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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
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January 5, 2023

Sterling Gray
Realta Thuaidh LLC
1200 W 13th St.
Vancouver, WA 98660
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Re: Further Action at the following Site:

Site Name:	Varicast, Inc.
Site Address:	1200 W 13th St, Vancouver, Clark County, WA 98660
Facility/Site ID:	1034
Cleanup Site ID:	3022
VCP Project ID:	SW1712

Dear Sterling Gray:

On May 23, 2022, the Washington State Department of Ecology (Ecology) received your request for an opinion on the Excavation Cleanup and Closure Report for the Varicast, Inc. (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA),[1] chapter 70A.305 Revised Code of Washington (RCW).[2]

Opinion

Ecology has determined that further remedial action is necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, chapter 70A.305 RCW, and its implementing regulations, Washington Administrative Code (WAC) chapter 173-340[3] (collectively "substantive requirements of MTCA"). The analysis is provided below.

[1] https://apps.ecology.wa.gov/publications/SummaryPages/9406.html
[2] https://app.leg.wa.gov/rcw/default.aspx?cite=70A.305
[3] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340

Site Description

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Total Petroleum Hydrocarbons (TPH), metals, volatile organic compounds (VOC), semivolatile organic compounds (SVOC), polycyclic aromatic compounds (PAH); polychlorinated biphenyls (PCB) in soil.
- TPH, metals, and VOC in groundwater.

A parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the following suite of documents:

1. North Star Casteel (NSC), Martin S. Burck Associates (MSBA), *Excavation Cleanup and Closure Report*, May 20, 2022.
2. NSC, MSBA, *Remedial Investigation/Feasibility Study*, March 3, 2021.
3. Associated Environmental Group, LLC (AEG), *Summary of Selected Confirmational Soil Sampling – Vancouver Iron and Steel, Inc.*, December 5, 2018.
4. Environmental Partners, Inc. (EPI), *Updated Subsurface Investigation Letter Report*, May 3, 2018.
5. Varicast, *Soil Sample Project*; November 10, 1995.

This opinion is based on the information in the documents listed above. You can request these documents by filing a records request.[4] For help making a request, contact the Public Records Officer[5] at or call 360-407-6040. Before making a request, check whether the documents are available on Ecology's Cleanup Site Search web page.[6]

[4] https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests
[5] publicrecordsofficer@ecy.wa.gov
[6] https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=3022

Analysis of the Cleanup

Ecology has concluded that **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

Characterizing the Site

The Site consists of 14 tax lots totaling 3.28 acres in Vancouver, Washington, northwest of West 13th Street (W 13th St) and Lincoln Avenue.

It is in an industrial area with mixed commercial and residential land use. Of note, the Site is bounded to the south by a former bulk fuel facility that is now operated by Emerald Petroleum Services (Emerald) as a used oil collection, treatment, and resale facility with numerous aboveground storage tanks (ASTs). A Burlington Northern Santa Fe (BNSF) railway and several associated buildings are located beyond the western Site boundary while the Erwin O. Rieger Memorial Highway (WA-501) and residential properties are located north of the property. Lincoln Avenue borders the Site to the east as well as the Lincoln Place Apartments and a commercial building across the street.

The Site reportedly operated as a cast steel foundry since the 1920s with historical processes likely including metal refining, smelting, alloying, and other related industrial operations. Swartz Steel and Varicast, Inc. have previously owned and operated the facility. The facility was purchased by NSC in 2018, which continues to operate the property as a cast steel foundry.

Two Quonset hut-style storage buildings approximately 800 and 1,200 sq. ft. in size are located near the northwest portion of the property and are primarily used for storage. An underground storage tank (UST) was present adjacent to the foundry building and was reportedly installed for use as emergency overflow storage of transformer oil. The UST was reportedly never used and was decommissioned in-place in 2021. No additional known USTs or ASTs are located at the property.

Stormwater runoff from the foundry building roof is discharged to Grattix rain boxes for removal of zinc from the galvanized metal roofs prior to surface discharge and infiltration into the ground. Two dry wells also exist on the property with one located in the parking area near the southwest corner of the property and the other near the eastern property boundary.

Past Investigative Activities

2017-2018. Environmental Partners, Inc. (EPI) conducted three phases of investigation at the Site including a 2017 Phase I ESA and an October 2018 Phase II Site Investigation (SI) and supplemental Phase II SI.

The Phase I ESA identified fifteen areas of potential concern (AOPC) as follows:

- **AOPC 1** – Metal Receiving Area
- **AOPC 2** – Electric Arc Furnace Area
- **AOPC 3** – Foundry Building
- **AOPC 4** – Stormwater Drain – Main Yard
- **AOPC 5** – Southwest Compressor
- **AOPC 6** – Southwest Drywell
- **AOPC 7** – South Compressor
- **AOPC 8** – Maintenance Shop Building
- **AOPC 9** – Welding Station Building
- **AOPC 10** – Stormwater Retention Structure
- **AOPC 11** – Oil-Sand Storage and Baghouse
- **AOPC 12** – Northwest Petroleum Storage
- **AOPC 13** – Foundry Waste Material
- **AOPC 14** – North Compressor
- **AOPC 15** – Clark County Transformer

EPI Phase II and Supplemental SI activities included soil and groundwater sampling activities at the Site to evaluate the fifteen AOPCs related to the historic foundry operations. These activities collectively included:

- Collection of 24 surface and near surface soil samples using hand tools.
- Advancing soil borings SB-1 through SB-19 using hollow-stem auger or direct push drilling and collecting 44 soil samples and 8 reconnaissance groundwater samples.
- Advancing hand auger soil borings HA-1 through HA-31 and collecting 31 shallow soil samples.
- Installing one groundwater monitoring well MW-1 to 60 feet below ground surface (bgs) and collection of one groundwater sample and two soil samples.

Soil and groundwater samples were analyzed for TPH as gasoline-range organics (GRO), diesel-range organics (DRO), and oil-range organics (ORO), VOC, SVOC, PAH, and PCB. Through those investigations, the constituents of concern (COCs) were identified based on concentrations exceeding the Method A cleanup levels (CULs). Based on the sampling activities, EPI concluded that AOPCs 3, 4, 6, 10, 11, 12, and 15 were in compliance with the Method A CULs while the remaining AOPCs as listed below, were not:

- **AOPC 1** – Metal Receiving Area: Lead, diesel, oil, carcinogenic PAHs (cPAHs), and PCBs.
- **AOPC 2** – Electronic Arc Furnace Area: Arsenic.

- **AOPC 5** – Southwest Compressor: Diesel, oil, cPAHs, and PCBs.
- **AOPC 7** – South Compressor: Oil.
- **AOPC 8** – Maintenance Shop Building: Oil and cPAHs.
- **AOPC 9** – Welding Station Building: Arsenic and chromium.
- **AOPC 13** – Foundry Waste Material: cPAHs.
- **AOPC 14** – North Compressor: Oil.

Although the vertical extent of COCs was not defined at all locations, EPI anticipated the COCs were limited to shallow soil to a depth of 5 feet bgs or less based on the surficial nature of the releases. EPI also concluded that being a foundry, petroleum hydrocarbons detections were primarily attributed to leaking compressor equipment and drum storage.

The groundwater grab sample results collected from AOPCs 1, 4, 5, 6, 7, 10, and 13 indicated the COPCs were either not detected or were detected below the Method A CULs in all samples except for 0.2134 micrograms per liter (µg/L) of cPAHs in sample SB-9:GW, located within AOPC 1, the metal receiving area. Compared with the subsequent cPAH sample results from MW-1 of 0.0453 µg/L, the SB-9 result was attributed to high turbidity.

The adjacent Emerald Site was not retained for further evaluation. Based on soil and groundwater sampling completed near the Emerald Site, EPI concluded there was no evidence that contamination from the adjacent Site has impacted the subject property.

2018 Excavation/Removal

During October/November 2018, cleanup activities via excavation were performed at AOPCs 1, 5, and 7. Associated Environmental Group, LLC (AEG), of Olympia, Washington, inspected the excavation areas when complete and collected soil confirmation samples. The dimensions of the excavation areas, depths, and exact sample locations were further determined by MSBA based on a review of photographs and a site plan map provided by AEG and later verified by MSBA in 2021 using ground penetrating radar (GPR) and exploratory test pits. MSBA estimated the following:

- **AOPC 1** – Metal Receiving Area: The excavation area was approximately 800 sq. ft. and the estimated depths ranged from 1 to 1.5 feet bgs. MSBA estimates approximately 62 tons of soil were removed from this area.

- **AOPC 5** – Southwest Compressor: The excavation area was approximately 1,580 sq. ft., and the estimated depths ranged from 1 to 3 feet bgs. MSBA estimates approximately 232 tons of soil were removed from this area.

- **AOPC 7** – South Compressor: The excavation area was approximately 230 sq. ft., and the estimated depth was 1.5 feet bgs. MSBA estimates approximately 24 tons of soil were removed from this area.

In conjunction with the excavation cleanup activities, overlying sediment/dirt was removed from the surface of the concrete at areas AOPC 8 (Maintenance Shop Building) and AOPC 9 (Welding Station Building) (Figure 3). The sediment/dirt removed during the concrete cleaning was added to the stockpile for subsequent off-Site disposal.

The modified excavation cleanup plans included removal of soil surrounding the north compressor (AOPC 14) at the general location of EPI sample AOPC14-01. However, based on field observations at the time, AEG concluded it did not appear that excavation was warranted and collected soil sample AOPC14-01 to confirm.

Confirmation Soil Sampling/Results. Subsequent to the excavation activities, 12 confirmation and 2 stockpile soil samples were collected from the bottom of the three excavation cleanup areas, AOPCs 1, 5, and 7 and the sample from area AOPC 14 (north compressor).

- **AOPC 1** – Metal Receiving Area: Five soil samples were collected from the bottom of the excavation within AOPC 1 at estimated depths ranging from 1 to 1.5 feet bgs and analyzed for gasoline, diesel, oil, VOCs, PAHs, PCBs, and RCRA 8 metals. One of the samples was analyzed for hexavalent chromium in addition to total chromium and exhibited hexavalent chromium at 19.2 milligrams per kilogram (mg/kg), slightly above the Method A CUL of 19.0 mg/kg. The remaining analytes were below the Method A CULs.

- **AOPC 5** – Southwest Compressor: Four soil samples were collected from the bottom of the excavation within this area at estimated depths ranging from 2 to 3 feet bgs and were analyzed for diesel, oil, VOCs, and PCBs. Tetrachloroethylene (PCE) was detected above the Method A CUL in one sample at 0.091 parts per million (ppm) and oil was also detected in one sample at 5,460 mg/kg and above the Method A CUL. The remaining analytes were below the Method A CULs (Tables 1 and 5).

- **AOPC 7** – South Compressor: Two soil samples were collected from the bottom of the excavation within this area at an estimated depth of 1.5 feet bgs and analyzed for diesel, oil, and PCBs. All analytes were below the Method A CULs.

- **AOPC 14** – North Compressor: The soil sample collected in this area was analyzed for diesel, oil, and PCBs and did not exhibit any analytes above the Method A CULs.

Based on a review of the available documentation, approximately 317.58 tons of soil were disposed at the Wasco County Landfill in The Dalles, Oregon.

2021 RI/FS and Excavation/Cleanup Activities

Upon MSBA further review of the previous AEG excavation report,[7] MSBA determined that three confirmation soil samples, AOPC1-2, AOPC5-3, and AOPC5-4, exhibited results exceeding the Method A CULs. As a result and following the interim action completed in 2018, residual COCs were further determined to be present in soil at AOPCs 1, 5, 8, 9, 13, and 14. Based on the evaluation of remedial options and disproportionate cost analysis presented in the MSBA Remedial Investigation/Feasibility Study (RI/FS) report, dated March 3, 2021, MSBA determined that Remedial Option 1, Targeted Soil Removal and Capping, was the most appropriate option for this Site.

As summarized below, the RI/FS activities included geophysical surveying, underground utility mapping, exploratory test pits, UST decommissioning and sampling, and targeted soil removal and confirmation sampling.

Geophysical Surveying. Subsurface geophysical surveying was conducted during April 2021 and consisted of GPR and electromagnetics (EM) technologies. The primary objectives of the survey were to:

- Evaluate proposed RI/FS removal areas for underground utilities.
- Verify previous 2018 excavation cleanup dimensions and depths.
- Evaluate possible former UST locations.
- Evaluate the layout of the stormwater conveyance system and verify the location of dry wells.
- Locate monitoring well MW-1 in AOPC 1.

Results of the survey identified the following:

- An approximately 1,800-gallon UST that was connected to a floor drain in the transformer room and was intended for use as emergency overflow storage of transformer oil.

[7] Summary of Selected Confirmational Soil Sampling; AEG; December 5, 2018.

- Dry wells associated with the stormwater conveyance system.
- Potential deep subsurface soil anomalies at AOPC 1 and AOPC 5. Monitoring well MW-1 could not be located based on the survey and MSBA anticipated that the well may have been inadvertently removed during the previous 2018 excavation cleanup activities although no record of the abandonment exists.

Exploratory Test Pits/UST Decommissioning. GPR survey results indicated that deep soil anomalies likely consisting of historical excavations were present at AOPC 1 and AOPC 5. Through additional excavation, it was determined that native undisturbed soil existed at depth and no staining, debris, or indication that a former UST had been present or historic releases had occurred. Conversely, the transformer oil overflow UST in AOPC 1 was confirmed via excavation and exhibited an approximate capacity of 1,800 gallons. No holes were observed in the tank and the UST was decommissioned in place due to structural building concerns under Ecology and municipality approval and was filled with concrete.

Per Ecology UST closure requirements, closing an UST in-place or removal must be accompanied by a site assessment and a permanent closure notice. Subsequently, three test pits were excavated along the west side of the tank to collect decommissioning soil samples to depths of 9 feet bgs and no indications of a release were noted. The soil sample analytical results did not indicate the presence of either diesel or oil at or above the laboratory method reporting limits.

Targeted Soil Removal/Confirmation Soil Sampling. In April 2021, soil removal activities were conducted at AOPCs 1, 5, 8, 9, 13, and 14 as well as evaluation of previous excavation and sampling at AOPC 7. The cleanup objective was to remove soil containing concentrations of the identified COCs to levels below the target Method A CULs, the majority of which consisted of soil within 1 to 3 feet from the surface. Deeper removal activities were necessary in AOPC 5 to a maximum depth of 6 feet bgs. Removal activities were guided by observations and field screening until confirmatory analyses verified that the target Method A CULs had been met. The following occurred within each area:

- **AOPC 1** – Metal Receiving Area: One hundred ten tons of soil was removed to depths ranging from 1 to 2.5 feet bgs and 30 confirmation soil samples were collected from the area. The samples were primarily collected at depths ranging from surface grade and 2.5 feet as well as 9 feet bgs (UST and melting pot area).
- **AOPC 5** – Southwest Compressor: One hundred fifty-three tons of soil were removed to depths of 1-6 feet bgs and 32 confirmation soil samples were collected from this area.

- **AOPC 7** – South Compressor: Excavation cleanup activities were performed at AOPC 7 in 2018 and the previous excavation appears to have successfully removed all COCs from this area.

- **AOPC 8** – Maintenance Shop Building: Eleven tons of soil were excavated from this area to an approximate depth of 1 foot bgs and 5 soil confirmation samples were collected to depths of 1 foot bgs. While the soil confirmation sample results verified that all regulatory concentrations of COCs had been successfully removed from the cleanup area, oil-impacted soil was present at former hand auger sample location HA-1:1.0 beneath the covered concrete pad at the north end of the maintenance shop building, with oil being detected at a maximum concentration of 8,500 mg/kg. The residual oil at this location has an estimated area of 80 sq. ft. and a maximum depth of 4 feet bgs (Figure 8). MSBA concluded the concrete pad will be maintained to act as an engineering control to restrict access to this soil.

- **AOPC 9** – Welding Station Building: Former EPI soil sample locations were evaluated based on Method A CUL exceedances and it appears they were collected immediately beneath degraded and cracked concrete. Based on additional sampling in this area, it appears that elevated levels of arsenic are present above the CUL and beneath the concrete at the S67-0 location, but the remaining area is in compliance. MSBA concluded the concrete pad will be maintained to act as an engineering control to restrict access to this soil.

- **AOPC 13** – Foundry Waste Material: Five tons of soil were removed from this area and two soil confirmation samples were collected to a depth of 1-foot bgs.

- **AOPC 14** – North Compressor (Photo 20): Four tons of soil were removed from this area and two soil confirmation samples were collected to a depth of 1-foot bgs.

Monitoring Well MW-2 Construction/Groundwater Sampling. As a replacement for former monitoring well MW-1, monitoring well MW-2 was installed within the AOPC 5 soil removal area in June 2021 and screened to a depth of 48-63 feet bgs. Both a shallow soil boring and groundwater interface sample were collected from the boring for laboratory analysis of DRO, ORO, cPAH, and PCB, none of which were detected at concentrations exceeding the Method A CULs. Upon further sampling of the well in August 2021, none of the AOPC 5 analytes were detected nor present at concentrations at or above the Method A CULs.

Ecology Comments:

1. **Historical Aerial Evaluation.** Please present a historical aerial photo correlation with past facility layouts, operations, and RI sample boring locations. Such correlation is key to assess other Site areas as potential sources beyond that which is currently represented. Based on Ecology's review of several of the aerial photos provided in the reports to date, the following observations were evident:

    - **1935:** Maintenance Building present. Long large rectangular building present adjacent to western Site-boundary occupying southern perimeter—may have extended on-Site. Circular line of what appears to be large ASTs or silos aligned north-south at west end of what is now foundry building. Structure at northeast corner.

    - **1948:** Another north-south oriented building just west of AOPC 8 (Maintenance Shop Building) occupying area of Site that is now vacant between AOPC 5 (Southwest Compressor) and AOPC 8—no investigation there to date.

      Also, another north-south oriented building east of and the length of 80 feet along uninvestigated swath of land adjacent to Lincoln Ave. Many other structures in northern half of Site that is now mostly devoid of structures and relatively uninvestigated. AOPC 3 – Foundry building extended to western Site-boundary in area that is now vacant and uninvestigated. Also structures are off-Site along western boundary beyond foundry building that may be associated with foundry—should verify as Site would need to be extended in that direction if so.

    - **1951:** Foundry building appears to extend on to neighboring property along the western Site-boundary. Same structures in northern half of Site that is now vacant and relatively uninvestigated.

    - **1955:** Basically, same configuration of buildings; although, sister building appears adjacent to foundry building and extends off-Site to the west.

    - **1960/63:** Same configuration but more buildings appear in northern half of property that are currently uninvestigated.

    These observations appear to indicate that large areas of the site between the AOCs remain both laterally and vertically uninvestigated when historical aerial photographs indicate prior activities. Additional soil and groundwater sampling should be conducted in these areas to assess the presence/absence of contamination due to past practices and/or unknown activities.

2. **Insufficient RI Borings/AOPC.** Existing deeper soil boring and interval sampling via HSA (excluding hand auguring) at the Site was not performed to a level that would be considered as adequately defining the nature and extent of contamination both in the existing source areas and in the intervening uninvestigated areas. The following soil borings by SB boring number and depth, per AOC, were completed:

    - **AOPC 1** – Metal Receiving Area: SB-9/10 (52'/48'); SB-15 (5')
    - **AOPC 3** – Foundry Buildings: SB-12/13/14 (5')
    - **AOCP 4** – Stormwater Drain Main Yard: SB-5 (56')
    - **AOCP 5** – Southwest Compressor: SB-2/3 (45'/50'); SB-18 (5')
    - **AOC-6** – Southwest Drywell: SB-1 (40')
    - **AOC-7** – South Compressor: SB-4 (55'); SB-19 (5')
    - **AOC-8** – Maintenance Shop Building: SB-17 (5')
    - **AOC-9** – Welding Station Building: SB-16 (5')
    - **AOC-10** – Stormwater Retention Structure: SB-7 (48')
    - **AOC-13** – Foundry Waste: SB-6 (56'); SB-11 (5')
    - **AOC-14** – North Compressor: SB-8 (22')

    AOCs 2 (Electric Arc Furnace), 11 (Oil-Sand Storage and Baghouse), 12 (Northwest Petroleum Storage), and 15 (Clark County Transformer) were investigated via only shallow hand augering and/or surface/near surface sampling.

    Ecology suggests additional soil boring with interval soil sampling via either direct-push or HSA to better characterize both the lateral and vertical extent of COC impact. Such characterization should be conducted in the vadose zone to groundwater and within both the AOCs and the uninvestigated areas based on correlation with said AOC or other operations as discussed above in the historical aerial photo assessment. Such characterization should be detailed along the southern Site border to assess any potential comingling of contaminants between North Casteel and the adjoining Emerald Petroleum property.

In addition, despite the removal actions completed to date, additional removal and/or other remedial activities may need to occur based on deeper soil boring and groundwater data obtained during subsequent investigation.

3. **Metals.** RCRA 8 metals are not typically representative of either remedial investigation or foundry operations. Ecology recommends analyzing soil for each AOPC for Priority Pollutant 13 metals including antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc—with copper, nickel, and zinc representing additional exposure sources for both human and ecological species. In addition, aluminum, tin, titanium, platinum, iron, cobalt, and manganese should also be analyzed as accessory metals.

4. **Groundwater Assessment.** The former and existing monitoring well network is not sufficient to assess seasonal groundwater chemical and hydraulic conditions across the Site. Further, RI HSA groundwater grabs are typically turbid and may not be representative of intrinsic groundwater conditions across a full seasonal cycle. Please obtain groundwater samples from permanent, developed, and surveyed monitoring wells across the Site. For metals, please collect samples using low flow groundwater sampling methodology and analyze samples for both total and dissolved metals as well as turbidity.

   Please also obtain groundwater elevation data from the well network such that both groundwater gradient and flow direction can be quantitatively calculated and determined over a complete annual seasonal cycle. The monitoring well network should extend across the Site-proper in assumed upgradient, crossgradient, and downgradient directions to better characterize all existing AOCs and intervening areas as well as provide for evaluation of soil contamination and source areas that are inaccessible due to existing building footprints, beyond the finite soil data sets that currently exist. Such groundwater characterization should be detailed along the southern Site border to assess any potential comingling of contaminants between North Casteel and the adjoining Emerald Petroleum property. Groundwater samples should be analyzed for the full suite of site COCs including TPH as GRO/DRO/ORO, Priority Pollutant metals, VOCs, and SVOCs including PAHs, and PCBs.

5. EPI and MSBA determined that site COC were limited to a depth of 5-6 feet bgs sub-slab or less based on the surficial nature of the past operational releases. This assumption discounts the potential for vertical mobilization through the soil column from chronic and long-term historical use and surface recharge from rain and snowmelt in open soil at the Site. In addition, chlorinated VOCs (cVOCs) can often be used as metal degreasers in foundries and have been detected in Site soil.

In sufficient quantities, VOCs can form dense nonaqueous phase liquids within environmental media. Further Site-wide evaluation of cVOCs in soil, and especially groundwater, is necessary. To that end, the groundwater investigation should be expanded via collection of samples from wells that are screened through the first saturated cohesive (or most cohesive) horizon.

6. **Conceptual Site Model (CSM).** The CSM should be updated based on collection of additional deeper soil and groundwater data. Although sub-slab areas may have formerly harbored Site COC to a depth of 6 feet bgs, Ecology does not concur that Site COCs are generally limited to 6 feet bgs based on past operations. The CSM should also include an evaluation of off-Site receptors potentially exposed via historical emission of hazardous air pollutants (HAP) that are typical of foundry operations.

   Ecology recommends that the CSM also be depicted schematically and include primary and secondary sources, migration pathways, exposure pathways, and receptors of concern. Receptors should also include trespassers. Potential exposure pathways for both human and ecological receptors should include dermal contact, inhalation, and ingestion. Vapor intrusion is not considered an exposure pathway but represents a migration pathway for conveyance of Site COCs to the available receptors. Ecological risk is neither a migration nor an exposure pathway and should not be listed as such.

7. **Vapor Investigation (VI).** VI assessment should be expanded beyond sub-slab surveys and should be updated once additional soil and groundwater data are collected.

8. **Off-Site Emissions Assessment.** Foundries have historically constituted sources of HAP emissions including both metals and organic compounds. To assess the potential for historical HAP emissions to have impacted off-Site properties, please conduct an off-property evaluation of relevant COC to assess whether such emission impacts have occurred**.**

Establishing Cleanup Standards.

Until the lateral and vertical extent of soil and groundwater contamination are assessed, Ecology has determined the cleanup levels and points of compliance you established for the Site do not meet the substantive requirements of MTCA. Please re-evaluate the cleanup standards when the nature and extent of contamination is fully characterized.

Cleanup Standards: Under MTCA, cleanup standards consist of three primary components; points of compliance,[8] cleanup levels,[9] and applicable state and federal laws.[10] Ecology will need you to propose specific:

- Applicable local, state, and federal laws.
- Points of compliance.
- Cleanup screening levels used for all hazardous substances detected at all points of compliance.
- Appropriate cleanup levels for all hazardous substances that exceeded cleanup screening levels.

Ecology suggests providing tables detailing the specific proposed cleanup standards.

Points of Compliance. Points of compliance, that you need to propose, are the specific locations at the Site where cleanup levels must be attained. For clarity, Ecology provides the following table of standard points of compliance:

Media	Points of Compliance
Soil-Direct Contact	Based on human exposure via direct contact, the standard point of compliance is throughout the Site from ground surface to fifteen feet below the ground surface. *WAC 173-340-740 (6)(d)*
Soil- Protection of Groundwater	Based on the protection of groundwater, the standard point of compliance is throughout the Site. *WAC 173-340-747*
Soil-Protection of Plants, Animals, and Soil Biota	Based on ecological protection, the standard point of compliance is throughout the Site from ground surface to fifteen feet below the ground surface. *WAC 173-340-7490(4)(b)*
Groundwater	Based on the protection of groundwater quality, the standard point of compliance is throughout the site from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the Site. *WAC 173-340-720(8)(b)*
Groundwater-Surface Water Protection	Based on the protection of surface water, the standard point of compliance is all locations where hazardous substances are released to surface water. *WAC 173-340-730(6)*
Air Quality	Based on the protection of air quality, the point of compliance is indoor and ambient air throughout the Site. *WAC 173-340-750(6)*
Sediment	Based on the protection of sediment quality, compliance with the requirements of 173-204 WAC. *WAC 173-340-760*

[8] WAC 173-340-200 "Point of Compliance."
[9] WAC 173-340-200 "Cleanup level."
[10] WAC 173-340-200 "Applicable state and federal laws," WAC 173-340-700(3)(c).

Cleanup Levels. Cleanup levels are the concentrations of a hazardous substance in soil, water, air, or sediment that are determined to be protective of human health and the environment. At this Site, MTCA Method A and MTCA Method B (for cPAH) unrestricted cleanup levels have been proposed although additional data may indicate other CULs could be applicable.

Applicable Laws and Regulations. In addition to establishing minimum requirements for cleanup standards, applicable local, state, and federal laws may also impose certain technical and procedural requirements for performing cleanup actions. These requirements are described in WAC 173-340-710. An online tool[11] is currently available to help you evaluate the local requirements that may be necessary.

All cleanup actions conducted under MTCA shall comply with applicable state and federal laws.[12] The person conducting a cleanup action shall identify all applicable local, state, and federal laws. The department shall make the final interpretation on whether these requirements have been correctly identified and are legally applicable or relevant and appropriate.[13]

There are three general groups of applicable local, state, and federal laws that need to be included:

- **Chemical-Specific:** Examples of chemical-specific laws include promulgated concentrations from another rule that result in adjusting proposed cleanup levels. Method A is inclusive of these laws. For Methods B or C, additional evaluation of chemical-specific applicable state and federal laws is required.

- **Action-Specific:** Examples of action-specific laws include requirements for obtaining local permits to excavate and/or dispose of contaminated soil, stormwater construction permits, or the requirement to notify local law enforcement in case human remains are discovered during excavation. All MTCA cleanups require evaluation of action-specific applicable state and federal laws.

- **Location-Specific:** Examples of location-specific laws include specific requirements for working near wetlands or archeologically important areas. All MTCA cleanups require evaluation of location-specific applicable state and federal laws.

[11] https://apps.oria.wa.gov/opas/index.asp
[12] WAC 173-340-710(1)
[13] WAC 173-340-710(2) Note – MTCA Method A includes ARARs and concentration-based tables (WAC 173-340-700(5)(a)) If MTCA Method A remains in use as proposed Site cleanup levels, identify non-concentration based technical and procedural requirements. If Method B or C cleanup levels are proposed, also include concentration-based requirements.

After you have identified appropriate applicable local, state, and federal laws, report to Ecology the applicable local, state, and federal laws applicable to this cleanup, and how those laws and regulations specifically effect the proposed cleanup.

Selection of Cleanup Action.

Ecology supports the interim remedial actions conducted at the Site to date. However, additional investigation is required to determine the lateral and vertical extents of contamination and selection of a comprehensive cleanup action.

Limitations of the Opinion

Opinion Does Not Settle Liability with the State.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70A.305.040(4).

Opinion Does Not Constitute a Determination of Substantial Equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. See RCW 70A.305.080 and WAC 173-340-545.

State is Immune from Liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion.
See RCW 70A.305.170(6).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our Voluntary Cleanup Program web page.[14] If you have any questions about this opinion, please contact me 360-489-5347 or joseph.hunt@ecy.wa.gov.

Sincerely,

Joseph B. Hunt, LHG
VCP Project Manager
Toxics Cleanup Program
Southwest Region Office

JBH/tam

cc by email: Josh Owen, MSBA, jowen@msbaenvironmental.com
Jerome Lambiotte, Ecology, jerome.lambiotte@ecy.wa.gov
Ecology Site File

[14] https://www.ecy.wa.gov/vcp