LETTER OF TRANSMITTAL

TO: Mr. Jason Cook	Date: January 17, 2020 | No.19-001
Washington State Dept. of Ecology	Project: Independent Metals Storage Lot
Toxics Cleanup Program	700 South Monroe Street
PO Box 47600	Seattle, Washington 98108
Olympia, WA 98504-7600	Facility/Site No.: 21489
	Cleanup Site ID No.: 12299
	VCP Project No.: NW3223

WE ARE SENDING:

COPIES	DATE	NO.	DESCRIPTION
1	January 17, 2020	19-001	Project Work Plan

REMARKS:

Mr. Cook:

Enclosed please find the Project Work Plan (in PDF format) for field sampling portion of the Independent Metals Storage Lot VCP project.

I check has been mailed to Cashiering Unit to bring the VCP billing current.

COPY TO: 19-001 Project File

SIGNED: _____

Miguel A. Ortega, LG

14777 NE 40th Street, Suite 301
Bellevue, Washington 98007
T 425-209-1409
www.gospectrumnw.com

INDEPENDENT METALS STORAGE LOT
WASHINGTON STATE DEPARTMENT OF ECOLOGY
VOLUNTEER CLEANUP PROGRAM RESPONSE PLAN

703 South Monroe Street
Seattle, Washington 98109

Prepared for:
Mr. Gary Watters
South Monroe, LLC
8210 NE 166th Street
Bothell, Washington 98028

Prepared by:
GO Spectrum NW, LLC.
14777 NE 40th Street, Suite 301
Bellevue, Washington 98007

January 17, 2020

INDEPENDENT METALS STORAGE LOT
WASHINGTON STATE DEPARTMENT OF ECOLOGY
VOLUNTEER CLEANUP PROGRAM
RESPONSE PLAN

Prepared for:
Mr. Gary Watters
South Monroe, LLC
8210 NE 166th Street
Bothell, Washington 98028

Prepared by
GO Spectrum NW, Inc.
14777 NE 40th Street, Suite 301
Bellevue, Washington 98007

January 17, 2020

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

ACRONYMS & ABBREVIATIONS

µg/L	micrograms per liter
ASTM	American Society for Testing and Materials
BGS	below ground surface
CAP	Cleanup Action Plan
cPAH	Carcinogenic Polynuclear Aromatic Hydrocarbon
CSCSL	Confirmed and Suspected Contaminated Sites List
CSM	Conceptual Site Model
CULs	Clean up levels
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
Spectrum	GO Spectrum NW, LLC
GW	ground water
HCID	Hydrocarbon Identification
mg/kg	milligrams per kilogram
MTCA	Washington State Model Toxics Control Act
NWTPH	Northwest Total Petroleum Hydrocarbon
PAHs	Polynuclear Aromatic Hydrocarbons
PCBs	Polychlorinated biphenyls
Phase II ESA	Phase II Environmental Site Assessment
ppb	parts per billion
ppm	parts per million
RCRA 8	arsenic, barium, cadmium, chromium, mercury, selenium, and lead)
TPH	Total Petroleum Hydrocarbons
USGS	United States Geologic Survey
VCP	Voluntary Cleanup Program
VOCs	Volatile Organic Compounds

1 INTRODUCTION

This Washington State Department of Ecology (Ecology) Volunteer Cleanup Program (VCP) Response Plan (Response Plan) was prepared to document proposed tasks to characterize current ground water and stormwater conditions at the Independent Metals Storage Lot (Site). In addition, the proposed methodology to incorporate past/upcoming environmental analytical data from the Site into the Ecology Environmental Information Management (EIM) database is also presented in the Response Plan. The Site is located at 703 South Monroe Street in Seattle, Washington 98108 (Figure 1).

1.1 INVOLVED PARTIES

GO Spectrum NW, LLC (Spectrum) will be responsible for the management, implementation, and documentation of the proposed Response Plan tasks ESN NW Laboratory (ESN) of Lacey, Washington will provide drilling and analytical services for this project. ESN is an Ecology accredited analytical laboratory, Certification Number C574-18.

1.2 ECOLOGY VCP RESPONSE PLAN ORGANIZATION

This Ecology VCP Response Plan consist of a Site physical description, an environmental background summary, and three proposed tasks sections. The environmental background section provides a synopsis of the past field work and analytical results for the Site. The subsequent Ground Water Assessment, Stormwater Testing, and EIM Submittal sections provide technical approaches for these proposed project tasks. The definitions for the Acronyms & Abbreviations used in this Response Plan follow the Table of Content. Figure 1 is the Site Location Map and Figure 2 the Site Plot Plan. Figure 3 is a copy of the Ground Water Sampling Log. Appendix A provides the *Standard Operating Procedure For Metals Analysis* that will be used by ESN for the ground water sample analysis.

2 SITE DESCRIPTION

The Site is a 20,000-square foot (0.5-acre) King County commercial property located within a south Seattle neighborhood that is occupied by heavy industry and both, single- and multi-family residences. The Site is made up of three King County parcels (King County Parcel Numbers: 732790-1445, 732790-1465, and 732790-1475). The Site elevation is 13 feet above mean sea level. The Site is a gravel and dirt storage lot with frontages on South Monroe Street (north), South Elmgrove Street (south), and 7th Avenue South (west). No structures exist within the Site. The Site has a very slight westerly slope. There is one point of ingress/egress to the Site on 7th Avenue South (Figure 2).

2.1 SITE PHYSICAL SETTING

The Site has a very slight westerly slope. There is one point of ingress/egress to the Site on 7th Avenue South (Figure 2).

3 SITE ENVIRONMENTAL BACKGROUND

3.1 2006-2012 SITE INVESTIGATIONS

In 2012, an “oily residue dripping into rainwater from an uncovered, empty metal container,” was observed at the Site (Pacific Crest Environmental 2017). Because of sampling results conducted by the City of Seattle, the site “was added to Ecology’s CSCSL in 2014 based on elevated concentrations of PCBs. In addition, Ecology noted that benzo(a)pyrene and bis(2-ethylhexyl) were also been identified in stormwater (Ecology 2013). As a response to this

Regulatory Agency action, the Site Owner, Independent Metals, enacted Site stormwater controls at the Site and conducted stormwater sewer competence and subsurface contamination assessments at the Site.

Between 2006 and 2012 the Site was used by Independent Metals for the storage of empty metal containers used to collect and transport scrap metal and to occasionally store transient containers of processed scrap metal prior to resale. Stormwater generated on the Site primarily infiltrated into the subsurface. In the event of high intensity or prolonged periods of precipitation, stormwater accumulated on the surface of the Site and traveled as sheet flow to the storm drain located in the 7th Avenue South right-of-way- immediately west of the Site west boundary (Figure 2).

In January 2012, Seattle Public Utilities and Ecology observed a petroleum sheen on stormwater flowing from the Site and entering the adjacent 7th Avenue South storm drain. The source of the petroleum sheen was an oily residue dripping into rainwater from an uncovered, empty metal container. Analysis of a sample collected from the runoff detected a PCB concentration of 7.2 µg/l. Analysis of a sediment sample from the 7th Avenue South storm drain detected a PCB concentration of 0.067 mg/kg dry weight (dw). PCB concentrations at a downgradient monitoring well decreased following Independent Metals' prompt removal of the metal container from the Site. Following the January 2012 incident, Independent Metals agreed to immediately remove and refrain from storing open-topped containers at the Site in the future. In March 2013, the City of Seattle collected a stormwater sample from the 7th Avenue South storm drain. A PCB concentration of 1.15 µg/l was detected. The Site was added to the Ecology CSCSL in 2014 based on elevated concentrations of PCBs, polycyclic aromatic hydrocarbons (PAHs), phthalates, and metals in surface water, as well as suspected impacts to the Site subsurface (soil and ground water; SPU 2012).

In 2013, the Site was re-graded and soil berms were constructed along the north, east, and south parcel boundaries. The berms were constructed to capture all onsite stormwater and prevent sheet flow into the 7th Avenue South storm drain. Additionally, a 6-foot wide by 1-foot deep fabric-lined trench backfilled with quarry spalls was installed along the 7th Avenue South property boundary to capture onsite stormwater.

Three soil borings were installed at the Site (SB-1, SB-2, and SB-3). The borings were advanced to total depths of 15- to 28-feet below ground surface (BGS) using a truck-mounted direct-push hydraulic probe rig. Three soil samples were collected from each boring and prepared for laboratory analysis. Upon completion of soil borings SB-1 and SB-2, temporary wells were installed in the annulus of each boring to facilitate the collection of reconnaissance ground water samples using low-flow ground water sampling procedures.

The soil and ground water samples were submitted to an analytical laboratory under standard chain-of-custody protocol for analysis of the following contaminants of potential concern (COPCs): RCRA 8 Metals, volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH) HCID with follow-up analysis for TPH as gasoline-range organics (GRO) and diesel-range organics (DRO), as warranted based on HCID results; Semivolatile organic compounds (SVOCs), PAHs, and PCBs.

No COPCs were detected at concentrations in exceedance of the corresponding Washington State Model Toxics Control Act (MTCA) Method A and/or Method B Cleanup Levels in any soil sample. In addition, no COPCs were detected at concentrations in exceedance of the corresponding MTCA Method A and/or Method B Cleanup Levels in any ground water sample.

COPCs were not detected at concentrations in exceedance of the corresponding MTCA Cleanup Levels in any soil or ground water samples, indicating that the Site does not appear to have been adversely impacted by past operations (Pacific Crest 2017).

3.2 2018 PHASE II ENVIRONMENTAL SITE ASSESSMENT

In September 2018, Spectrum conducted a Phase II Environmental Site Assessment (ESA) of an industrial property known as the Independent Metals Storage Lot (639 Wealth Trust 2018).

Subsurface soil and ground water sampling at the Site was conducted on September 6, 2018. Spectrum supervised the installation of three borings on the Site by geoprobe drilling method. The soil samples were described in accordance with the Unified Soils Classification System (USCS). Spectrum collected a total of three subsurface soil samples and three grab ground water samples for the Phase II ESA. Spectrum did not filter ground water prior to sample collection.

3.2.1 ANALYTICAL PROTOCOLS

ESN NW tested soil and ground water samples utilizing the following analytical protocols:

- Soil & Water PAHs utilizing Test Methods EPA 8270;
- Soil VOCs utilizing Test Method EPA 8260C/5035;
- Water VOCs utilizing Test Method EPA 8260C/5030C;
- Soil & Water SVOCs utilizing Test Method EPA 8270;
- Soil & Water PCBs utilizing Test Method EPA 8082A/3510C;
- Soil & Water Hydrocarbon Identification utilizing Test Method NWTPH-HCID; and
- Soil & Water RCRA 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) utilizing Test Methods EPA Method 6010C and 7471A.

3.2.2 SOIL ANALYTICAL DATA

A synopsis of the soil analytical results is provided in the subsequent sections. Tables three through eight provide detail analytical results.

3.2.1 SOIL PAHs ANALYTICAL RESULTS

Soil analytical results indicated that no detectable PAHs were detected in any analyzed soil sample.

3.2.2 SOIL VOCs ANALYTICAL RESULTS

Soil analytical results indicated that no detectable VOCs were detected in any analyzed soil sample.

3.2.3 SOIL SVOCs ANALYTICAL RESULTS

Soil analytical results indicated that no detectable SVOCs were detected in any analyzed soil sample.

3.2.4 SOIL PCBs ANALYTICAL RESULTS

Soil analytical results indicated that no detectable PCBs were detected in any analyzed soil sample.

3.2.5 SOIL TPHs ANALYTICAL RESULTS

Soil analytical results indicated that no detectable TPHs were detected in any analyzed soil sample.

3.2.6 SOIL RCRA 8 METALS RESULTS

Chromium in identical concentrations of 16 mg/kg was detected in soil samples 639WT-SB1-01 and 639WT-SB2-01. In addition, chromium in a concentration of 13 mg/kg was also detected in soil sample 639WT-SB3-01. Lead in a concentration of 7.2 mg/kg was detected in soil sample 639WT-SB 1-01. However, no arsenic, barium, cadmium, mercury, selenium, lead, and silver were detected in any other analyzed soil sample.

3.2.7 GROUND WATER ANALYTICAL RESULTS

Grab ground water samples were collected from the three on-site borings. A synopsis of the ground water analytical results is provided in the subsequent sections. Tables nine through 14 provide detail analytical results.

3.2.8 GROUND WATER PAHs ANALYTICAL RESULTS

Ground water analytical results indicated that no detectable PAHs were found in the analyzed ground water samples.

3.2.9 GROUND WATER VOCs ANALYTICAL RESULTS

Ground water analytical results indicated that no detectable VOCs were found in the analyzed ground water samples.

3.2.10 GROUND WATER SVOCs ANALYTICAL RESULTS

Ground water analytical results indicated that no detectable SVOCs were found in the analyzed ground water samples.

3.2.11 GROUND WATER PCBs ANALYTICAL RESULTS

Ground water analytical results indicated that no detectable PCBs were found in the analyzed ground water samples.

3.2.12 GROUND WATER TPHs ANALYTICAL RESULTS

Ground water analytical results indicated that no detectable TPHs were found in the analyzed ground water samples.

3.2.13 GROUND WATER RCRA 8 RESULTS

Arsenic in a concentration of 56 µg/L was detected in sample 639WT-SB3-W. Arsenic in concentrations of 13 µg/L and 11 µg/L were also detected in ground water samples 639WT-SB1-W and 639WT-SB2-W, respectively.

Barium in a concentration of 439 µg/L was detected in sample 639WT-SB3-W. Barium in concentrations of 230 µg/L and 190 µg/L were also detected in ground water samples 639WT-SB1-W and 639WT-SB2-W, respectively.

Chromium in a concentration of 38 µg/L was detected in sample 639WT-SB3-W. Chromium in concentrations of 35 µg/L and 22 µg/L were also detected in ground water samples 639WT-SB1-W and 639WT-SB2-W, respectively.

Lead in concentrations of 5.1 µg/L and 7.7 µg/L were detected in ground water samples 639WT-SB1-W and 639WT-SB2-W, respectively. No lead was detected in sample 639WT-SB3-W.

No cadmium, mercury, silver, or selenium were detected in the analyzed ground water samples

3.2.14 REGULATORY REVIEW

The soil samples analytical results were compared to the Washington State MTCA Method A Cleanup Levels for Unrestricted Land Uses where available. When MTCA Method A values were not available, CLARC cleanup levels were used for compliance evaluation. The ground water samples analytical results were compared to the MTCA Method A Ground Water Cleanup Levels.

Regulatory review indicates that there were no soil samples with detectable PAHs, VOCs, SVOCs, PCBs, TPH, RCRA, or metals in concentrations above State of Washington regulatory clean up levels.

Three ground water samples (639WT-SB1-W, 639WT-SB2-W, and 639WT-SB3-W) had concentrations of arsenic in concentrations ranging from 11 to 56 µg/L. At these concentrations the samples exceeded the MTCA Method A Arsenic Cleanup Level for Ground Water of 5 µg/L. All other analyzed ground water samples had detectable metals concentrations that were MTCA Ground Water Cleanup Levels compliant.

3.2.15 CONCLUSIONS

The results of the 2008 Phase II ESA investigation indicated that arsenic is present in the Site ground water in concentrations above MTCA Method A Ground Water Cleanup Levels. There is also an impermeable clay layer, that resulted in a shallow ground water identified at approximately 6.4 feet BGS.

4 GROUND WATER ASSESSMENT

Spectrum will assess ground water conditions at the Site. The following sections provide our methodology for the ground water testing.

4.1 GROUND WATER ASSESSMENT FIELD ACTIVITIES

The Ground Water Assessment field activities will consist of the installation, development, and sampling of three ground water monitoring wells.

4.2 PROPOSED WELL LOCATIONS

There is no discernable topographic gradient across the Site. However, based on existing grab ground water sampling data from Spectrum and Pacific Crest, we interpret the ground water flow gradient to be from the southwest to the northeast. Well SM-MS 1 will be placed approximately 20 feet east of the Site entrance on 7th Avenue South. Wells SM-MS 2 and

SM-MS 3 will be placed on the northwest and southwest quadrants of the Site (Table 1 & Figure 2).

4.3 WELL DRILLING

ESN personnel will install three ground water monitoring wells using hollow stem auger drilling methodology. The well borings will be drilled to a depth of 15 feet BGS.

4.4 WELL CONSTRUCTION

The wells will be 2" diameter PVC with the upper ten feet consisting of blank casing and the lower ten feet will be slotted (0.01") screen with bottom cap. The annular space from the base of the screen to two feet above the screen will be filled with Colorado sand. The annular space above the sand to two feet BGS will be completed with a Bentonite slurry. The upper two feet of casing will be incased in concrete. The wells will have flush surface monuments with metal covers.

4.5 WELL LOGS

Spectrum will prepare well logs for the three Site wells. The well logs will provide as-built information for the wells.

4.6 WELL DEVELOPMENT

The wells will be developed the same day they are installed. Spectrum will develop the wells with a combination of pressure air and a submersible pump. The well water will be drummed on-site to await analytical results to determine appropriate disposal methods.

4.7 WELL SAMPLING

The three wells will be sampled utilizing the following methods:

- Initially a survey of depth to ground water will be taken to determine initial distance to the water table. Following the establishment of static water levels, the water level measurements will be used to calculate existing well volumes.
- Once the well volumes are determined, the individual wells will be purged using a peristaltic pump. Following the removal of three well volumes, an aliquot of water will be collected and tested for pH, conductivity, and turbidity using field instrumentation.
- When three aliquots measurements confirm that the sample parameters are consistent, a sample will be collected. Purge water will be collected and stored on-site for characterization prior to disposal.

4.8 SAMPLE HANDLING AND SHIPPING

Spectrum field personnel will check all sample containers for completeness and cap tightness. The sealed sample containers will be placed upright in a cooler and chilled with Blue Ice. All samples collected will be delivered under chain-of-custody to the ESN laboratory for analysis.

4.9 SAMPLING DOCUMENTATION

Spectrum will document all field activities associated with the Ground Water Assessment. Documentation will include a comprehensive discussion of field observations, including field parameters measurements, and any problems encountered.

All ground water sample activity will be documented using the Spectrum Ground Water Sampling Log (Figure 3).

All water sample containers will be labeled with the following information:

- Project identification number;
- Sample date;
- Sampler's name; and
- Sample identification number.

In addition, the sample chain-of-custody forms will be completed with Spectrum project identification number, the sampler's name, date, and sample identification codes, Number of containers, and date and time the sample was collected. The chain-of-custody form will be included with samples transported to the analytical laboratory.

4.10 DECONTAMINATION PROCEDURES

All non-disposable sampling equipment was decontaminated prior to and after each sampling operation. The specific steps used for decontamination of the equipment are:

- Rinse and pre-clean equipment in potable water;
- Wash and scrub equipment with non-phosphate based detergent and potable water;
- Rinse with potable water;
- Rinse in deionized water; and
- Air-dry and store in clean plastic bags (or visqueen sheet) between samplings.

4.11 ANALYTICAL PROTOCOL

During two past site investigations, ground water has been tested for petroleum hydrocarbons, VOCs, SVOCs, PCBs, and metals (i.e., arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury). However, only arsenic has been detected in the Site ground water in concentrations exceeding MTCA Method A Groundwater Cleanup Levels. The proposed number of samples and analyses are presented below:

- Spectrum will collect three grab ground water samples and test them for arsenic using EPA Test Method 6020 (Table 2); and
- Due to the anticipated poor ground water quality, the samples will be filtered prior to analysis.

Ground water samples will be submitted to ESN for analysis. No field duplicates will be collected. The *Standard Operating Procedure for Metals Analysis* documents ESN's quality assurance procedures. A copy of ESN's *Standard Operating Procedure for Metals Analysis* is presented in Appendix A.

5 STORMWATER TESTING

The stormwater sample location and testing protocol are presented in the following sections.

5.1 STORMWATER SAMPLE LOCATION

Spectrum will collect one stormwater sample from the area surrounding the stormwater catch basin located immediately west of the entrance to Site. The sample will be collected utilizing sampling protocols presented in the EPA Industrial Stormwater Monitoring and Sampling Guide (US EPA 2009).

5.2 ANALYTICAL PROTOCOL

The Stormwater sample will be tested for Polychlorinated Biphenyls (PCBs) utilizing Test Method (EPA 8082A).

6 ECOLOGY EIM SUBMITTAL

Spectrum will submit past stormwater and subsurface soil and ground water analytical results to Ecology VCP. The environmental testing results will be provided using the Ecology EIM database analytical results protocol. The analytical data from the following reports will be added to the Ecology EIM:

1. Seattle Public Utilities (SPU) collected stormwater runoff originating from the Site (Plant One Storage Yard). January 2012
2. Pacific Crest Environmental Plant One & Storage Yard Environmental Assessment. November 2017 (Pacific Crest 2017).
3. GO Spectrum Northwest (GO Spectrum). Phase II Environmental Site Assessment Commercial Property - 703 Monroe Street, Seattle, Washington 98109 Final Report. September 2018.
4. Analytical Data from the proposed Independent Metals Storage Lot Ground Water Assessment. January 2020.

7 REFERENCES

639 Wealth Trust 2018. Phase II Environmental Site Assessment Commercial Property 703 South Monroe Street Seattle, Washington 98109 Final Report. September 21, 2018.

Pacific Crest 2017. Pacific Crest Environmental Plant One & Storage Yard Environmental Assessment. November 2017.

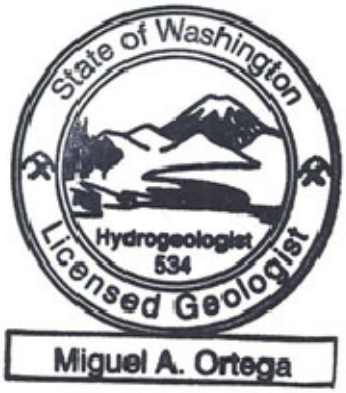
SPU 2012. SPU stormwater Testing, Plant One Storage Yard. January 2012.

King County 2015. Stormwater Sampling Manual. A guide for the Industrial Stormwater General Permit. Publication No. 15-03-044. December 2015.

US EPA 2009. EPA Industrial Stormwater Monitoring and Sampling Guide. EPA Publication EPA 822-B-09-003. March 2009.

8 SIGNATURE

This Ecology VCP Response Plan was prepared by the undersigned.



January 17, 2020

Miguel A. Ortega
Washington Licensed Geologist (Hydrogeologist #534)

Date

FIGURES

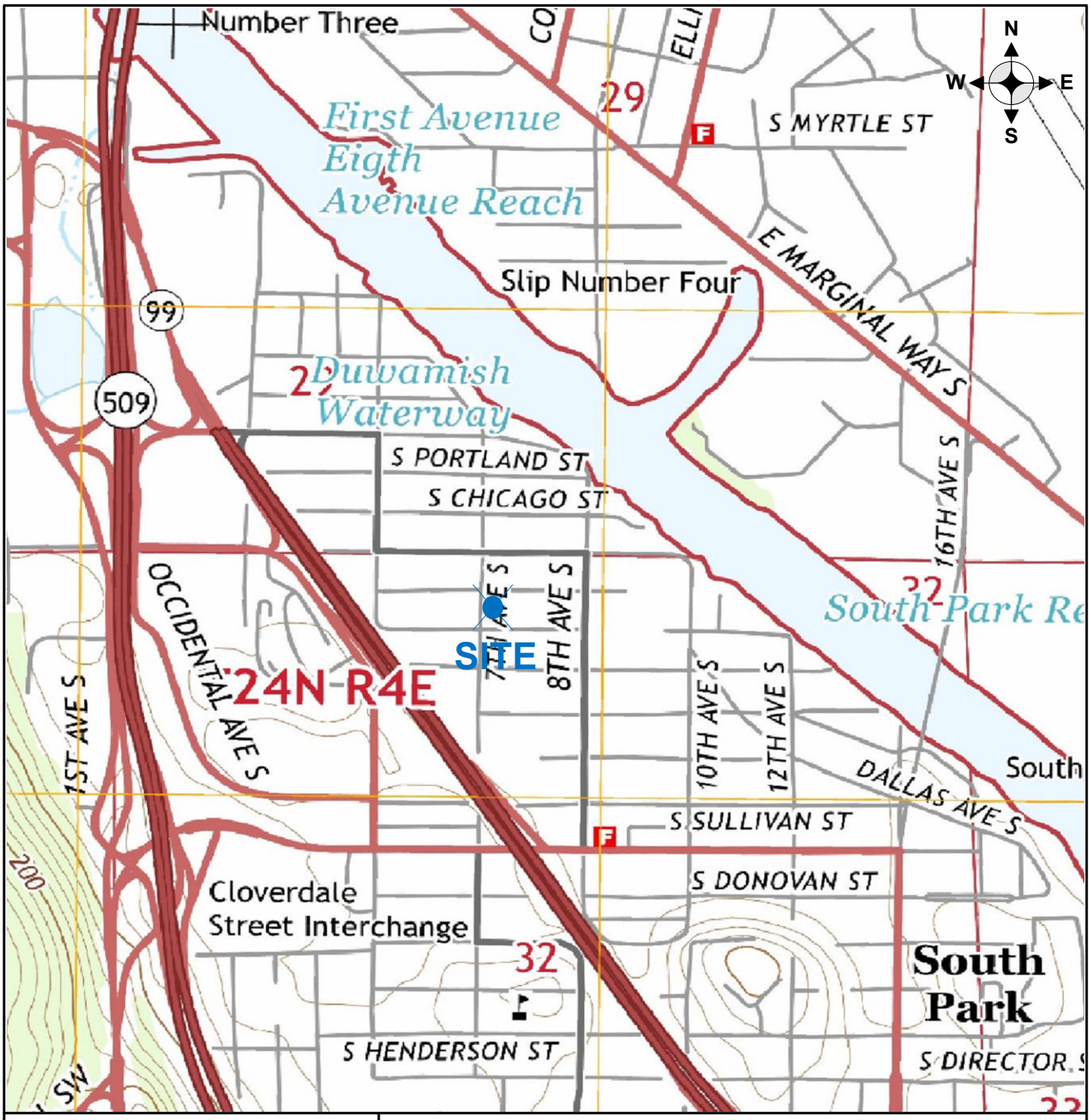


FIGURE 1

SOUTH MONROE, LLC
INDEPENDENT METALS STORAGE LOT
ECOLOGY VCP RESPONSE PLAN
703 SOUTH MONROE STREET
SEATTLE, WASHINGTON 98108

SITE LOCATION MAP

Seattle South, Washington
USGS 7.5 Minute Quadrangle
2014

GO Spectrum NW, LLC

December 2019

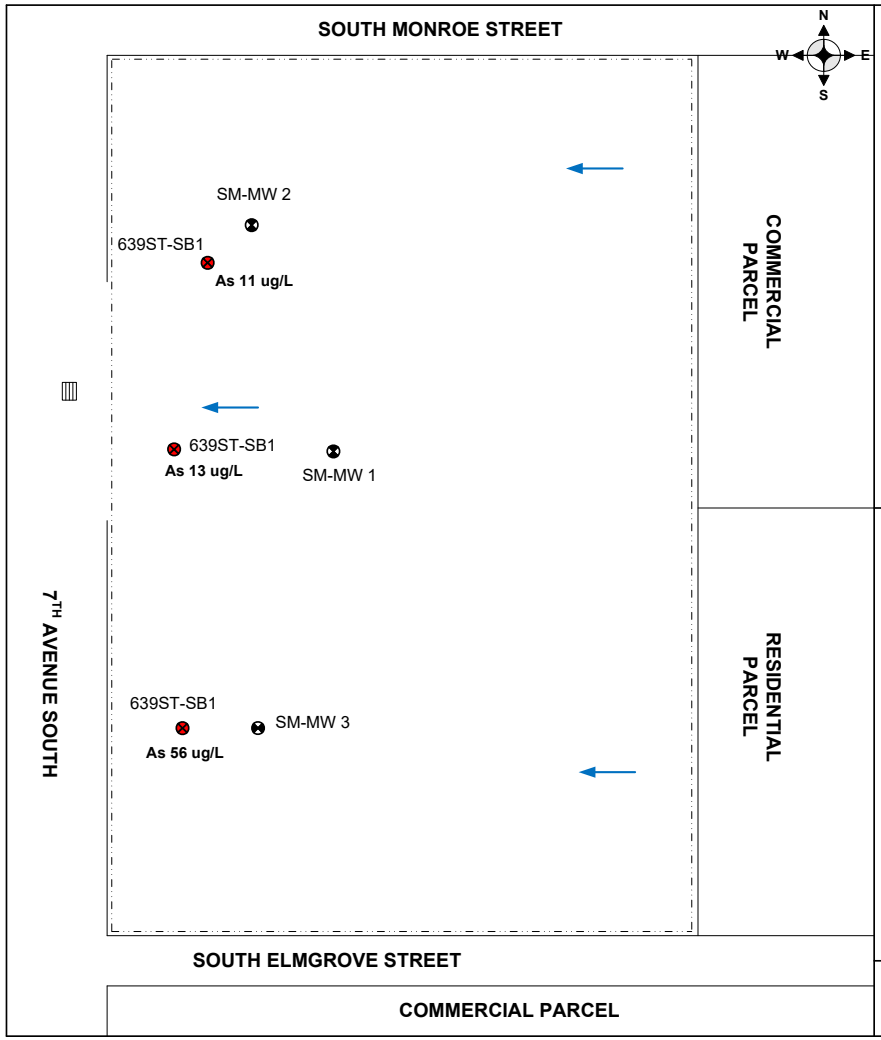


FIGURE 2

SOUTH MONROE, LLC
INDEPENDENT METALS STORAGE LOT
ECOLOGY VCP RESPONSE PLAN
703 SOUTH MONROE STREET
SEATTLE, WASHINGTON 98108

SITE PLOT PLAN

EXPLANATION

	Catch Basin
	Berm
639ST-SB1	Soil Boring September 2018
As 11 ug/L	Ground Water Arsenic Analytical Result September 2018 in Parts Per Million (ug/L)
SM-MW1	Proposed Ground Water Monitoring Well
	Interpreted Ground Water Flow Direction

SCALE: 1 INCH = 10 FEET

December 2019

GOSpectrum NORTHWEST

FIGURE 3: GROUND WATER SAMPLING LOG

DATE _____

WELL ID. _____

CLIENT _____

LOCATION _____

FIELD CONDITIONS _____

SAMPLER _____

SITE CONDITIONS _____

WELL DIAMETER _____

DEPTH TO WATER(Feet) _____ TOTAL WELL DEPTH (Feet) _____

REFERENCE POINT _____ REFERENCE POINT ELEV. _____

PURGE METHOD _____

VOLUME PURGED _____

FIELD INSTRUMENTATION _____

TIME	VOLUME	TEMP.	pH	SPECIFIC CONDUCTANCE	NOTES

SAMPLE ID. _____ SAMPLING TIME _____

SAMPLING METHOD _____

COMMENTS _____

TABLES

TABLE 1: PROPOSED WELL LOCATIONS	
WELL	**LOCATION**
SM-MW1	50 Feet south of the northwest corner of South Monroe Street and 7th Avenue South; then 15 feet east of 7th Avenue South.
SM-MW2	70 Feet south of the northwest corner of South Monroe Street and 7th Avenue South; then 25 feet east of 7th Avenue South.
SM-MW3	85 Feet south of the northwest corner of South Monroe Street and 7th Avenue South; then 15 feet east of 7th Avenue South.

TABLE 2: PROPOSED ANALYTICAL PROTOCOL		
ANALYTICAL PROTOCOL		
Ground Water	Arsenic	EPA Test Method 6020

TABLE 3: SOIL ANALYTICAL DATA SUMMARY PAHs[1]

	MTCA Method A	Screening Criteria MTCA Method B					
	Cleanup Levels For Soil In Unrestricted Land Use	Carcinogen, Direct Contact, Unrestricted Land Use	Non-Carcinogen, Direct Contact, Unrestricted Land Use	Number of Quantifiable Locations Detected	Minimum Detected Values	Maximum Detected Value	Number of Exceedances/ Samples Collected
	mg/kg	mg/kg	mg/kg	---	mg/kg	mg/kg	---
PAHs							
Naphthalene			1600	0	0	0	0
2-Methylnaphthalene			320	0	0	0	0
1-Methylnaphthalene		4	5600	0	0	0	0
Acenaphthylene				0	0	0	0
Acenaphthene			4800	0	0	0	0
Fluorene			3200	0	0	0	0
Pentachlorophenol		2.5	400	0	0	0	0
Phenanthrene				0	0	0	0
Anthracene			24000	0	0	0	0
Fluoranthene			3200	0	0	0	0
Pyrene			2400	0	0	0	0
Benzo(a)pyrene				0	0	0	0
cPAHs							
Benzo(a)anthracene		1.37		0	0	0	0
Chrysene		137		0	0	0	0
Benzo(b)fluoranthene		1.37		0	0	0	0
Benzo(k)fluoranthene		13.7		0	0	0	0
Benzo(a)pyrene	0.1	0.137		0	0	0	0
Indeno(1,2,3cd)pyrene		1.37		0	0	0	0
Dibenzo(a,h)anthracene		0.137		0	0	0	0
cPAH Mixture				0	0	0	0

EXPLANATION

[1]Polynuclear Aromatic Hydrocarbons (PAHs) by Test Method (EPA 8270).

TABLE 4: SOIL ANALYTICAL RESULTS VOCs[1]

Sample/Sample Depth	Acetone[2]	2-Butanone[2]	sec-Butylbenzene[2]	b-Butylbenzene[2]	Methylene Chloride[2]
639WT-SB1-01 (3.5 – 5.0 feet BGS[4])	ND[3]	ND	ND	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND	ND	ND
MTCA Method A Cleanup Levels[5]	0.03	---[6]	0.03	0.03	0.02

EXPLANATION

[1]Volatile Organic Compounds (VOCs) by Test Method EPA 8260C/5035; [2]Analytical values reported in milligrams per kilograms - mg/kg; [3]ND - Not Detected, below test practical quantification limits (PQL) – acetone (0.0056-0.011 mg/kg), benzenes (0.0011 mg/kg), methylene chloride (0057 mg/kg); [4]Below ground surface; **Bold**- signifies exceedance of regulatory cleanup level; [5]MTCA – Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels For Unrestricted Land Uses (WAC 173-340-745) and Cleanup Levels and Risk Calculation (CLARC); and [6]No available Cleanup Levels.

TABLE 5: SOIL ANALYTICAL RESULTS SVOCs[1]

Sample/Sample Depth	Diethylphtalate[2]	Pentachloropenol[2]	Pyrene[2]
639WT-SB1-01 (3.5 – 5.0 feet BGS[4])	ND[3]	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND
MTCA Method A Cleanup Levels/CLARC	6,400	400	655

EXPLANATION: [1]Semivolatile Organic Compounds (VOCs) by Test Method EPA 8260C/5035; [2]Analytical values reported in milligrams per kilograms - mg/kg; [3]ND - Not Detected, below test practical quantification limits (PQL) – phtalates (0.0056-0.011 mg/kg), chloropenols (0.0011 mg/kg), pyrene (0057 mg/kg); [4]Below ground surface; **Bold**- signifies exceedance of regulatory cleanup level; [5]MTCA – Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels For Unrestricted Land Uses (WAC 173-340-745) and Cleanup Levels and Risk Calculation (CLARC).

TABLE 6: SOIL ANALYTICAL RESULTS PCBs[1]							
Sample/Sample Depth	**Aroclor - 1016[2]**	**Aroclor - 1221[2]**	**Aroclor - 1232[2]**	**Aroclor - 1242[2]**	**Aroclor - 1048[2]**	**Aroclor - 1054[2]**	**Aroclor - 1060[2]**
639WT-SB1-01 (3.5 – 5.0 feet BGS[4])	ND[4]	ND	ND	ND	ND	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND	ND	ND	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND	ND	ND	ND	ND
[5]MTCA Method A Cleanup Levels	10	10	10	10	10	10	10

EXPLANATION

[1]Polychlorinated biphenyl (PCBs) by EPA Test Method EPA 8082A/3510C; [2]Analytical values reported in milligrams per kilograms - mg/kg; [3]ND - Not Detected, below practical quantification limits (PQL)– Aroclor (0.055-0.074 mg/kg); [4]Below ground surface; **Bold** - signifies exceedance of the regulatory cleanup level; and [5]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Unrestricted Land Uses (WAC 173-340-745).

TABLE 7: SOIL ANALYTICAL RESULTS TPH[1]			
Sample/Sample Depth	**Gasoline Range Organics (mg/kg)[3]**	**Diesel Range Organics (mg/kg)**	**Motor Oil Range Organics (mg/kg)**
639WT-SB1-01 (3.5 – 5.0 feet BGS[4])	ND[2]	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND
[5]MTCA Method A Cleanup Levels for Unrestricted Land Uses	100	2,000	2,000

EXPLANATION

[1]NWTPH-HCID, qualitative and semi-quantitative screen to determine the presence and. type of petroleum products that may exist in soil; [2]ND not detected at 20 mg/kg (Gasoline Range Organics), 50 mg/kg (Diesel Range Organics), 100 mg/kg (Motor Oil Range Organics); [3]Results presented in mg/kg; [4]Below ground surface; [5]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Unrestricted Land Uses.

TABLE 8: SOIL ANALYTICAL RESULTS RCRA 8 METALS[1]

Sample/Sample Depth	Arsenic[2]	Barium	Cadmium	Chromium
639WT-SB1-01 (3.5 – 5.0 feet BGS[3])	ND[4]	ND	36	16
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	35	16
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	50	13
MTCA Method A Cleanup Levels5	20	16,000	2	2,000
Sample/Sample Depth	**Lead**	**Mercury**	**Selenium**	**Silver**
639WT-SB1-01 (3.5 – 5.0 feet BGS)	7.2	ND	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND	ND
639WT-SB2-01 (3.5 – 5.0 feet BGS)	ND	ND	ND	ND
[5]MTCA Method A Cleanup Levels/CLARC	250	2.09	5.2	13.6

EXPLANATION

[1]RCRA 8 Metals in Soil by EPA Method 6010C and 7471A; [2]Analytical values reported in milligrams per kilograms (mg/kg); [3]BGS – Below Ground Surface; [4]Not Detected, below test method detection limits – arsenic (5.0 mg/kg), barium (50 mg/kg); cadmium (1.0 mg/kg), chromium 5.0 mg/kg), lead 5.0 (mg/kg), mercury (0.5 mg/kg), selenium (20 mg/kg), and silver (20 mg/kg); **Bold**- signifies exceedance of regulatory cleanup level; and [5]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Unrestricted Land Uses (WAC 173-340-900) and Cleanup Levels and Risk Calculation (CLARC).

TABLE 9: GROUND WATER ANALYTICAL DATA SUMMARY PAHs[1]							
	Screening Criteria						
	MTCA Method A	MTCA Method B					
	Cleanup Levels For Ground Water	Carcinogen, Direct Contact, Unrestricted Land Use	Non-Carcinogen, Direct Contact, Unrestricted Land Use	Number of Quantifiable Locations Detected	Minimum Detected Value (PQL if ND[3])	Maximum Detected Value	Number of Exceedances/ Samples Collected
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
[1]PAHs							
Naphthalene	160			2	0.099	27	
2-Methylnaphthalene	160			1	1.0	2.7	
1-Methylnaphthalene	160			1	1.0	2.0	
Acenaphthylene	---[2]		---[2]	1	0.10	.22	
Acenaphthene	---[2]		960	1	0.10	.82	
Fluorene	---[2]		640	1	0.10	1.0	
Pentachlorophenol	---[2]		---[2]	0	4.9	0	
Phenanthrene	---[2]		---[2]	1	0.10	1.2	
Anthracene	---[2]		4,800	1	0.10	.16	
Fluoranthene	---[2]		640	1	0.10	.11	
Pyrene	---[2]		---[2]	1	0.10	.11	
Benzo(a)pyrene	---[2]		---[2]	1	0.010	.025	
cPAHs							
Benzo(a)anthracene	---[2]	---[2]		3	0.0099	.039	
Chrysene	---[2]	---[2]		2	0.0099	.036	
Benzo(b)fluoranthene	---[2]	---[2]		2	0.0099	.040	
Benzo(k)fluoranthene	---[2]	---[2]		2	0.0099	.041	
Benzo(a)pyrene	0.1	---[2]		2	0.0099	.032	
Indeno(1,2,3cd)pyrene	---[2]	---[2]		1	0.0099	.026	
Dibenzo(a,h)anthracene	---[2]	---[2]		0	0.0099	0	
cPAH Mixture (with TEF computation)	0.1	NA[4]	NA			0.04696	

EXPLANATION: [1]Polynuclear Aromatic Hydrocarbons (PAHs) by Test Methods EPA 8270; [2]No Cleanup Level Available; [3]PQL – practical quantification limit and ND – not detected. In the column, where an analyte is ND, it will be identified as ND with the PQL in parentheses [ND (PQL)]; and [4]NA – not applicable.

TABLE 10: GROUND WATER ANALYTICAL RESULTS VOCs[1]

Sample Source Location	Acetone[2]	Benzene[2]	Toluene[2]	o-Xylene[2]	Methylene chloride[2]
639WT-SB1-W (6.4 feet BGS[4])	ND[3]	ND	ND	ND	2.2
639WT-SB2-W (6.4 feet BGS)	8.9	ND	ND	ND	2.2
639WT-SB2-W (6.5 feet BGS)	6.0	ND	ND	ND	ND
[5]MTCA Method A Cleanup Levels/CLARC	7,200	5	1,000	1,000	5

EXPLANATION

[1]Volatile Organic Compounds (VOCs) by Test Methods EPA 8260C/5030C; [2]Analytical values reported in µg/L; [3]ND - Not Detected, below test method detection limits – acetone (5.0 µg/L), benzene (0.0011 µg/L), toluene (1.0 µg/L), xylenes (0.02 µg/L), and methylene chloride (0057 µg/L); [5]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Ground Water (WAC 173-340-745) and Cleanup Levels and Risk Calculation (CLARC).

TABLE 11: GROUND WATER ANALYTICAL RESULTS SVOCs[1]

Sample/Sample Depth	Diethylphtalate[2]	Pentachloropenol	Pyrene
639WT-SB1-W (6.4 feet BGS[3])	ND	ND	ND
639WT-SB2-W (6.4 feet BGS)	ND	ND	ND
639WT-SB2-W (6.5 feet BGS)	ND	ND	ND
[4]MTCA Method A Ground Water Cleanup Levels/CLARC	6,400	2.19	480

EXPLANATION

[1]Semivolatile Organic Compounds (VOCs) by Test Method EPA 8270; [2]Analytical values reported in µg/L; [3]BGS - Below ground surface; [4]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Ground Water (WAC 173-340-745) and Cleanup Levels and Risk Calculation (CLARC).

TABLE 12: GROUND WATER ANALYTICAL RESULTS PCBs[1]							
Sample	**Aroclor - 1016[2]**	**Aroclor - 1221[2]**	**Aroclor - 1232[2]**	**Aroclor - 1242[2]**	**Aroclor - 1048[2]**	**Aroclor - 1054[2]**	**Aroclor - 1060[2]**
639WT-SB1-W (6.4 feet BGS[4])	ND	ND	ND	ND	ND	ND	ND
639WT-SB2-W (6.4 feet BGS)	ND	ND	ND	ND	ND	ND	ND
639WT-SB2-W (6.5 feet BGS)	ND	ND	ND	ND	ND	ND	ND
MTCA Method A Cleanup Levels[5]	0.10	0.10	0.10	0.10	0.10	0.10	0.10

EXPLANATION

[1]Polychlorinated biphenyl (PCBs) by EPA Test Methods EPA 8082A/3510C; [2]Analytical values reported in micrograms per liters (µg/L) - parts per billion; [3]NA – Not Analyzed; [4]ND - Not Detected, below test practical quantification limits (PQL) – Aroclor (5.0 parts per billion); and [5]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup for Ground Water (WAC 173-340-745).

TABLE 13: GROUND WATER ANALYTICAL RESULTS TPH[1]			
Sample/Sample Depth	**Gasoline Range Organics[3]**	**Diesel Range Organics**	**Motor Oil Range Organics**
639WT-SB1-W (6.4 feet BGS[4])	ND[2]	ND	ND
639WT-SB2-W (6.4 feet BGS)	ND	ND	ND
639WT-SB2-W (6.5 feet BGS)	ND	ND	ND
[5]MTCA Method A Cleanup Levels for Unrestricted Land Uses	800	500	500

EXPLANATION

[1]NWTPH-HCID, qualitative and semi-quantitative screen to determine the presence and type of petroleum products that may exist in water; [2]ND not detected at 250 µg/L (Gasoline Range Organics), 500 µg/L (Diesel Range Organics), 500 µg/L (Motor Oil Range Organics); [3]Results presented in µg/L; [4]BGS - Below ground surface; [5]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Unrestricted Land Uses.

TABLE 14: GROUND WATER ANALYTICAL RESULTS RCRA 8 METALS[1]

Sample/Sample Depth	Arsenic[2]	Barium	Cadmium	Chromium
639WT-SB1-W (6.4 feet BGS[4])	**13**	230	ND[4]	13
639WT-SB2-W (6.4 feet BGS)	**11**	190	ND	11
639WT-SB2-W (6.5 feet BGS)	**56**	490	ND	38
MTCA Method A Cleanup Levels5	5	3,200	5	50

Sample/Sample Depth	Lead	Mercury	Selenium	Silver
639WT-SB1-W (6.4 feet BGS[4])	5.1	ND	ND	ND
639WT-SB2-W (6.4 feet BGS)	4.7	ND	ND	ND
639WT-SB2-W (6.5 feet BGS)	ND	ND	ND	ND
[5]MTCA Method A Cleanup Levels/CLARC	15	2	8	8

EXPLANATION

[1]RCRA 8 Metals in Soil by EPA Method 6010C and 7471A; [2]Analytical values reported in milligrams per kilograms (mg/kg); [3]BGS – Below Ground Surface; [4]Not Detected, below test method detection limits – arsenic (2.0 mg/kg), barium (20 mg/kg); cadmium (2.0 µg/L), chromium (10 µg/L), lead (2.0 µg/L), mercury (1.0 µg/L), selenium (10 µg/L), and silver (10 µg/L); **Bold**- signifies exceedance of regulatory cleanup level; [4]BGS – Below Ground Surface; and [5]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Unrestricted Land Uses (WAC 173-340-900) and Cleanup Levels and Risk Calculation (CLARC).

APPENDIX A: LABORATORY QA/QC PROCEDURES FOR METALS ANALYSIS