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**Contaminated Media Management Plan.
40490 Old Highway 30
Astoria, Oregon 97103
DEQ File # 04-16-0669**

Prepared for:

Bernard Hunt Estate
92990 Labeck Road
Astoria, Oregon 97103

March 17, 2023

Prepared by:

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Abbreviations

BGS Below ground surface

CMMP Contaminated Media Management Plan

DEQ Oregon Department of Environmental Quality

EPA *United States Environmental Protection Agency*

ESA Environmental Site Assessment

PAHs Polycyclic Aromatic Hydrocarbons

RBC Risk Based Concentration

SSES Soil Solutions Environmental Services

TPH Total Petroleum Hydrocarbons

VOCs Volatile Organic Compounds



1. Introduction

Soil Solutions Environmental Services (SSES) has completed this Contaminated Media Management Plan (CMMP) for 40490 Old Highway 30 in Astoria, Oregon, the adjacent property to the north identified as taxlot 80822B002300, the property further north identified as taxlot 80822B002401, and areas of the right-of-way near the intersection of Svenson Marked Road and Old US Highway 30 (Site). The site location is shown on the attached Figure 1.

This CMMP outlines precautions and procedures to protect human health and the environment from gasoline, diesel, and heavy oil-contaminated media. This CMMP applies solely to gasoline, diesel, and heavy oil contamination that is known to exist at concentrations that merit precautions and procedures are taken. This CMMP identifies known contaminated media at the site, excavation protocols, soil handling procedures, and waste characterization and disposal requirements. The precautions and procedures outlined in this CMMP are to be followed during any future subsurface disturbance activities that may take place at the site.

2.0 Contamination Information

In this CMMP, contamination at the site is defined to include the gasoline, diesel, and heavy oil impacted soil and groundwater that is known to exist in excess of regulatory risk-based concentrations. The regulator risk-based concentrations are identified as Oregon Department of Environmental Quality (DEQ) published Risk Based Concentrations (RBCs). Contamination above RBCs potentially poses unacceptable risk to receptors if not otherwise managed or controlled. The estimated extent of soil contamination, groundwater contamination, and groundwater contamination in excess of the RBC for the groundwater in excavation for construction and excavation pathway are shown on Figure 2. The depths of the soil contamination range from approximately 6 to 16-feet below ground surface (bgs). Depth to groundwater may vary depending on the season but is may be expected to be present at 5 to 21-feet bgs.

Contaminants of concern include gasoline, diesel, and heavy oil range petroleum hydrocarbons and their associated constituents including volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs).

2.1 Previous Environmental Investigations

SSES began work at the subject property in April of 2021. Prior to SSES involvement numerous environmental investigations, monitoring, and remediation events were completed. The extent of gasoline, diesel, and heavy oil impacted soil that is known to exist at the site has been determined based on data from the following reports:

- Phase I Environmental Site Assessment - Country Market 40490 Old Highway 30, Astoria, Oregon - Environmental Associates Inc. (date not known)
- Phase II Environmental Site Assessment - Country Market 40490 Old Highway 30, Astoria, Oregon - Envitech LLC, July 15, 2015
- Focused Subsurface Investigation - EcoCon Inc., September 12, 2016
- Supplemental Focused Subsurface Investigation - EcoCon Inc., May 22, 2017
- Underground Storage Tank Closure & Site Assessment - EcoCon Inc., May 17, 2018
- Project Update Letter- EcoCon Inc., November 28, 2018
- Groundwater Monitoring Well Installation & Sampling Report- EcoCon, Inc., May 23, 2019
- Soil Vapor Investigation – ECI – June 12, 2019
- Groundwater Monitoring Sampling Report, Second Quarter 2019 - EcoCon, Inc, August 27, 2019
- Groundwater Monitoring Sampling Report, Third Quarter 2019 - EcoCon, Inc, October 27, 2019
- Meeting with Oregon Department of Environmental Quality- October 22, 2019
- Workplan to Address DEQ Concerns from the October Meeting - EcoCon Inc., December 26, 2019
- Groundwater Monitoring Well Installation & Sampling Report – ECI – April 17, 2020
- Environmental Investigation Report – SSES - February 4, 2022.
- Additional Environmental Investigation report – SSES – December 15, 2022

2.2 Risk Based Concentrations

Regulatory RBCs for the site were determined using DEQ published guidance titled “Risk-Based Decision Making for the Remediation of Contaminated Sites” (DEQ, 2017). The applicable RBCs are shown on the attached tables 1, 2 and 3.

3.0 Contaminated Media Management

A qualified environmental professional should oversee any subsurface disturbance activities at the site. Subsurface disturbance activities include but are not limited to excavation, grading, utility trenching, well installation, and grubbing.

There are no planned subsurface disturbance activities at the site. The following sections describe general procedures that should be followed for possible subsurface disturbance activities; however project specific procedures should be established by an environmental professional in the future if activities are planned.

3.1 Screening/Handling of Soil and Groundwater

All soil excavated from the site should be assumed to contain hazardous constituents above applicable risk criteria until sampling and analysis as described in this CMMP demonstrates otherwise.

Potentially contaminated soil and groundwater may be identified using the following screening methods:

- Visual and Olfactory
 - Soil and groundwater that is contaminated with petroleum hydrocarbons may show gray or black staining and/or release vapors that can be interpreted as an odor. Staining and odor may also be caused by other contaminants as well as natural conditions. In addition, inhalation of vapors from contaminated soil can be harmful to human health. Therefore, visual and olfactory screening is not recommended.
- Sheen
 - Soil and groundwater that is contaminated with petroleum hydrocarbons may show a shiny and reflective sheen with iridescent and rainbow colors.
- Photoionization Detector (PID)
 - PID screening of soil can be conducted by collecting a soil sample into a plastic bag and sealed with ample air headspace. The bag should then be shaken to expose the air trapped in the bag to the soil. The probe of the PID should then be placed into the bag, measuring the VOC vapors. PIDs can vary, but generally they are designed to quantify vapor concentrations ranging from 1 to 2,000 ppm. Detections of VOCs indicate the soil is likely contaminated with petroleum hydrocarbons and associated constituents. PIDs may give false readings in high humidity environments or if the soil moisture levels are high.
- Collection and analysis of soil and groundwater samples
 - Soil and groundwater samples can be collected and analyzed as described in section 4.0 of this report.

Clean overburden soil may be used at the site for backfill if it meets clean fill determinations as outlined in the DEQ Clean Fill Determinations guidance document, updated February 2019. A clean fill determination should be completed by an environmental professional in conjunction with DEQ.

3.2 Excavation and Stockpiling of Soil

Potentially contaminated soil should be excavated in a manner that reduces dust production under the oversight of an environmental professional. Any potentially contaminated soil excavated at the site should be temporarily stockpiled in a manner that minimizes erosion,

contact with stormwater runoff, and worker contact or should be immediately placed into trucks for off-site disposal.

In order to minimize erosion, contact with stormwater runoff, and worker contact, temporarily stockpiled soil should be placed on impermeable plastic sheeting with a berm around the perimeter of the stockpile. The plastic sheeting should run up over the berm to prevent runoff. The stockpile should also be covered with plastic sheeting and secured with sandbags or other equivalent item.

3.3 Disposal of Soil

Contaminated soil should be managed per solid waste and/or hazardous waste rules and be disposed of at an Oregon-permitted landfill in accordance with local, state, and federal regulations.

3.4 Decontamination

Any potentially contaminated soil that has adhered to excavation equipment, vehicles, or other tooling used at the site should be cleaned after the completion of work activities and/or before the equipment leaves the site.

3.5 Groundwater

Shallow contaminated groundwater may be present at the site during certain times of the year. If groundwater is present during subsurface disturbing activities, it should be assumed to contain hazardous constituents above applicable risk criteria until sampling and analysis as described in this CMMP demonstrates otherwise. Groundwater generated during site activities, such as dewatering, should be managed and disposed of under an activity specific groundwater plan. A groundwater plan could include managing groundwater by pumping into an appropriate container such as a temporary tank. A sample of the groundwater can then be collected and analyzed to determine if it meets disposal requirements. Water confirmed as contaminated must be disposed of in accordance with local, state, and federal regulations.

4.0 Sampling Procedures

An environmental professional working at the site to oversee potential subsurface disturbing activities, should collect soil and/or groundwater samples using accepted industry standards. Samples should be placed in laboratory-supplied clean glass jars or bottles, labeled and placed in a cooler with ice. Samples should be transported under chain of custody documentation to an accredited independent laboratory for analysis. Laboratory analysis should include contaminants of concern.

Contaminants of concern and the appropriate laboratory analysis to be performed on samples are listed below:

- Gasoline range petroleum hydrocarbons by NWTPH-Gx
- Diesel and heavy oil-range petroleum hydrocarbons by NWTPH-Dx
- VOCs by Environmental Protection Agency (EPA) Method 8260D
PAHs by EPA Method 8270E

5.0 Record Keeping

Any subsurface disturbing activities should be overseen by an environmental professional who should maintain documentation describing the activities related to contaminated soil and/or groundwater at the site including excavation, stockpiling, sampling, laboratory chains-of-custody, laboratory analytical results, waste profiles, shipping manifests, disposal tickets, and backfill information.

6.0 Limitations

The material in it this CMMP reflects our best judgment in light of the information available at report preparation.

This CMMP was prepared by Soil Solutions Environmental Services for The Bernard Hunt Estate. Any observations and conclusions described in this report are based solely on the scope of work provided in the proposal. This report may not be used or relied upon by any other party without the written consent of Soil Solutions Environmental Services. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Soil Solutions Environmental Services is not responsible for the independent conclusions, opinions or recommendations made by others based on this report and accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

This report reflects site conditions observed and described by records available to Soil Solutions Environmental Services as of the date of report preparation. The material in it reflects our best judgment in light of the information available at the time of preparation. The passage of time may result in significant changes in site conditions, technology, or economic conditions, which could alter the findings and/or recommendations of the report.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation,

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availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

5.0 References

State of Oregon Department of Environmental Quality (DEQ). Updated October 2, 2017.
Risk-Based Decision Making for the Remediation of Contaminated Sites.

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TABLES

Table 1
Petroleum Hydrocarbons in Soil RBCs

Exposure Pathway	Receptor Scenario	RBCs (ppm)	
		Total Petroleum Hydrocarbons (TPH)	
		Gasoline Range (C ₂ -C ₅) by NWTPH-Gx	Diesel Range (C ₁₀ -C ₂₅) by NWTPH-Dx Residual Range (C ₂₇ -C ₄₀) by NWTPH-Dx
Soil Ingestion, Dermal Contact, and Inhalation (RBC _s)	Residential	1,200	1,100
	Urban Residential	2,500	2,200
	Occupational	20,000	1,400
	Construction Worker	9700	4,600
	Excavation Worker	>Max	>Max
Volatilization to Outdoor Air (RBC _o)	Residential	5,900	>Max
	Urban Residential	5,900	>Max
	Occupational	69,000	>Max
Vapor Intrusion into Buildings (RBC _i)	Residential	94	>Max
	Urban Residential	94	>Max
	Occupational	>Max	>Max
Leaching to Groundwater (RBC _{gw})	Residential	31	9,500
	Urban Residential	31	9,500
	Occupational	130	>Max

Notes:
RBCs for Diesel Range and Residual Range Organics are given as Generic Diesel/Heating Oil.
>Max - The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg.
>C_{sat} - The soil RBC exceeds the three-phase equilibrium partitioning for this compound
NV - Compound is considered non-volatile for purposes of exposure calculations
NA - Not Applicable

Table 2
Volatile Organic Compounds in Soil RBCs

Exposure Pathway	Receptor Scenario	RBCs (ppm)																											
		Volatile Organic Carbons (VOCs)																											
		Dichlorodifluoromethane	Chloromethane	Vinyl chloride	Bromomethane	Chloroethane (ethyl chloride)	Trichlorofluoromethane (Freon 11)	Acetone	1,1-Dichloroethene (DCE, 1,1-Dichloroethylene)	Hexane (n-hexane)	Methylene chloride (Dichloromethane)	Methyl t-butyl ether (MTBE)	trans-1,2-Dichloroethane (trans-1,2-Dichloroethylene)	1,1-Dichloroethane	2,2-Dichloropropane	cis-1,2-Dichloroethane (cis-1,2-Dichloroethylene)	Chloroform	2-Butanone (MEK, methyl ethyl ketone)	1,2-Dichloroethane (EDC)	1,1,1-Trichloroethane	1,1-Dichloroethene	Carbon tetrachloride	Benzene	Trichloroethene (TCE, Trichloroethylene)	1,2-Dichloropropane	Bromodichloromethane	Dibromomethane (methylene bromide)	4-Methyl-2-pentanone (Methyl isobutyl ketone)	cis-1,3-Dichloropropene
Soil Ingestion, Dermal Contact, and Inhalation (RBC _{soil})	Residential	NE	1,400	0.36	3.7	160,000	7,600	NE	1,800	NE	76	250	1,600	58	NE	160	5.8	NE	3.6	53,000	NE	7.5	8.2	6.7	NE	3.4	3.7	NE	NE
	Urban Residential	NE	2,900	0.80	12	320,000	15,000	NE	3,500	NE	170	730	3,100	190	NE	310	22	NE	12	110,000	NE	21	24	17	NE	12	12	NE	NE
	Occupational	NE	25,000	4.4	17	>Max	130,000	NE	29,000	NE	1,600	1,100	23,000	260	NE	2,300	26	NE	16	870,000	NE	34	37	51	NE	15	17	NE	NE
	Construction Worker	NE	25,000	34	210	>Max	69,000	NE	13,000	NE	12,000	12,000	7,100	3,200	NE	710	410	NE	200	470,000	NE	320	380	470	NE	230	210	NE	NE
Volatilization to Outdoor Air (RBC _{vo})	Excavation Worker	NE	700,000	950	5,800	>Max	>Max	NE	370,000	NE	340,000	320,000	200,000	89,000	NE	20,000	11,000	NE	5,600	>Max	NE	8,900	11,000	13,000	NE	6,300	5,800	NE	NE
	Residential	NE	>Csat	5.3	3.3	>Max	>Csat	NE	>Csat	NE	>Csat	340	>Max	56	NE	>Max	3.9	NE	3.4	>Csat	NE	15	11	15	NE	2.4	3.3	NE	NE
	Urban Residential	NE	>Csat	6.5	7.8	>Max	>Csat	NE	>Csat	NE	>Csat	810	>Max	130	NE	>Max	9.2	NE	8.1	>Csat	NE	35	27	33	NE	5.7	7.8	NE	NE
Vapor Intrusion into Buildings (RBC _{bi})	Occupational	NE	>Csat	89	14	>Max	>Csat	NE	>Csat	NE	>Csat	1,500	>Max	240	NE	>Max	17	NE	15	>Csat	NE	65	50	96	NE	11	14	NE	NE
	Residential	NE	24	0.043	0.22	>Csat	190	NE	54	NE	26	8.5	>Max	0.45	NE	>Max	0.031	NE	0.077	>Csat	NE	0.12	0.16	0.12	NE	0.041	0.22	NE	NE
	Urban Residential	NE	24	0.053	0.53	>Csat	190	NE	54	NE	51	20	>Max	1.1	NE	>Max	0.074	NE	0.18	>Csat	NE	0.28	0.38	0.26	NE	0.096	0.53	NE	NE
Leaching to Groundwater (RBC _{gw})	Occupational	NE	300	2.2	2.9	>Csat	>Csat	NE	680	NE	950	110	>Max	5.9	NE	>Max	0.41	NE	1.0	>Csat	NE	1.6	2.1	2.3	NE	0.53	2.9	NE	NE
	Residential	NE	2.2	0.00057	0.0024	310	61	NE	6.7	NE	0.14	0.11	7.0	0.044	NE	0.63	0.0034	NE	0.0028	190	NE	0.013	0.023	0.013	NE	0.0020	0.0024	NE	NE
	Urban Residential	NE	7.9	0.0014	0.011	1,100	230	NE	25	NE	0.44	0.50	27	0.20	NE	2.4	0.016	NE	0.013	710	NE	0.055	0.10	0.053	NE	0.0091	0.011	NE	NE
Occupational	NE	9.1	0.010	0.011	1,300	280	NE	32	NE	2.4	0.54	51	0.20	NE	4.5	0.015	NE	0.013	880	NE	0.058	0.10	0.087	NE	0.0088	0.011	NE	NE	

Notes:
 Highlighted cells indicate that detected value remaining on site exceeds one or more of the referenced RBCs.

Bold indicates a detection
 RBCs for m,p-Xylenes and o-Xylenes are given as a total of all Xylenes.
 1 - Depth in feet below ground surface
 >Csat - The soil RBC exceeds the three-phase equilibrium partitioning for this compound
 >Max - The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg.
 NE - An RBC has not been established for this compound
 NV - Compound is considered non-volatile for purposes of exposure calculations

Table 2
Volatile Organic Compounds in Soil RBCs

Exposure Pathway	Receptor Scenario	Laboratory Analytical Results (mg/kg)																											
		Volatile Organic Carbons (VOCs) by EPA Method 8260C																											
		Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	2-Hexanone	1,3-Dichloropropane	Tetrachloroethene (PCE, perchloroethylene, tetrachloroethylene)	Dibromochloromethane	1,2-Dibromoethane (EDB, ethylene dibromide)	Chlorobenzene	Ethylbenzene	1,1,1,2-Tetrachloroethane	m,p-Xylene	o-Xylene	Styrene	Isopropylbenzene (Cumene)	Bromofarm	n-Propylbenzene	Bromobenzene	1,3,5-Trimethylbenzene	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropane	2-Chlorotoluene (o-Chlorotoluene)	4-Chlorotoluene (p,p',p,p'-tetrachlorotoluene)	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	p-Isopropyltoluene (p-cymene)	1,3-Dichlorobenzene
Soil Ingestion, Dermal Contact, and Inhalation (RBC _{soil})	Residential	5,800	NE	5.8	NE	NE	220	3.7	0.16	530	34	NE	1,400	7,900	NE	57	NE	NE	780	NE	NE	NE	NE	NE	110	NE	NE	NE	14
	Urban Residential	12,000	NE	19	NE	NE	650	12	0.53	1,100	110	NE	2,900	16,000	NE	170	NE	NE	1,600	NE	NE	NE	NE	NE	220	NE	NE	NE	62
	Occupational	88,000	NE	26	NE	NE	1,000	17	0.73	8,700	150	NE	25,000	130,000	NE	260	NE	NE	12,000	NE	NE	NE	NE	NE	2,000	NE	NE	NE	64
	Construction Worker	28,000	NE	320	NE	NE	10,000	210	9.0	4,700	1,700	NE	20,000	56,000	NE	2,700	NE	NE	3,500	NE	NE	NE	NE	NE	2,000	NE	NE	NE	1,300
Volatilization to Outdoor Air (RBC _{soil})	Excavation Worker	770,000	NE	8,900	NE	NE	280,000	5,800	250	130,000	49,000	NE	560,000	>Max	NE	74,000	NE	NE	98,000	NE	NE	NE	NE	NE	54,000	NE	NE	NE	36,000
	Residential	>Csat	NE	5.6	NE	NE	>Csat	3.3	0.15	>Csat	36	NE	>Csat	>Csat	NE	81	NE	NE	>Max	NE	NE	NE	NE	NE	230	NE	NE	NE	8.1
	Urban Residential	>Csat	NE	13	NE	NE	>Csat	7.8	0.35	>Csat	85	NE	>Csat	>Csat	NE	190	NE	NE	>Max	NE	NE	NE	NE	NE	230	NE	NE	NE	19
Vapor Intrusion into Buildings (RBC _{soil})	Occupational	>Csat	NE	24	NE	NE	>Csat	14	0.65	>Csat	160	NE	>Csat	>Csat	NE	360	NE	NE	>Max	NE	NE	NE	NE	NE	980	NE	NE	NE	36
	Residential	>Csat	NE	0.32	NE	NE	2.8	0.22	0.012	77	1.3	NE	160	>Csat	NE	8.2	NE	NE	>Max	NE	NE	NE	NE	NE	16	NE	NE	NE	0.99
	Urban Residential	>Csat	NE	0.75	NE	NE	6.6	0.53	0.028	77	3.0	NE	160	>Csat	NE	19	NE	NE	>Max	NE	NE	NE	NE	NE	16	NE	NE	NE	2.3
Leaching to Groundwater (RBC _{soil})	Occupational	>Csat	NE	4.2	NE	NE	36	2.9	0.16	>Csat	17	NE	>Csat	>Csat	NE	110	NE	NE	>Max	NE	NE	NE	NE	NE	210	NE	NE	NE	13
	Residential	83	NE	0.0063	NE	NE	0.46	0.0024	0.00012	5.8	0.22	NE	23	170	NE	0.046	NE	NE	21	NE	NE	NE	NE	NE	2.8	NE	NE	NE	0.057
	Urban Residential	340	NE	0.029	NE	NE	1.9	0.011	0.00056	22	0.94	NE	87	640	NE	0.20	NE	NE	94	NE	NE	NE	NE	NE	10	NE	NE	NE	0.27
Occupational	490	NE	0.029	NE	NE	1.9	0.011	0.00056	27	0.90	NE	100	800	NE	0.22	NE	NE	110	NE	NE	NE	NE	NE	12	NE	NE	NE	0.25	

Notes:
 Highlighted cells indicate that detected value remaining on site exceeds one or more of the referenced RBCs.

Bold indicates a detection
 RBCs for m,p-Xylenes and o-Xylenes are given as a total of all Xylenes.
 1 - Depth in feet below ground surface
 >Csat - The soil RBC exceeds the three-phase equilibrium partitioning for this compound
 >Max - The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg.

NE - An RBC has not been established for this compound
 NV - Compound is considered non-volatile for purposes of exposure calculations

Table 2
Volatile Organic Compounds in Soil RBCs

Exposure Pathway	Receptor Scenario	Laboratory Analytical Results (mg/kg)					
		Volatile Organic Carbons (VOCs) by EPA Method 8260C					
		1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane (DBCP, dibromochloropropane)	1,2,4-Trichlorobenzene	Hexachlorobutadiene	Naphthalene	1,2,3-Trichlorobenzene
Soil Ingestion, Dermal Contact, and Inhalation (RBC _s)	Residential	2,200	NE	NE	NE	5.3	NE
	Urban Residential	4,400	NE	NE	NE	25	NE
	Occupational	36,000	NE	NE	NE	23	NE
	Construction Worker	20,000	NE	NE	NE	580	NE
	Excavation Worker	560,000	NE	NE	NE	16,000	NE
Volatilization to Outdoor Air (RBC _o)	Residential	>Csat	NE	NE	NE	6.4	NE
	Urban Residential	>Csat	NE	NE	NE	15	NE
	Occupational	>Csat	NE	NE	NE	83	NE
Vapor Intrusion into Buildings (RBC _i)	Residential	>Csat	NE	NE	NE	6.4	NE
	Urban Residential	>Csat	NE	NE	NE	15	NE
	Occupational	>Csat	NE	NE	NE	83	NE
Leaching to Groundwater (RBC _w)	Residential	36	NE	NE	NE	0.077	NE
	Urban Residential	140	NE	NE	NE	0.37	NE
	Occupational	160	NE	NE	NE	0.34	NE

Notes:

Highlighted cells indicate that detected value remaining on site exceeds one or more of the referenced RBCs.

Bold indicates a detection

RBCs for m,p-Xylenes and o-Xylenes are given as a total of all Xylenes.

1 - Depth in feet below ground surface

>Csat - The soil RBC exceeds the three-phase equilibrium partitioning for this compound

>Max - The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg.

NE - An RBC has not been established for this compound

NV - Compound is considered non-volatile for purposes of exposure calculations

Table 3
Polycyclic Aromatic Hydrocarbons in Soil Analytical Results

Exposure Pathway	Receptor Scenario	RBCs (ppm)															
		Polycyclic Aromatic Hydrocarbons (PAHs)															
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Ideno(1,2,3-cd)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene
Soil Ingestion, Dermal Contact, and Inhalation (RBC _{ss})	Residential	5.3	NE	4,700	3,100	NE	23,000	2,400	1,800	0.15	15	0.015	0.15	1.5	0.15	0.015	NE
	Urban Residential	25	NE	9,400	6,300	NE	47,000	4,800	3,600	0.34	34	0.034	0.34	3.4	0.34	0.031	NE
	Occupational	23	NE	70,000	47,000	NE	350,000	30,000	23,000	2.9	290	0.29	2.9	29	2.9	0.29	NE
	Construction Worker	580	NE	21,000	14,000	NE	110,000	10,000	7,500	24	2,400	2.4	24	240	24	2.4	NE
	Excavation Worker	16,000	NE	590,000	390,000	NE	>Max	280,000	210,000	660	67,000	67	670	6,700	670	67	NE
Volatilization to Outdoor Air (RBC _{so})	Residential	6.4	NE	>Max	>Max	NE	>Max	NV	>Max	>Csat	NV	NV	NV	NV	NV	NV	NE
	Urban Residential	15	NE	>Max	>Max	NE	>Max	NV	>Max	>Csat	NV	NV	NV	NV	NV	NV	NE
	Occupational	83	NE	>Max	>Max	NE	>Max	NV	>Max	>Csat	NV	NV	NV	NV	NV	NV	NE
Vapor Intrusion into Buildings (RBC _{si})	Residential	6.4	NE	>Max	>Max	NE	>Max	NV	>Max	>Csat	NV	NV	NV	NV	NV	NV	NE
	Urban Residential	15	NE	>Max	>Max	NE	>Max	NV	>Max	>Csat	NV	NV	NV	NV	NV	NV	NE
	Occupational	83	NE	>Max	>Max	NE	>Max	NV	>Max	>Csat	NV	NV	NV	NV	NV	NV	NE
Leaching to Groundwater (RBC _{sw})	Residential	0.077	NE	>Csat	>Csat	NE	>Csat	>Csat	>Csat	0.64	>Csat	0.6	6.2	>Csat	>Csat	2.0	NE
	Urban Residential	0.37	NE	>Csat	>Csat	NE	>Csat	>Csat	>Csat	2.3	>Csat	1.9	>Csat	>Csat	>Csat	>Csat	NE
	Occupational	0.34	NE	>Csat	>Csat	NE	>Csat	>Csat	>Csat	8.8	>Csat	>Csat	>Csat	>Csat	>Csat	>Csat	NE

Notes:

Highlighted cells indicate that detected value remaining on site exceeds one or more of the referenced RBCs.

1 - Depth in feet below ground surface

2 - Results reported in milligrams per kilogram

>Csat - The soil RBC exceeds the three-phase equilibrium partitioning for this compound

>Max - The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg.

NE - An RBC has not been established for this compound

NV - Compound is considered non-volatile for purposes of exposure calculations

Contaminated Media Management Plan
40490 Old Highway 30
Astoria, Oregon 97103
DEQ File #04-16-0669

FIGURES



Figure 1: Vicinity Map
 40490 Old HWY 30
 Astoria, Oregon 97103
 DEQ File #04-16-0669

PROJECT: CMMP
 DATE: 3/8/23
 500 feet

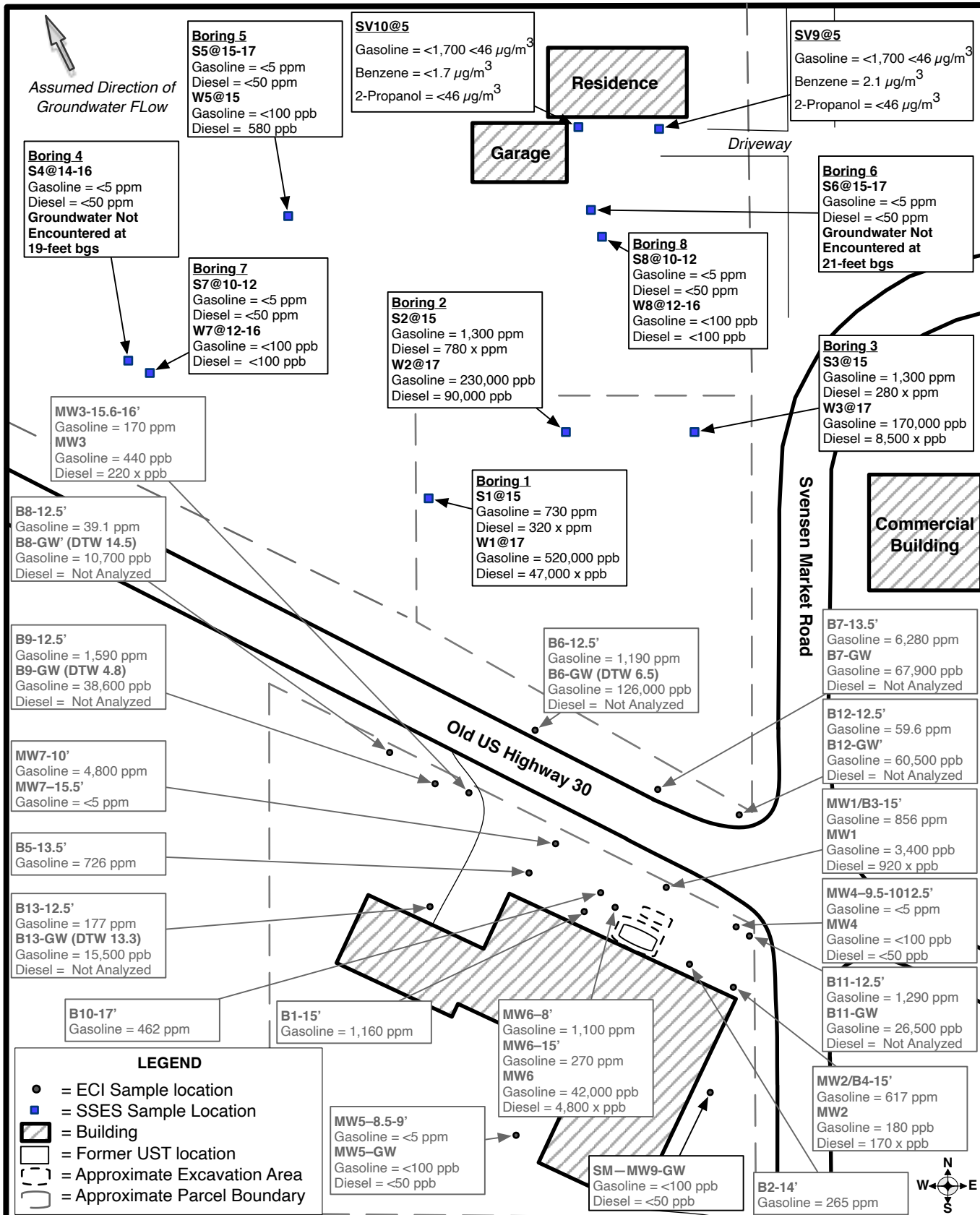


Figure 2: Site Map
40490 Old HWY 30
Astoria, Oregon 97103
DEQ File #04-16-0669

PROJECT: CMMP

DATE: 3/8/23

25 feet



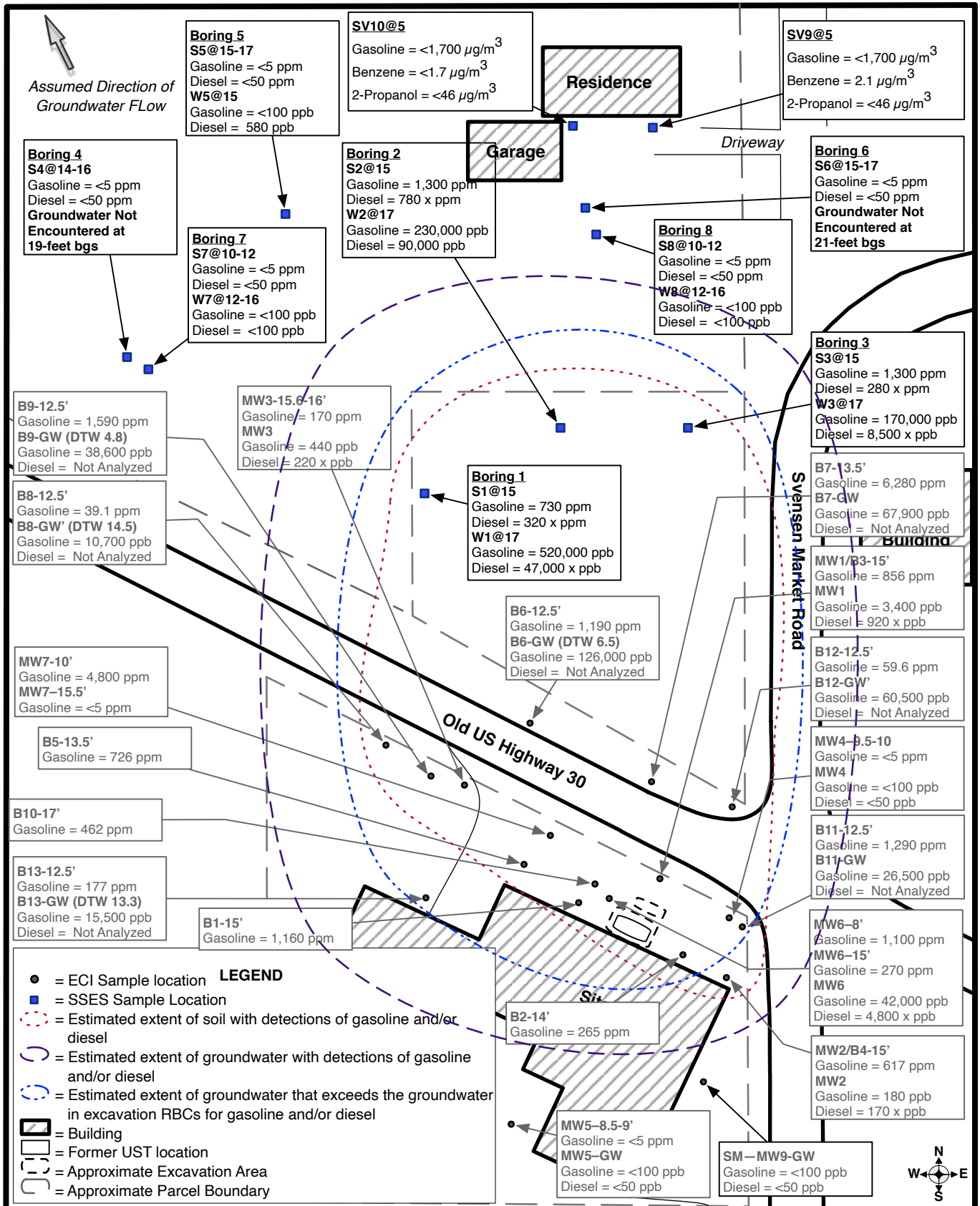


Figure 3: Site Map with Estimated Extent of Contamination
 40490 Old HWY 30
 Astoria, Oregon 97103
 DEQ File #04-16-0669

PROJECT: CMMP

DATE: 3/8/23

25 feet

