X	
11	2021-SS-11	surface soil	Former House and Drum Area	0-1	1	FD	X	X	X	X	
12	2021-SS-12	surface soil	Drum Storage Area	0-1	1	DS	X	X	X	X	
13	2021-SB-13	subsurface soil	Drum Storage Area MW-1	5-6.5	1	ES	X	X	X	X	X
14	2021-SB-14	subsurface soil	Drum Storage Area MW-1	10-11.5	1	ES	X	X	X	X	X
15	2021-SB-15	subsurface soil	Drum Storage Area MW-1	15-16.5	1	ES	X	X	X	X	X
16	2021-SB-16	subsurface soil	Drum Storage Area MW-1	20-21.5	1	ES	X	X	X	X	X
17	2021-SB-17	subsurface soil	Drum Storage Area MW-1	25-26.5	1	ES	X	X	X	X	X
18	2021-SB-18	subsurface soil	Drum Storage Area MW-2	5-6.5	1	ES, MS/MSD	X	X	X	X	X
19	2021-SB-19	subsurface soil	Drum Storage Area MW-2	10-11.5	1	ES	X	X	X	X	X
20	2021-SB-20	subsurface soil	Drum Storage Area MW-2	15-16.5	1	ES	X	X	X	X	X
21	2021-SB-21	subsurface soil	Drum Storage Area MW-2	20-21.5	1	ES	X	X	X	X	X
22	2021-SB-22	subsurface soil	Drum Storage Area MW-2	25-26.5	1	ES	X	X	X	X	X
23	2021-SB-23	subsurface soil	Drum Storage Area MW-3	5-6.5	1	ES	X	X	X	X	X

Sample Number	Sample ID	Matrix	Location	Depth bgs	Event	Type	Method TPH G/D/X	BTEX	Lead/ Arsenic	PAHs	PCBs
24	2021-SB-24	subsurface soil	Drum Storage Area MW-3	10-11.5	1	ES	X	X	X	X	X
25	2021-SB-25	subsurface soil	Drum Storage Area MW-3	15-16.5	1	ES	X	X	X	X	X
26	2021-SB-26	subsurface soil	Drum Storage Area MW-3	15-16.5	1	FD	X	X	X	X	X
27	2021-SB-27	subsurface soil	Drum Storage Area MW-3	20-21.5	1	ES	X	X	X	X	X
28	2021-SB-28	subsurface soil	Drum Storage Area MW-3	25-26.5	1	ES	X	X	X	X	X
29	2021-SB-29	subsurface soil	Debris Pile 1 MW-4	5-6.5	1	ES	X	X	X	X	X
30	2021-SB-30	subsurface soil	Debris Pile 1 MW-4	10-11.5	1	ES	X	X	X	X	X
31	2021-SB-31	subsurface soil	Debris Pile 1 MW-4	15-16.5	1	ES	X	X	X	X	X
32	2021-SB-32	subsurface soil	Debris Pile 1 MW-4	20-21.5	1	ES	X	X	X	X	X
33	2021-SB-33	subsurface soil	Debris Pile 1 MW-4	25-26.5	1	ES	X	X	X	X	X
34	2021-SB-34	subsurface soil	Debris Pile 1 MW-4	25-26.5	1	FD	X	X	X	X	X
35	2021-SB-35	subsurface soil	Debris Pile 2 MW-5	5-6.5	1	ES	X	X	X	X	X
36	2021-SB-36	subsurface soil	Debris Pile 2 MW-5	10-11.5	1	ES	X	X	X	X	X
37	2021-SB-37	subsurface soil	Debris Pile 2 MW-5	15-16.5	1	ES, MS/MSD	X	X	X	X	X
38	2021-SB-38	subsurface soil	Debris Pile 2 MW-5	20-21.5	1	ES	X	X	X	X	X
39	2021-SB-39	subsurface soil	Debris Pile 2 MW-5	25-26.5	1	ES	X	X	X	X	X
900		QC			1	TB		X			
901		QC			1	TB		X			
902		QC			1	TB		X			
903		QC			1	TB		X			
950		QC			1	Temp					
951		QC			1	Temp					
952		QC			1	Temp					
953		QC			1	Temp					
101	2021-GW-101	Groundwater	Drum Storage Area MW-1		2	ES, MS/MSD	3X	3X	3X	3X	3X
102	2021-GW-102	Groundwater	Drum Storage Area MW-2		2	ES	X	X	X	X	X
103	2021-GW-103	Groundwater	Drum Storage Area MW-3		2	ES	X	X	X	X	X

Sample Number	Sample ID	Matrix	Location	Depth bgs	Event	Type	Method TPH G/D/X	BTEX	Lead/ Arsenic	PAHs	PCBs
104	2021-GW-104	Groundwater	Debris Pile 1 MW-4		2	ES	X	X	X	X	X
105	2021-GW-105	Groundwater	Debris Pile 2 MW-5		2	ES	X	X	X	X	X
105 FD	2021-GW-105FD	Groundwater	Debris Pile 2 MW-5		2	FD	X	X	X	X	X
904		QC			2	TB		X			
954		QC			2	Temp					
201	2021-GW-201	Groundwater	Drum Storage Area MW-1		3	ES	X	X	X	X	X
202	2021-GW-202	Groundwater	Drum Storage Area MW-2		3	ES, MS/MSD	3X	3X	3X	3X	3X
203	2021-GW-203	Groundwater	Drum Storage Area MW-3		3	ES	X	X	X	X	X
203FD	2021-GW-203FD	Groundwater	Drum Storage Area MW-3		3	FD	X	X	X	X	X
204	2021-GW-204	Groundwater	Debris Pile 1 MW-4		3	ES	X	X	X	X	X
205	2021-GW-205	Groundwater	Debris Pile 2 MW-5		3	ES	X	X	X	X	X
905		QC			3	TB		X			
955		QC			3	Temp					
301	2021-GW-301	Groundwater	Drum Storage Area MW-1		4	ES	X	X	X	X	X
301FD	2021-GW-301FD	Groundwater	Drum Storage Area MW-1		4	FD	X	X	X	X	X
302	2021-GW-302	Groundwater	Drum Storage Area MW-2		4	ES	X	X	X	X	X
303	2021-GW-303	Groundwater	Drum Storage Area MW-3		4	ES	X	X	X	X	X
304	2021-GW-304	Groundwater	Debris Pile 1 MW-4		4	ES, MS/MSD	3X	3X	3X	3X	3X
305	2021-GW-305	Groundwater	Debris Pile 2 MW-5		4	ES	X	X	X	X	X
906		QC			4	TB		X			
956		QC			4	Temp					
401	2022-GW-401	Groundwater	Drum Storage Area MW-1		5	ES	X	X	X	X	X
402	2022-GW-402	Groundwater	Drum Storage Area MW-2		5	ES	X	X	X	X	X
402FD	2022-GW-402FD	Groundwater	Drum Storage Area MW-2		5	FD	X	X	X	X	X
403	2022-GW-403	Groundwater	Drum Storage Area MW-3		5	ES	X	X	X	X	X

Sample Number	Sample ID	Matrix	Location	Depth bgs	Event	Type	Method TPH G/D/X	BTEX	Lead/ Arsenic	PAHs	PCBs
405	2022-GW-405	Groundwater	Debris Pile 2 MW-5		5	ES	X	X	X	X	X
907		QC			5	TB		X			
957		QC			5	Temp					

Notes

ES	Environmental Sample
FD	Field Duplicate
DS	Discrete Sample
TB	Trip Blank
Temp	Temperature Blank
QC	Quality Control Sample
X	Collect Sample
3X	Collect Triple Volume
MS/MSD	Requires 3x Volume for water samples

Events

1	Initial Investigation
2	Q1 Groundwater Sampling
3	Q2 Groundwater Sampling
4	Q3 Groundwater Sampling
5	Q4 Groundwater Sampling

10. REFERENCES

N. L. Olsen & Associates, Inc. 2021. *Geotechnical Engineering Investigation, Silverdale Multi-Family/Commercial Development*, Near Clear Creek Road NW and NW Greaves Way, Silverdale, Washington, March, 2021.

Krazan & Associates, Inc. 2020. *Phase I Environmental Site Assessment, JSP Silverdale Project*, 11493 & 11531 Clear Creek Road NW, Silverdale, Washington, November 20, 2020.

Associated Environmental Group, LLC, 2020. *Phase I Environmental Site Assessment, Seitz Property*, Silverdale, Washington, July 19, 2020.

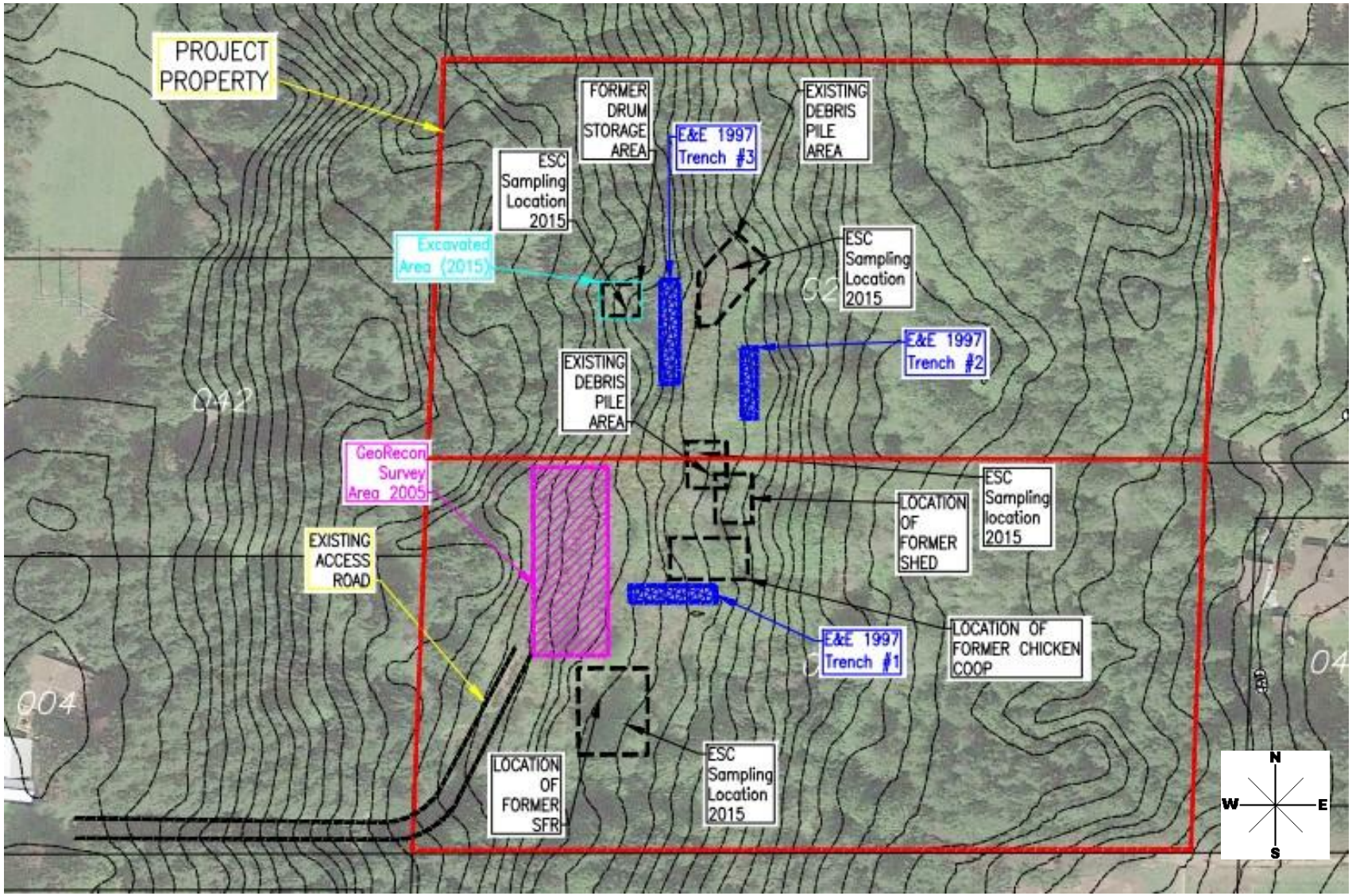
Ecology and Environment, Inc., 1997. *Silverdale Dump Site Removal Site Assessment Trip Report*, October 30, 1997.

EnviroSound Consulting Inc., 2015. *Site Soil Investigation, Seitz Property, Silverdale, Washington*, November 30, 2015.

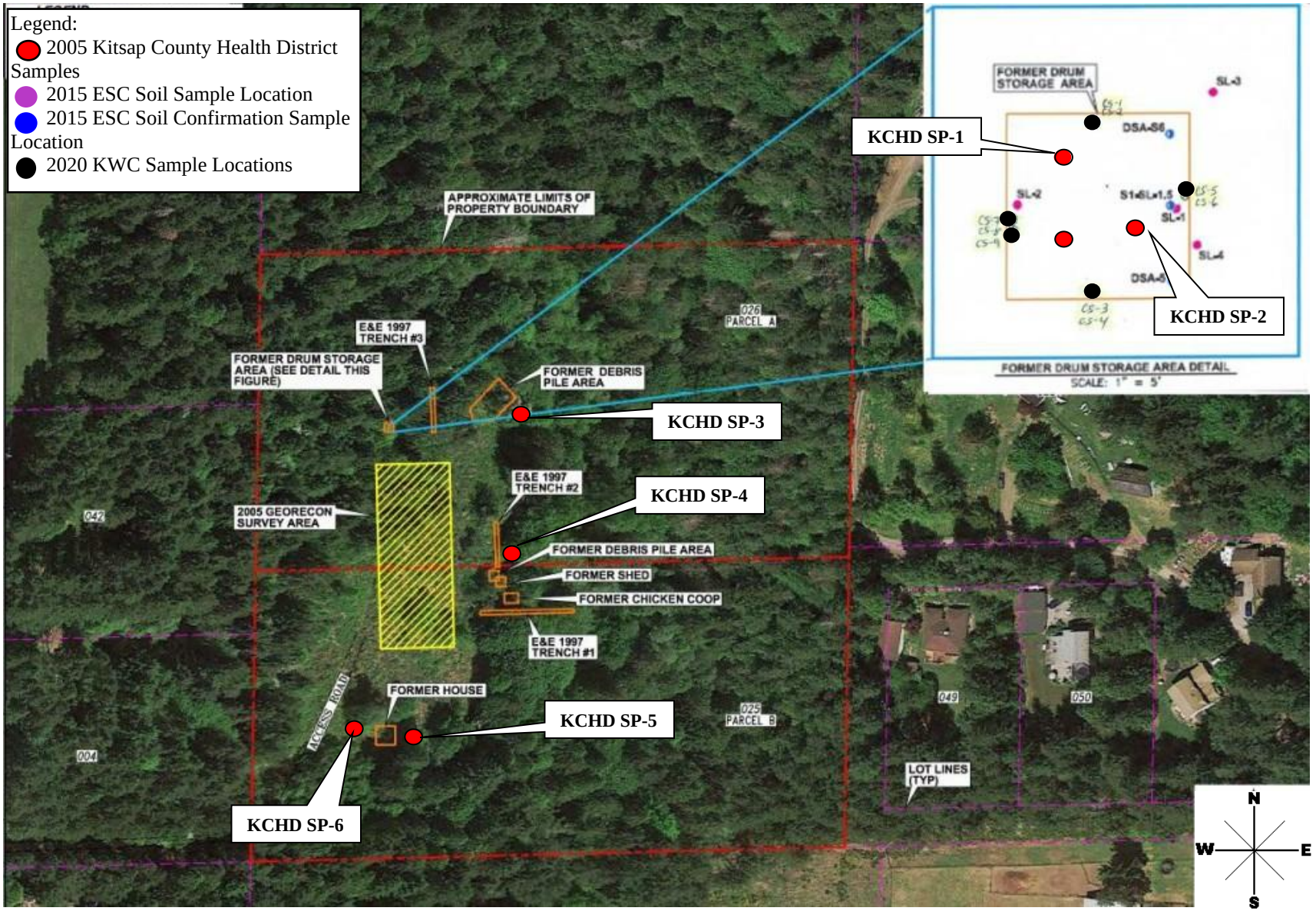
FIGURES

Source: Google Maps

VICINITY MAP	Scale: NTS	Date: April 2021	Krazan SITE DEVELOPMENT ENGINEERS *Conducting Assessments Nationwide*
Seitz Property – Lots 25 & 26 **Sampling and Analysis Plan** **Brian Lane** **Silverdale, Washington**	**Modified by:** CB	**Approved by:** SEW	
	Project No. 104-21020	**Figure No.** 1	

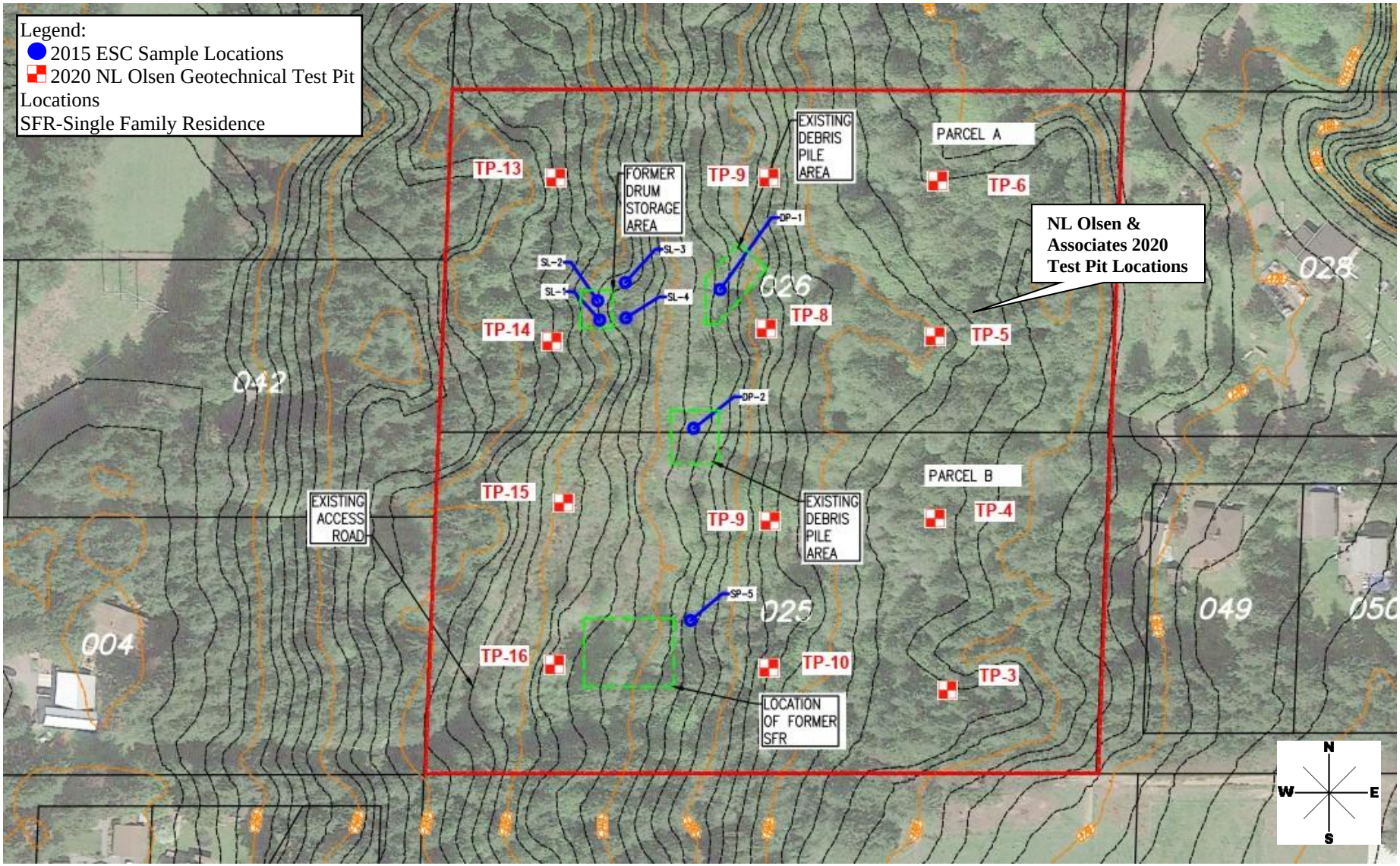


SITE MAP	**Scale:** 1"=100'	**Date:** April 2021	Krazan **SITE DEVELOPMENT ENGINEERS** ***Conducting Assessments Nationwide***
Seitz Property – Lots 25 & 26 Sampling and Analysis Plan Brian Lane Silverdale, Washington	**Drawn by:** CB	**Approved by:** SEW	
	Project No. 104-21018	**Figure No.** 2	



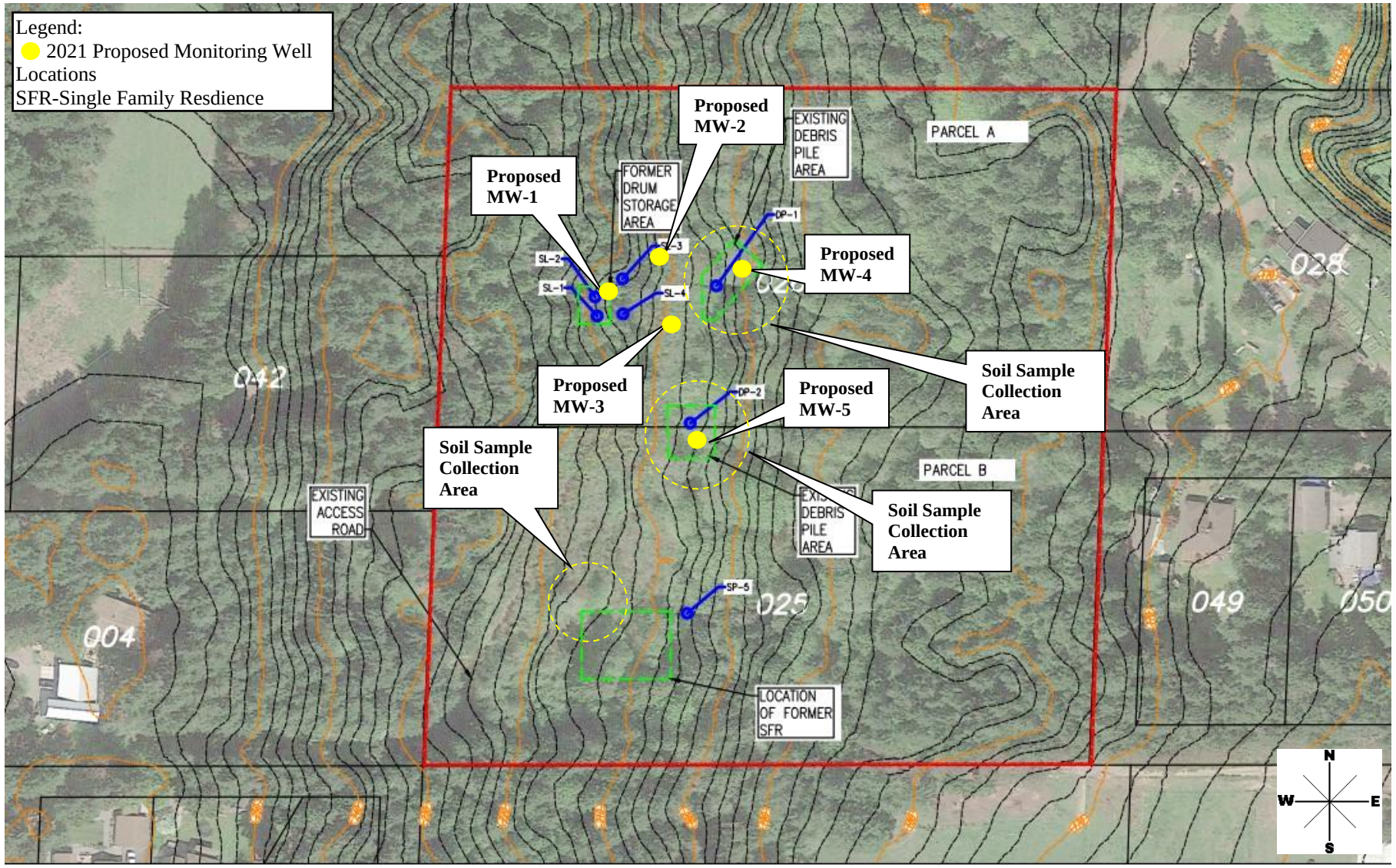
Source: Google Maps

SITE MAP-Previous Sampling Locations	**Scale:** NTS	**Date:** April 2021	Krazan
Seitz Property – Lots 25 & 26 Sampling and Analysis Plan Brian Lane Silverdale, Washington	**Drawn by:** CB	**Approved by:** SEW	**SITE DEVELOPMENT ENGINEERS** ***Conducting Assessments Nationwide***
	Project No. 104-21018	**Figure No.** 3	



Source: Google Maps

SITE MAP-Previous Sampling Locations	**Scale:** 1"=100'	**Date:** April 2021	Krazan **SITE DEVELOPMENT ENGINEERS** ***Conducting Assessments Nationwide***
Seitz Property – Lots 25 & 26 Sampling and Analysis Plan Brian Lane Silverdale, Washington	**Drawn by:** CB	**Approved by:** SEW	
	Project No. 104-21018	**Figure No.** 4	



Source: Google Maps

SITE MAP-Proposed Sampling Locations	**Scale:** 1"=100'	**Date:** April 2021	Krazan **SITE DEVELOPMENT ENGINEERS** ***Conducting Assessments Nationwide***
Seitz Property – Lots 25 & 26 Sampling and Analysis Plan Brian Lane Silverdale, Washington	**Drawn by:** CB	**Approved by:** SEW	
	Project No. 104-21018	**Figure No.** 5	

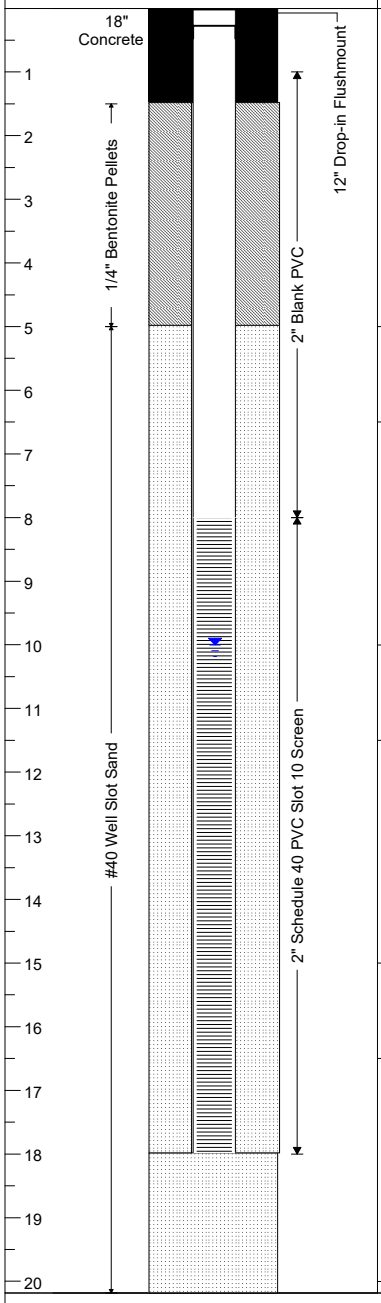
Figure 6.

Project: **Boring:** **Page:** 1 of 2

Drilling Co.: **Drilling Method:** **Date Started:**

Well Tag No.: **Sampler/Drop:** **Date Completed:**

Logged By:

WELL COMPLETION DETAILS	BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION	NOTES
								

Krazan & Associates

Lithologic Log and Well Construction Details

Client:

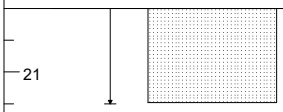
Project Location: **Project No.:**

Project: **Boring:** **Page:** 2 of 2

Drilling Co.: **Drilling Method:** **Date Started:**

Well Tag No.: **Sampler/Drop:** **Date Completed:**

Logged By:

WELL COMPLETION DETAILS	BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION	NOTES
					21			
					22			
					23			
					24			
					25			
					26			
					27			
					28			
					29			
					30			
					31			
					32			
					33			
					34			
					35			
					36			
					37			
					38			
					39			
					40			

Krazan & Associates

Lithologic Log and Well Construction Details

Client:

Project Location: **Project No.:**

Appendix A
Laboratory Methods and Specifications

Sample Number	Matrix	Location	Depth	Event	Type	Method TPH G/D/X	BTEX	Lead/Arsenic	PAHs	PCBs
1	surface soil	Debris Pile 1	0-1	1	CS			X		
2	surface soil	Debris Pile 1	0-1	1	CS			X		
3	surface soil	Debris Pile 1	0-1	1	CS			X		
4	surface soil	Debris Pile 2	0-1	1	CS			X		
5	surface soil	Debris Pile 2	0-1	1	CS			X		
6	surface soil	Debris Pile 2	0-1	1	CS			X		
7	surface soil	Debris Pile 2	0-1	1	FD			X		
8	surface soil	Former House and Drum Area	0-1	1	CS	X	X	X	X	
9	surface soil	Former House and Drum Area	0-1	1	CS	X	X	X	X	
10	surface soil	Former House and Drum Area	0-1	1	CS	X	X	X	X	
11	surface soil	Former House and Drum Area	0-1	1	FD	X	X	X	X	
12	surface soil	Drum Storage Area	0-1	1	CS	X	X	X	X	
13	subsurface soil	Drum Storage Area MW-1	5-6.5	1	ES	X	X	X	X	X
14	subsurface soil	Drum Storage Area MW-1	10-11.5	1	ES	X	X	X	X	X
15	subsurface soil	Drum Storage Area MW-1	15-16.5	1	ES	X	X	X	X	X
16	subsurface soil	Drum Storage Area MW-1	20-21.5	1	ES	X	X	X	X	X
17	subsurface soil	Drum Storage Area MW-1	25-26.5	1	ES	X	X	X	X	X
18	subsurface soil	Drum Storage Area MW-2	5-6.5	1	ES	X	X	X	X	X
19	subsurface soil	Drum Storage Area MW-2	10-11.5	1	ES	X	X	X	X	X
20	subsurface soil	Drum Storage Area MW-2	15-16.5	1	ES	X	X	X	X	X
21	subsurface soil	Drum Storage Area MW-2	20-21.5	1	ES	X	X	X	X	X
22	subsurface soil	Drum Storage Area MW-2	25-26.5	1	ES	X	X	X	X	X
23	subsurface soil	Drum Storage Area MW-3	5-6.5	1	ES	X	X	X	X	X
24	subsurface soil	Drum Storage Area MW-3	10-11.5	1	ES	X	X	X	X	X
25	subsurface soil	Drum Storage Area MW-3	15-16.5	1	ES	X	X	X	X	X
26	subsurface soil	Drum Storage Area MW-3	15-16.5	1	FD	X	X	X	X	X
27	subsurface soil	Drum Storage Area MW-3	20-21.5	1	ES	X	X	X	X	X
28	subsurface soil	Drum Storage Area MW-3	25-26.5	1	ES	X	X	X	X	X
29	subsurface soil	Debris Pile 1 MW-4	5-6.5	1	ES	X	X	X	X	X
30	subsurface soil	Debris Pile 1 MW-4	10-11.5	1	ES	X	X	X	X	X
31	subsurface soil	Debris Pile 1 MW-4	15-16.5	1	ES	X	X	X	X	X
32	subsurface soil	Debris Pile 1 MW-4	20-21.5	1	ES	X	X	X	X	X
33	subsurface soil	Debris Pile 1 MW-4	25-26.5	1	ES	X	X	X	X	X
34	subsurface soil	Debris Pile 1 MW-4	25-26.5	1	FD	X	X	X	X	X
35	subsurface soil	Debris Pile 2 MW-5	5-6.5	1	ES	X	X	X	X	X
36	subsurface soil	Debris Pile 2 MW-5	10-11.5	1	ES	X	X	X	X	X
37	subsurface soil	Debris Pile 2 MW-5	15-16.5	1	ES	X	X	X	X	X
38	subsurface soil	Debris Pile 2 MW-5	20-21.5	1	ES	X	X	X	X	X
39	subsurface soil	Debris Pile 2 MW-5	25-26.5	1	ES	X	X	X	X	X
900	QC			1	TB		X			
901	QC			1	TB		X			
902	QC			1	TB		X			
903	QC			1	TB		X			
950	QC			1	Temp					
951	QC			1	Temp					
952	QC			1	Temp					
953	QC			1	Temp					
101	Groundwater	Drum Storage Area MW-1		2	ES	X	X	X	X	X
102	Groundwater	Drum Storage Area MW-2		2	ES	X	X	X	X	X
103	Groundwater	Drum Storage Area MW-3		2	ES	X	X	X	X	X
104	Groundwater	Debris Pile 1 MW-4		2	ES	X	X	X	X	X
105	Groundwater	Debris Pile 2 MW-5		2	ES	X	X	X	X	X
105 FD	Groundwater	Debris Pile 2 MW-5		2	FD	X	X	X	X	X
904	QC			2	TB		X			
954	QC			2	Temp					
201	Groundwater	Drum Storage Area MW-1		3	ES	X	X	X	X	X
202	Groundwater	Drum Storage Area MW-2		3	ES	X	X	X	X	X
203	Groundwater	Drum Storage Area MW-3		3	ES	X	X	X	X	X
203FD	Groundwater	Drum Storage Area MW-3		3	FD	X	X	X	X	X
204	Groundwater	Debris Pile 1 MW-4		3	ES	X	X	X	X	X
205	Groundwater	Debris Pile 2 MW-5		3	ES	X	X	X	X	X
905	QC			3	TB		X			
955	QC			3	Temp					
301	Groundwater	Drum Storage Area MW-1		4	ES	X	X	X	X	X
301FD	Groundwater	Drum Storage Area MW-1		4	FD	X	X	X	X	X
302	Groundwater	Drum Storage Area MW-2		4	ES	X	X	X	X	X
303	Groundwater	Drum Storage Area MW-3		4	ES	X	X	X	X	X
304	Groundwater	Debris Pile 1 MW-4		4	ES	X	X	X	X	X
305	Groundwater	Debris Pile 2 MW-5		4	ES	X	X	X	X	X
906	QC			4	TB		X			
956	QC			4	Temp					
401	Groundwater	Drum Storage Area MW-1		5	ES	X	X	X	X	X
402	Groundwater	Drum Storage Area MW-2		5	ES	X	X	X	X	X
402FD	Groundwater	Drum Storage Area MW-2		5	FD	X	X	X	X	X
403	Groundwater	Drum Storage Area MW-3		5	ES	X	X	X	X	X
404	Groundwater	Debris Pile 1 MW-4		5	ES	X	X	X	X	X
405	Groundwater	Debris Pile 2 MW-5		5	ES	X	X	X	X	X
907	QC			5	TB		X			
957	QC			5	Temp					

Notes

ES	Environmental Sample
FD	Field Duplicate
CS	Composite Sample
TB	Trip Blank
Temp	Temperature Blank
QC	Quality Control Sample
X	Collect Sample

Events

1	Initial Investigation
2	Q1 Groundwater Sampling
3	Q2 Groundwater Sampling
4	Q3 Groundwater Sampling
5	Q4 Groundwater Sampling

Sample	Method	Matrix	Reporting Limit (mg/kg)	LCS (%R)	MS/MSD (%R)	Duplicate RPD (%)	Surrogate (%R)
GRO	NWTPH-Gx	Soil	5	70-130	50-150	20	50-150
DRO/RRO	NWTPH-Dx	Soil	50/250	70-130	50-150	20	50-150
BTEX	EPA 8021B	Soil	0.02 to 0.06	70-130	50-150	20	50-150
Lead/Arsenic	EPA 6020B	Soil	1	80-120	75-125	20	n/a
PAHs	EPA 8270E	Soil	0.01	70-130	50-150	20	50-150
PCBs	EPA 8082	Soil	0.02	70-130	50-150	20	50-150

Analyte	Method	Matrix	Reporting Limit (ug/L)	LCS (%R)	MS/MSD (%R)	Duplicate RPD (%)	Surrogate (%R)
GRO	NWTPH-Gx	Water	100	70-130	50-150	20	50-150
DRO/RRO	NWTPH-Dx	Water	50/250	70-130	50-150	20	50-150
BTEX	EPA 8021B	Water	1 to 3	70-130	50-150	20	50-150
Lead/Arsenic	EPA 6020B	Water	1	80-120	75-125	20	n/a
PAHs	EPA 8270E	Water	0.04	70-130	50-150	20	50-150
PCBs	EPA 8082	Water	0.1	70-130	50-150	20	50-150

LCS/MS/MSD/Surrogate %R values are method defaults. Laboratory generated acceptance criteria generated through ongoing control chart practices may also be used.

Analyte	Method	Matrix	Container Type	Preservation	Holding Time
GRO	NWTPH-Gx	Soil	40 mL VOA pre-tared	Cool to <6C for 48	14 Days
DRO/RRO	NWTPH-Dx	Soil	4 ounce WMG	Cool to <6C	14 Days
BTEX	EPA 8021B	Soil	40 mL VOA pre-tared	Cool to <6C for 48	14 Days
Lead/Arsenic	EPA 6020B	Soil	4 ounce WMG	None	1 Year
PAHs	EPA 8270E	Soil	4 ounce WMG	Cool to <6C	1 Year
PCBs	EPA 8082	Soil	4 ounce WMG	Cool to <6C	None
GRO	NWTPH-Gx	Water	40 mL VOA	Cool to <6C, HCl	14 Days
DRO/RRO	NWTPH-Dx	Water	500 mL Amber Glass	Cool to <6C	7 Days to extract, 40 to analyze
BTEX	EPA 8021B	Water	40 mL VOA	Cool to <6C, HCl	14 Days
Lead/Arsenic	EPA 6020B	Water	250 mL Poly	Cool to <6C	6 Months
PAHs	EPA 8270E	Water	500 mL Amber Glass	Cool to <6C	7 Days to extract, 40 to analyze
PCBs	EPA 8082	Water	1L Amber Glass	Cool to <6C	None