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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
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April 25, 2023

Stanley Sasser
Port of Tacoma
PO Box 1837
Tacoma, WA 98401
ssasser@portoftacoma.com

Re: No Further Action at the following contaminated Site:

- **Site Name:** Port of Tacoma Parcel 14
- **Site Address:** 1131 Alexander Ave, Tacoma, Pierce County, WA 98421
- **Facility/Site ID:** 6836
- **Cleanup Site ID:** 12725
- **VCP Project ID:** SW1780

Dear Stanley Sasser:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Port of Tacoma Parcel 14 facility (Site). Your request, including acceptance of electronic Site data, is complete. 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]

Issue Presented and Opinion

Upon completion of your proposed cleanup, Ecology has determined that no 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

[1] https://apps.ecology.wa.gov/publications/SummaryPages/9406.html
[2] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305

Administrative Code (WAC) chapter 173-340[3] (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. A Site description, as currently known to Ecology, is provided in **Enclosure A**. The Site is defined by the nature and extent of contamination associated with the following releases:

- Arsenic into soil.

The Property is comprised of Pierce County tax parcels 0320013157 and 0320013158. The Property has been re-developed into a constructed wetland as part of the Lower Wapato Creek Habitat Project. A wetland is the projected land use for the foreseeable future. The Property is zoned as industrial.

Please note the Property is also located within the projected boundaries of the Tacoma Smelter Plume facility (facility Site identification number [FSID] #62855481). At this time, we have no information that those parcels are actually affected. This opinion does not apply to any contamination associated with the Tacoma Smelter Plume facility.

Basis for the Opinion

This opinion is based on the information contained in the documents listed in Enclosure B.

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. Information on obtaining those records can be found on Ecology's public records requests web page.[4] Some site documents may be available on Ecology's Cleanup Site Search web page.[5]

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that, upon completion of the proposed cleanup, no further remedial action is necessary to clean up contamination at the Site. Anchor QEA's Cleanup Action Report, dated June 2022 is herein referred to as "the Report."

[3] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340
[4] https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests
[5] https://apps.ecology.wa.gov/gsp/CleanupSiteDocuments.aspx?csid=15256

1. Characterization of the Site.

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards and select a cleanup action.

NFA-II Recission

On August 17, 2021, Ecology issued a letter rescinding a no further action determination based on an initial investigation completed by Tacoma Pierce County Health District (TPCHD). The initial investigation was completed April 22, 2015. The original no further action determination was related to removal of arsenic and slag in soil at the Site. Additional site investigation was completed in 2021 in preparation for re-developing the Property as a constructed wetland. Additional sampling identified arsenic in soil, arsenic in duff, and slag requiring additional cleanup action.

Additional Site Investigation and Cleanup

The 2015 initial investigation focused on evaluating arsenic in soil as well as slag. The Report summarizes both the 2014 removal action and the 2021 removal action.[6] After recission of the NFA letter, additional evaluation of cleanup of arsenic in soil and slag was completed. Table 2 in the Report summarizes those locations which were removed in April 2021 and disposed of under approved waste profile 2553/2553A at Pierce County's Land Resources, Inc. (LRI) Landfill. Screening sample locations, excavation areas, excavation extent and associated sampling are provided in the figures included in **Enclosure A**. The interim action appears to have been completed consistent with WAC 173-340-430.

Arsenic leaching test results[7] were completed in May 2021 at samples S-41 and S-66. Both locations had concentrations of arsenic in soil exceeding the MTCA Method A cleanup level of 20 mg/kg. Both samples were analyzed by toxicity characteristic leaching procedure (TCLP) and synthetic precipitation leaching procedure (SPLP). Arsenic was not detected in the leachate from either procedure. The conclusion based on these results was that arsenic in soil was not a risk to leach to groundwater (or by extension, surface water once the new constructed wetland was completed).

Site Hazardous Substances

The 2015 initial investigation focused on arsenic in soil as well as slag. Analytical data show that the 2021 soil sampling at the Property included an expanded sampling list: polycyclic aromatic hydrocarbons (PAHs), diesel, heavy oil, total arsenic, total barium, total cadmium, total chromium, total lead, total selenium, total silver, and total mercury (RCRA 8 metals).

[6] Sections 2.1 and 2.2.
[7] Table 3 of the Report. Included in Enclosure A.

After reviewing these data, Ecology concluded that diesel was generally not detected in any soil sample, heavy oil was detected in some samples but did not exceed the MTCA Method A cleanup level. Total metals (excluding arsenic), when detected, were also less than MTCA cleanup levels. Based on available data, Ecology concurs that arsenic in soil was the contaminant to carry forward for additional evaluation and cleanup.

Ecology also notes that surface water sampled eight times from Wapato Creek at GSI USB-1 in 2016 and 2017 shows that concentrations of arsenic are less than surface water criteria[8], the MTCA Method A cleanup level for arsenic in groundwater of 5 µg/L, and the Puget Sound Basin background value for arsenic in groundwater of 8 µg/L.[9] This location of surface water sampling location was at the overpass at the southern end of Parcel 14, where Wapato Creek was previously channelized. The surface water sampling is part of the Portac Inc Tacoma cleanup site (FSID: 1215; CSID: 3642), as part of the remedial investigation/feasibility study portion of that cleanup. These results support the hypothesis that surface water was not impacted by the Site, and also support moving forward with arsenic in soil as the Site hazardous substance and media requiring cleanup.

Vapor Pathway

Per the SWPPP Addendum, arsenic was managed during construction for inhalation pathway (fugitive dust) and preventing stormwater runoff. Arsenic does not pose a vapor intrusion risk directly from soil without disturbance, and concentrations remaining in soil are less than the MTCA Method A cleanup level. Screened out contaminants which might be a vapor concern (heavy oil, mercury) were also at concentrations less than the MTCA Method A cleanup level and do not pose a vapor risk. No building will be constructed over the Site, as the land use for the foreseeable future is as a constructed wetland. Current data indicate that the vapor pathway is incomplete.

Surface Water and Sediment

The Site is a bit of an unusual situation in that a constructed wetland now is adjacent to selected excavated areas. Before the wetland was constructed, Wapato Creek ran in a channel along the southern property boundary, then turned north through the parcel adjacent to the Property, eventually flowing into Commencement Bay (Puget Sound). The former Wapato Creek channel was not adjacent to the contaminated area. After wetland construction, Wapato Creek meanders through the Property, but then turns north on the adjacent parcel to the west to flow into Puget Sound.

[8] WAC 173-201A-240, Table 240, protective of human health for water and organisms and consumption of organisms only.

[9] Ecology Publication 14-09-044, Natural Background Groundwater Arsenic Concentrations in Washington State: Study Results, revised January 2022.

Prior to wetland construction, Site media was correctly evaluated as soil. After wetland construction, some Site media could be defined as sediment, where that definition is met under WAC 173-204-200(24). Generally, potential areas of sediment are where surface water inundates the Property for at least six weeks a year. Practically, this is where the surface water is seen, such as in photos provided in the Report.

Ecology provides the following Site-specific sediment evaluation. Now that Wapato Creek can meander over the Property, Ecology evaluated arsenic in soil concentrations most likely to be impacted by the change in course for Wapato Creek, as if it were sediment. A part of the Site is potentially inundated nearly year-round by the new constructed channel for Wapato Creek. To determine if a sediment station cluster of potential concern is present, Ecology evaluated the average concentration of arsenic at three sampling locations as a single station cluster to determine if they exceed sediment cleanup screening levels.[10] The purpose of the evaluation was to ensure that contaminant concentrations in soil did not exceed concentrations of those same contaminants in sediment, as cleanup levels in soil and sediment are different.

Concentrations of potential Site contaminants and arsenic in soil are less than sediment cleanup objective (SCO) values for freshwater sediment. For instance, the SCO for arsenic, protective of benthic communities, in freshwater sediment is 14 mg/kg. The benthic protection SCO value is greater than the arsenic background value (90/90 upper tolerance level [UTL]) and the value protective of human health and higher trophic level species, and the highest value is allowed to be used under the sediment management standards. Historical water parameters indicated that conductivity and salinity were indicative of fresh water.[11] Ecology is not going into a detailed discussion of setting sediment cleanup levels in this letter, except to note that SCO values are more conservative (risk at 1x10-6 vs 1x10-5) than SCLs for sediment. Therefore, as discussed below, as the Site meets SCOs for arsenic, it is protective of human health and the environment, and the sediment pathway is incomplete.

To ensure the cleanup was protective of the freshwater sediment, Ecology evaluated three excavation extent soil sampling locations for arsenic in soil which was most likely to be within the Wapato Creek Channel, representing by proxy three sediment stations. These three sediment stations selected (excavation confirmatory soil sampling locations S-82, S-104, and S-87) representing a single sediment station cluster, are also representative of remaining concentrations of arsenic at the Site. The average arsenic concentration at these three locations is 5.84 mg/kg, which is less than the arsenic SCO. Ecology also analyzed three locations within the general Wapato Creek meander area that were outside the

[10] WAC 173-204-510(2)
[11] P. 12 in GeoEngineers Site Investigation report, December 6, 2010.

excavations (sampling locations S-55, S-62, and S-63). The average arsenic concentration at these three stations is 3.54 mg/kg, again less than the arsenic in sediment SCO. As these concentrations for arsenic at the identified station clusters are below the SCO, the results meet the long-term goal for sediment quality in Washington State and are not considered to be of concern.[12]

Therefore, residual arsenic concentrations at the Site indicate that it is more likely than not that there is no sediment site of potential concern and that the sediment pathway is incomplete. Based on this screening result, Ecology further evaluated arsenic at the Site as arsenic in soil.

Vapor Intrusion/Air Pathway Comments

Ecology's comments on soil vapor and indoor air are based on the Property continuing to be used for industrial purposes. Arsenic in soil is not considered volatile. Fugitive dust was managed during cleanup. No further evaluation of the vapor/air pathway is needed.

Terrestrial Ecological Evaluation (TEE)

The TEE form submitted by Anchor indicates that the Site can be excluded from further TEE because concentrations of hazardous substances in soil do not exceed natural background levels as described in WAC 173-340-200 and WAC 173-340-709 (Step 3, option 2). Ecology concurs and no further TEE is needed for the Site.

Environmental Information Management (EIM) System

Site data collected since August 1, 2005, have been uploaded per Ecology Toxics Cleanup Program Policy 840.[13] Site data were reviewed by the VCP site manager and have been approved.

[12] Page 2-2, Ecology Publication No. 12-09-057, Sediment Cleanup User's Manual (SCUM), revised December 2021.
[13] https://apps.ecology.wa.gov/publications/documents/1609050.pdf

2. Establishment of Cleanup Standards.

Cleanup Standards: Under MTCA, cleanup standards consist of three primary components; points of compliance,[14] cleanup levels,[15] and applicable state and federal laws.[16]

a. Points of Compliance. Points of compliance are the specific locations at the Site where cleanup levels must be attained. The below appear to be the standard points of compliance applicable to the Site.

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)* *Pathway protected - based on sampling results and statistical evaluation.*
Soil- Protection of Groundwater	Based on the protection of groundwater, the standard point of compliance is throughout the Site. *WAC 173-340-747* *Pathway incomplete - concur with leaching demonstration.*

b. 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. The proposed MTCA Method A cleanup for arsenic in soil applies and is established for the Site, as presented in the table below.

Hazardous Substance[17]	**Soil Cleanup Level** (mg/kg)
Arsenic	20

Residual arsenic concentrations in soil are in compliance with the cleanup level at a standard point of compliance.

c. Applicable state and federal laws. Ecology evaluated applicable state and federal laws for the Site. No adjustments to the cleanup level or points of compliance were needed.

[14] WAC 173-340-200 "Point of Compliance."
[15] WAC 173-340-200 "Cleanup level."
[16] WAC 173-340-200 "Applicable state and federal laws," WAC 173-340-700(3)(c)
[17] Based on exceedance of cleanup level identified at the Site, per data collected to date.

3. Selection of Cleanup Action.

Excavation with off-Site disposal at Pierce County's LRI landfill was selected as an interim action to remove arsenic contamination at the Site.

4. Cleanup.

The following interim actions have been completed at the Site:

- A total of 14,149 tons of arsenic contaminated soil, slag, and duff material were removed by excavation. Disposal was completed under waste authorization 2553/2553A at Pierce County's LRI Landfill in Puyallup, Washington.

- This 2021 excavation and soil removal was in addition to 943 tons of arsenic contaminated soils and slag which had been removed from the Site in 2014. That removal led to the April 2015 no further action determination at the initial investigation phase. Those contaminated soils were also disposed of at LRI Landfill.

Arsenic in Soil Statistical Calculation

The Report presents a statistical calculation[18] for determining compliance with the MTCA Method A cleanup level for remaining arsenic in soil concentrations. A total of 71 soil samples and their respective arsenic concentrations were analyzed, at an average 4.8 mg/kg arsenic in soil concentration and a 95 UCL concentration of 5.6 mg/kg, calculated using MTCA Stat 97. The concentration of arsenic in soil in areas free of slag averaged 5.4 mg/kg.[19] The Report concluded that this concentration showed that arsenic in soil at the Site complied with both the MTCA Method A cleanup level of 20 mg/kg and is less than the Puget Sound Basin background value for arsenic in soil.[20]

The Report concludes that the 95th UCL meets the requirements for the three-part statistical test under WAC 173-340-740(8): the 95th UCL is less than the cleanup level, fewer than 10% of the sample concentrations exceed the cleanup level, and no sample concentration exceeds two times the cleanup level. In fact, no arsenic in soil concentration exceeds the MTCA Method A cleanup level at any remaining soil sampling location. Ecology concurs with the analysis performed and that arsenic in soil at the Site is in compliance with the MTCA Method A cleanup level. The cleanup level is met at a standard point of compliance in Site soil.

[18] Table 2 in the Report.
[19] Table 4 in the Report.
[20] 7 mg/kg, which is the 90th percentile value from Table 1, page 1, Ecology Publication 94-115, Natural Background Soil Metals Concentrations in Washington State, October 1994.

Per WAC 173-340-360(2)(a), threshold requirements are met for this cleanup and closure is appropriate because:

- The cleanup is protective of human health and the environment, complies with cleanup standards, and complies with applicable state and federal laws.
- Contaminated soil on the Property has been removed to the extent practicable.
- Cleanup levels are met at a standard point of compliance.
- The cleanup method used is permanent to the maximum extent practicable, and provided for cleanup in a reasonable restoration timeframe.
- A groundwater cleanup was not warranted based on the leachate testing performed on arsenic in soil from the Site.
- The Site is not expected to be used as a school or residential property.
- Cleanup actions did not rely on dilution or dispersion.
- Remediation levels are not being used for this Site.
- No engineered or institutional controls are required as part of this cleanup.

Based on the data presented, the removal action appears to have remediated the arsenic contaminated soil at the Site. No further action for the arsenic in soil release appears to be necessary. There are no monitoring wells at the Site to decommission. The Site is not ranked, so no public notice and comment period is required with regards to this no further action determination in this opinion letter.

Limitations of the Opinion

1. **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).

2. **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.[21]

3. **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).

[21] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340-545

Termination of Agreement

Thank you for cleaning up the Site under the VCP. This opinion terminates the Agreement governing VCP Project No. SW1780.

Questions

If you have any questions about this opinion or the termination of the Agreement, please contact me by phone at 360-999-9589 or email at tim.mullin@ecy.wa.gov .

Sincerely,

Tim Mullin, LHG
Toxics Cleanup Program
Southwest Region Office

TCM/js

Enclosures (2): A – Site Description, Figures, and Tables
B – Document List

cc by email: Jason Cornetta, Anchor QEA; jcornetta@anchorqea.com
Jerome Lambiotte, Ecology; jerome.lambiotte@ecy.wa.gov
Fiscal, VCP Fiscal Analyst (w/o enclosure)
TCP, Operating Budget Analyst (w/o enclosure)
Ecology Site File

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Enclosure A

Site Description, Figures, and Tables

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Site Description

The Site is located at 1131 Alexander Avenue, Tacoma, Washington, on Pierce County parcel 0320013157. The Property, where the constructed wetland was developed, also includes parcel 0320013158. According to the Pierce County Assessor-Treasurer's website, parcel 0320013157 is 13.195 acres in size and parcel 0320013158 is 4.47 acres in size. Both parcels are owned by the Port of Tacoma.

Property History and Current Use: The Property has been vacant until recent development as a constructed wetland.

Property Vicinity: The Site is located in an area of mainly commercial and industrial facilities. A parking lot borders the Property on the east, and another vacant parcel (also incorporated into the constructed wetland) borders the Property on the west. State Route 509 borders the Property on the north and 12th Street E borders the Property on the south.

Soils and Geology: To the maximum depth explored of approximately 15 feet below ground surface (bgs), the Site is fill overlying deposits from the Puyallup River. Native soils generally consist of fine to medium sand and silty sand and silt. In their 2010 report, GeoEngineers noted a hydrogen sulfide odor during test pitting, which they interpreted as indicative of a reducing (historical wetland) environment. The Site is within the historical delta and estuary for the Puyallup River.

Groundwater: Based on groundwater monitoring wells from the nearest Sites, and the surface of nearby Wapato Creek, groundwater is anticipated to be shallow. To date, the constructed wetland is continually inundated with water. Site groundwater is reportedly affected by precipitation events and diurnal tidal fluctuations, up to 6.4 feet of change in a day.[22] Depth to groundwater at the Site fluctuates between about 8.7 feet to 15.01 feet bgs.

Surface/Storm Water/Septic Systems/Wetlands: There are no storm water or septic systems on the Site. The Property was re-developed into constructed freshwater wetlands. Wapato Creek previously flowed in a channel along the southern Property boundary, located about 300 feet south of the Site, before turning north on the adjacent parcel and flowing to Commencement Bay (Puget Sound). The channel for Wapato Creek has now been modified and is allowed to meander on the Property and adjacent to the Site as part of a constructed wetland.

[22] P. 13, GeoEngineers, Site Investigation, December 6, 2010.

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Figure 2
Duff Layer Characterization Data
Parcel 14 Cleanup Action Report
Port of Tacoma

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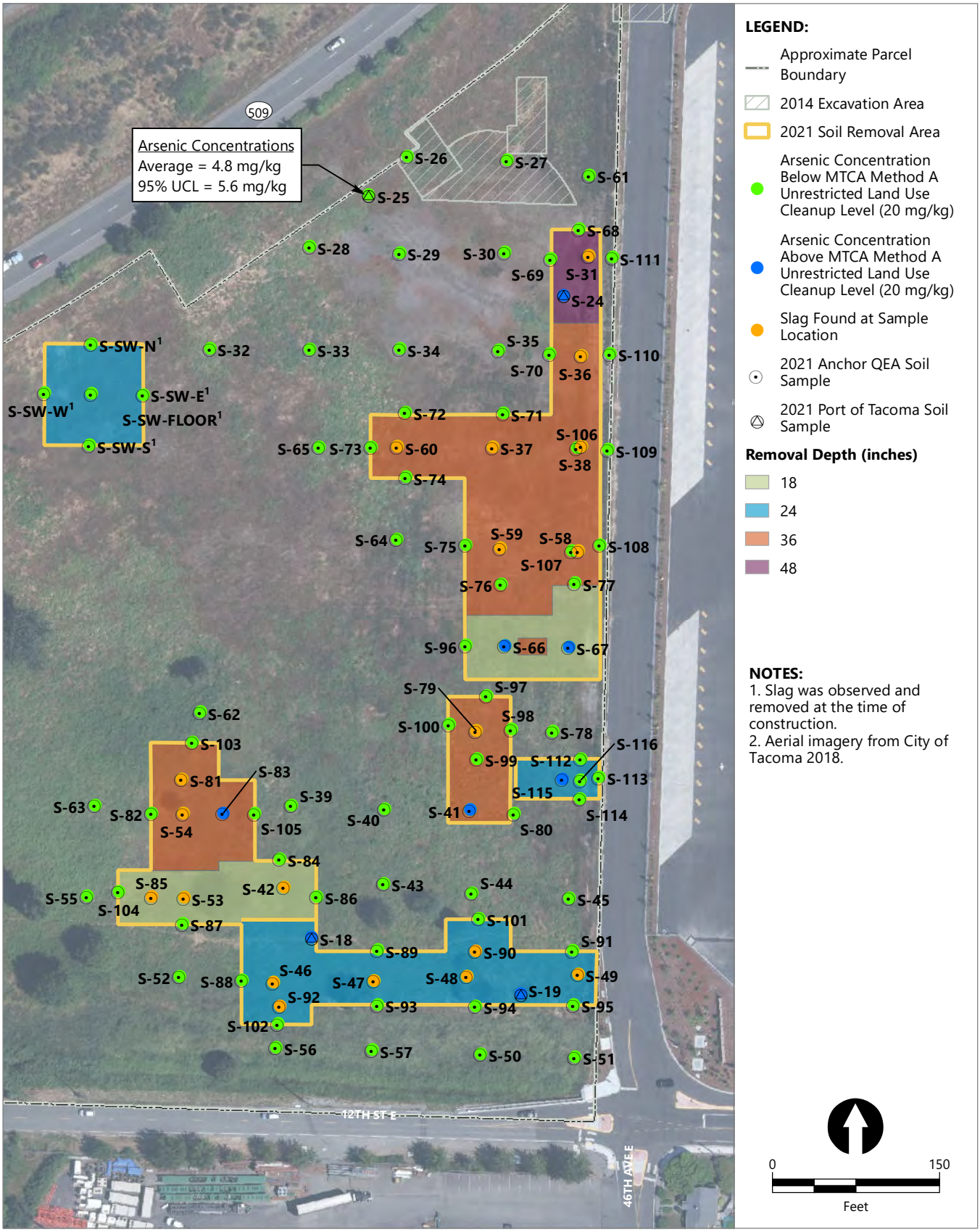

LEGEND:

- Approximate Parcel Boundary
- 2014 Excavation Area
- 2021 Soil Removal Area
- Arsenic Concentration Below MTCA Method A Unrestricted Land Use Cleanup Level (20 mg/kg)
- Arsenic Concentration Above MTCA Method A Unrestricted Land Use Cleanup Level (20 mg/kg)
- Slag Found at Sample Location
- 2021 Anchor QEA Soil Sample
- 2021 Port of Tacoma Soil Sample

Removal Depth (inches)

- 18
- 24
- 36
- 48

NOTES:
1. Slag was observed and removed at the time of construction.
2. Aerial imagery from City of Tacoma 2018.

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Feet

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ANCHOR QEA

Figure 3
Delineation of Contaminated Soil Removal Areas
Parcel 14 Cleanup Action Report
Port of Tacoma

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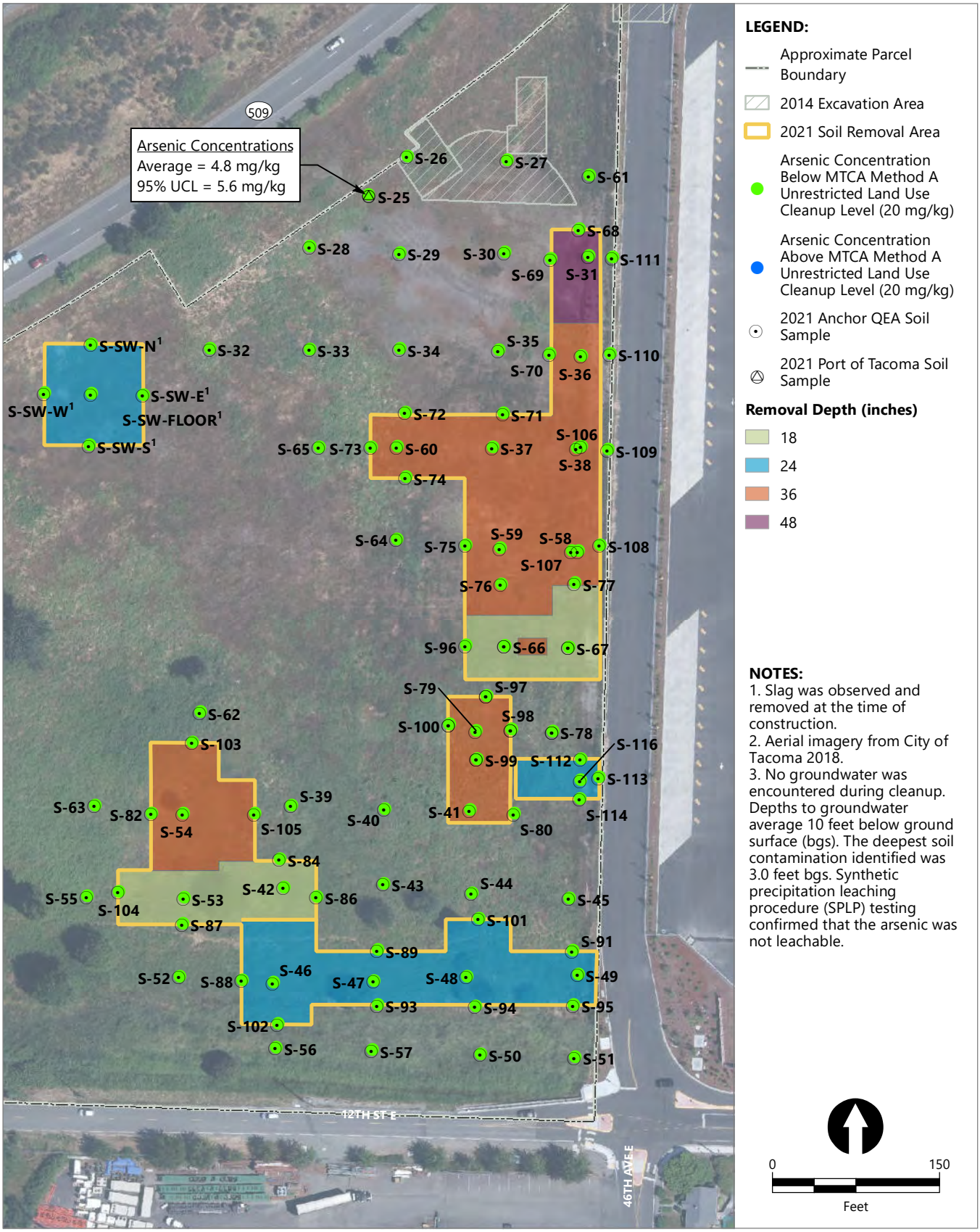

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Figure 4
Soil Arsenic Concentrations Remaining After Removal
Parcel 14 Cleanup Action Report
Port of Tacoma

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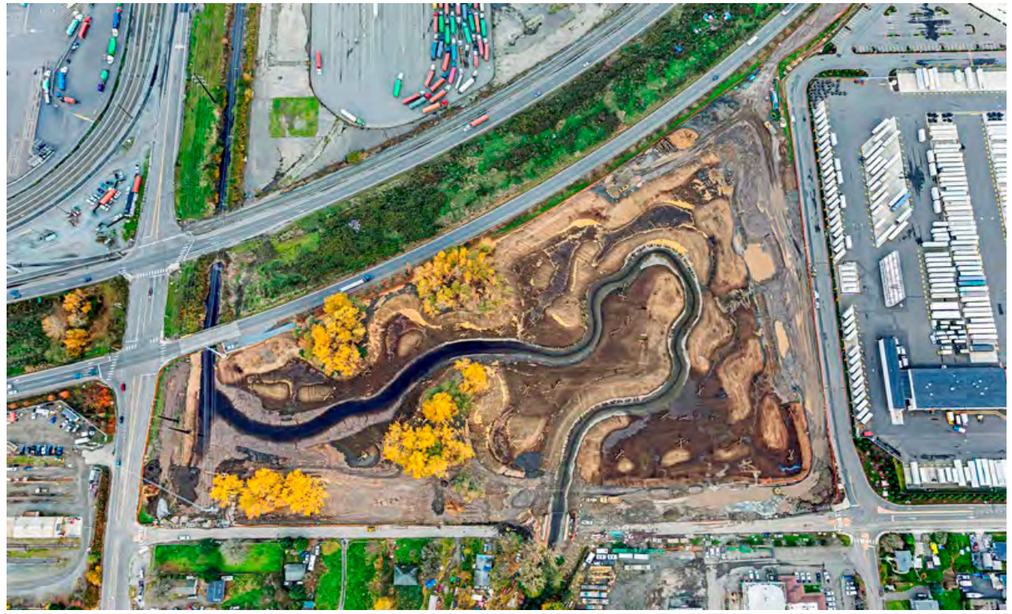

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Figure 5
Site Following Cleanup (Pre-Planting)
Parcel 14 Cleanup Action Report
Port of Tacoma

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Table 1
Summary of Duff Layer Analytical Results for Arsenic and Lead

Duff Removal Area Samples	Port Sample ID	Analytical Results for Total Arsenic (mg/kg)	Analytical Results for Total Lead (mg/kg)
(Removed and sent for Landfill Disposal August 2021)	S-18	34.2	12.2
	S-19	45.4	9.0
	S-24	52.4	18.2

Non-Impacted Area Samples	Port Sample ID	Analytical Results for Total Arsenic (mg/kg)	Analytical Results for Total Lead (mg/kg)
Duff Samples from Non-Impacted Areas [1]	S-1	3.0	6.3
	S-2	<2.5	2.6
	S-3	3.4	8.0
	S-4	4.6	9.6
	S-5	3.1	11.2
	S-6	<2.5	<2.5
	S-7	2.8	7.2
	S-8	2.8	3.4
	S-9	6.1	5.4
	S-10	3.2	<2.5
	S-11	<2.5	2.6
	S-12	<2.5	<2.5
	S-13	<2.5	<2.5
	S-14	7.6	2.9
	S-15	<2.5	<2.5
	S-16	18.6	7.4
	S-17	2.8	5.4
	S-20	18.4	5.4
	S-21	11.0	6.1
	S-22	6.5	<2.5
	S-23	3.5	<2.5
	S-25	28.4	8.9
	No. of Samples	**22**	**22**
	Mean	**6.1 mg/kg [2]**	**4.6 mg/kg [2]**
	95% UCL [1,3]	**9.9 mg/kg**	**5.8 mg/kg**

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Table 1
Summary of Duff Layer Analytical Results for Arsenic and Lead

Notes:

mg/kg: milligrams per kilogram

MTCA: Model Toxics Control Act

UCL: upper confidence limit

Refer to Figures 2A and 2B for sample locations.

All samples were collected April 2, 2021, from depths of 0 to 4 inches below ground surface (within the duff layer).

1. Under MTCA, compliance with the cleanup standard is met when the 95% UCL is less than the cleanup level, provided that no more than 10% of the individual samples exceed the cleanup level and no single sample exceeds the cleanup level by more than two times [WAC 173-340-740(7)(d) and (e)]. The MTCA Method A cleanup level for arsenic is 20 mg/kg.

2. Calculated value is less than Ecology's estimate of natural background soil concentrations for arsenic (7.3 mg/kg) or lead (24.0 mg/kg) in the Puget Sound Basin (Ecology Publication No. 94-115).

3. The 95% UCL was determined using MTCA Stat 97.

Table 2
Summary of Soil Analytical Results for Arsenic in Soil Removal Areas

Soil Removal Area Samples	Sample Station	Sample Date	Sample Depth (inches bgs)	Arsenic Concentration (mg/kg)
(Removed and sent for Landfill Disposal August 2021)*	S-18	04/02/21	5-10	10.8
		04/02/21	11-22	15.4
	S-19	04/02/21	5-10	21.5
		04/02/21	11-22	40.0
	S-24	04/02/21	5-10	23.8
		04/02/21	11-22	16.8
	S-41	05/14/21	5-10	29.0
	S-66	05/17/21	5-10	57
	S-67	05/17/21	5-10	38
	S-83	06/01/21	21	85

Soil Removal Area Boundary Samples	Sample Station	Sample Date	Sample Depth (inches bgs)	Arsenic Concentration (mg/kg)
Samples at Lateral Limits (Excavation Sidewalls) of Contaminated Area Excavations	S-68	06/01/21	27	3.1
	S-69	06/01/21	27	7.2
	S-70	06/01/21	21	6.8
	S-71	06/01/21	21	3.0
	S-72	06/01/21	21	1.6
	S-73	06/01/21	21	3.2
	S-74	06/01/21	21	1.8
	S-75	06/01/21	21	7.5
	S-80	06/01/21	5-10	15
		06/01/21	18-24	15
	S-82	06/01/21	21	11
	S-84	06/01/21	12	7.1
	S-86	06/01/21	12	12
	S-87	06/01/21	12	3.9
	S-88	06/01/21	15	4.6
	S-89	06/01/21	15	8.0
	S-91	06/01/21	15	1.4
	S-93	06/01/21	15	1.8
	S-94	06/01/21	15	1.8
	S-95	06/01/21	15	1.5
	S-96	06/01/21	18	2.3

Table 2
Summary of Soil Analytical Results for Arsenic in Soil Removal Areas

Soil Removal Area Samples	Sample Station	Sample Date	Sample Depth (inches bgs)	Arsenic Concentration (mg/kg)
Samples at Lateral Limits (Excavation Sidewalls) of Contaminated Area Excavations (cont.)	S-97	06/01/21	5-10	3.6
		06/01/21	18-24	10
	S-98	06/01/21	5-10	8.3
		06/01/21	18-24	4.6
	S-99	06/01/21	5-10	7.4
		06/01/21	18-24	14
	S-100	06/01/21	5-10	4.0
		06/01/21	18-24	2.5
	S-101	06/01/21	15	7.8
	S-102	06/01/21	15	3.2
	S-103	06/01/21	21	1.7
	S-104	06/01/21	12	2.6
	S-105	06/11/21	21	2.7
	S-108	8/17/2021	24	1.8
	S-109	8/17/2021	24	1.7
	S-110	8/17/2021	24	2.7
	S-111	8/17/2021	24	5.3
	S-112	8/18/2021	18	2.5
	S-113	8/18/2021	18	2.5
	S-114	8/18/2021	18	1.7
	SW-N	8/17/2021	24	2.2
	SW-W	8/17/2021	24	1.7
	SW-S	8/17/2021	24	3.9
	SW-E	8/17/2021	24	4.5
Samples at Vertical Limits (Excavation Bottom) of Contaminated Area Excavations	S-31	05/14/21	48-54	6.6
	S-36	05/14/21	36-42	3.4
	S-37	05/14/21	36-42	16
	S-38	05/14/21	28-34	5.2
	S-41	05/14/21	30-36	3.0
	S-42	05/14/21	18-24	2.0
	S-46	05/14/21	24-30	1.4
	S-47	05/14/21	26-32	3.6
	S-48	05/14/21	28-34	8.2
	S-49	05/14/21	24-30	1.8
	S-53	05/14/21	19-25	4.32

Table 2
Summary of Soil Analytical Results for Arsenic in Soil Removal Areas

Soil Removal Area Samples	Sample Station	Sample Date	Sample Depth (inches bgs)	Arsenic Concentration (mg/kg)
Samples at Vertical Limits (Excavation Bottom) of Contaminated Area Excavations (cont.)	S-54	05/17/21	41-47	17
	S-58	05/17/21	24-30	2.3
	S-59	05/17/21	41-47	6.3
	S-60	05/17/21	40-46	7.2
	S-66	05/17/21	30-36	2.0
		06/01/21	18-24	2.1
	S-67	05/17/21	30-36	4.9
		06/01/21	18-24	1.9
	S-76	06/01/21	21	2.8
	S-77	06/01/21	18	2.4
	S-79	06/01/21	36-40	3.1
	S-106	08/13/21	36	3.2
	S-107	08/13/21	36	1.8
	S-116	08/18/21	24	2.8
	Floor	08/17/21	24	2.3
Summary Statistics for Excavation Sidewall and Bottom Samples	**Summary Statistics**		**No. of Samples**	**71**
			Average	**4.8 mg/kg [2]**
			95% UCL [1,3]	**5.6 mg/kg**

Notes:

bgs: below ground surface

mg/kg: milligram per kilogram

MTCA: Model Toxics Control Act

UCL: Upper confidence limit

Refer to Figures 4A and 4B for sample locations.

Analytical Method: 6020B

* Samples represent soil that was removed and is not included in summary statistics. Other locations were removed based on visual observation of slag (see orange locations depicted on Figure 4A).

1. Under MTCA, compliance with the cleanup standard is met when the 95% UCL is less than the cleanup level, provided that no more than 10% of the individual samples exceed the cleanup level and no single sample exceeds the cleanup level by more than two times [WAC 173-340-740(7)(d) and (e)]. The MTCA Method A cleanup level for arsenic is 20 mg/kg.

2. Calculated value is less than Ecology's estimate of natural background soil concentrations for arsenic in the Puget Sound Basin, which is 7.3 mg/kg (Ecology Publication No. 94-115).

3. The 95% UCL was determined using MTCA Stat 97.

Table 3
Arsenic Leaching Test Results

Sample Station	Sample Date	Arsenic (mg/kg)	Sample Depth (inches bgs)	TCLP Arsenic Concentration (mg/L)	SPLP Arsenic Concentration (mg/L)
S-41 [1]	05/14/21	29	5-10	< 0.060	< 0.060
S-66 [1]	05/17/21	57	5-10	< 0.060	< 0.060

Notes:
1. The soils associated with these samples have been removed and disposed of at an off-site landfill.

bgs: below ground surface

mg/kg: milligrams per kilogam

mg/L: milligrams per liter

NA: not analyzed

SPLP: synthetic precipitation leaching procedure (simulates exposure to rain water)

TCLP: toxicity characteristic leaching procedure (simulates exposure to municipal landfill leachate)

Table 4
Summary of Soil Analytical Results for Arsenic in Areas Free of Slag

Sample Station	Sample Date	Sample Depth (inches bgs)	Arsenic Concentration (mg/kg)
S-25	04/02/21	5-10	5.8
	04/02/21	11-22	2.8
S-26	05/14/21	5-10	2.2
S-27	05/14/21	5-10	18
S-28	05/14/21	5-10	2.1
S-29	05/14/21	5-10	6.0
S-30	05/14/21	5-10	1.7
S-32	05/14/21	5-10	3.9
S-33	05/14/21	5-10	6.7
S-34	05/14/21	5-10	8.4
S-35	05/14/21	5-10	4.2
S-39	05/14/21	5-10	4.2
S-40	05/14/21	5-10	7.7
S-43	05/14/21	5-10	8.5
S-44	05/14/21	5-10	16
S-45	05/14/21	5-10	1.7
S-50	05/14/21	5-10	5.3
S-51	05/14/21	5-10	4.7
S-52	05/14/21	5-10	1.5
S-55	05/17/21	5-10	2.8
S-56	05/17/21	5-10	4.4
S-57	05/17/21	5-10	3.8
S-61	05/17/21	5-10	2.9
S-62	05/17/21	5-10	2.2
S-63	05/17/21	5-10	5.6
S-64	05/17/21	5-10	6.1
S-65	05/17/21	5-10	2.9
S-78	06/01/21	5-10	5.8
	06/01/21	18-24	8.6

Table 4
Summary of Soil Analytical Results for Arsenic in Areas Free of Slag

Sample Station	Sample Date	Sample Depth (inches bgs)	Arsenic Concentration (mg/kg)
Summary Statistics		No. of Samples	29
		Average	5.4 mg/kg [2]
		95% UCL [1,3]	6.9 mg/kg

Notes:
bgs: below ground surface

mg/kg: milligrams per kilogram

MTCA: Model Toxics Control Act

UCL: upper confidence limit

Refer to Figures 4A and 4B for sample locations.

1. Under MTCA, compliance with the cleanup standard is met when the 95% UCL is less than the cleanup level, provided that no more than 10% of the individual samples exceed the cleanup level and no single sample exceeds the cleanup level by more than two times [WAC 173-340-740(7)(d) and (e)]. The MTCA Method A cleanup level is 20 mg/kg for arsenic.

2. Calculated value is less than Ecology's estimate of natural background soil concentrations for arsenic in the Puget Sound Basin, which is 7.3 mg/kg (Ecology Publication No. 94-115).

3. The 95% UCL was determined using MTCA Stat 97.

Table 4
Summary of Soil Analytical Results for Arsenic in Areas Free of Slag

Sample Station	Sample Date	Sample Depth (inches bgs)	Arsenic Concentration (mg/kg)
S-25	04/02/21	5-10	5.8
	04/02/21	11-22	2.8
S-26	05/14/21	5-10	2.2
S-27	05/14/21	5-10	18
S-28	05/14/21	5-10	2.1
S-29	05/14/21	5-10	6.0
S-30	05/14/21	5-10	1.7
S-32	05/14/21	5-10	3.9
S-33	05/14/21	5-10	6.7
S-34	05/14/21	5-10	8.4
S-35	05/14/21	5-10	4.2
S-39	05/14/21	5-10	4.2
S-40	05/14/21	5-10	7.7
S-43	05/14/21	5-10	8.5
S-44	05/14/21	5-10	16
S-45	05/14/21	5-10	1.7
S-50	05/14/21	5-10	5.3
S-51	05/14/21	5-10	4.7
S-52	05/14/21	5-10	1.5
S-55	05/17/21	5-10	2.8
S-56	05/17/21	5-10	4.4
S-57	05/17/21	5-10	3.8
S-61	05/17/21	5-10	2.9
S-62	05/17/21	5-10	2.2
S-63	05/17/21	5-10	5.6
S-64	05/17/21	5-10	6.1
S-65	05/17/21	5-10	2.9
S-78	06/01/21	5-10	5.8
	06/01/21	18-24	8.6

Table 4
Summary of Soil Analytical Results for Arsenic in Areas Free of Slag

Sample Station	Sample Date	Sample Depth (inches bgs)	Arsenic Concentration (mg/kg)
Summary Statistics		No. of Samples	29
		Average	5.4 mg/kg [2]
		95% UCL [1,3]	6.9 mg/kg

Notes:
bgs: below ground surface

mg/kg: milligrams per kilogram

MTCA: Model Toxics Control Act

UCL: upper confidence limit

Refer to Figures 4A and 4B for sample locations.

1. Under MTCA, compliance with the cleanup standard is met when the 95% UCL is less than the cleanup level, provided that no more than 10% of the individual samples exceed the cleanup level and no single sample exceeds the cleanup level by more than two times [WAC 173-340-740(7)(d) and (e)]. The MTCA Method A cleanup level is 20 mg/kg for arsenic.

2. Calculated value is less than Ecology's estimate of natural background soil concentrations for arsenic in the Puget Sound Basin, which is 7.3 mg/kg (Ecology Publication No. 94-115).

3. The 95% UCL was determined using MTCA Stat 97.

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Enclosure B

Document List

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Enclosure B. Document List.

1. Anchor QEA (Anchor), *Cleanup Action Report*, June 2022.
2. Ecology, Re: Recission of No Further Action (NFA) Status for the following Site, August 17, 2021.
3. Anchor, *Lower Wapato Creek Habitat Project*, SWPPP Addendum.
4. Anchor, *Data Report and Cleanup Plan Parcel 14 Slag Removal*, June 2021.
5. TPCHD on behalf of Ecology, *Initial Investigation Field Report*, April 22, 2015.
6. Anchor, *Memorandum: Results of Test Pits and Soil Sampling at Parcel 14*, May 6, 2014.
7. GeoEngineers, *Site Investigation*, December 6, 2010.