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February 2, 2021

Pete Stoltz
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PO Box 1730
Seattle, WA 98111
pstoltz@calportland.com

Re: Opinion on the Proposed Cleanup of a Property associated with the Asarco Tacoma Smelter Site

- **Property Name:** DuPont South Parcel
- **Property Address:** 1700 Center Dr., DuPont, Pierce County, WA 98327
- **Facility/Site ID:** 80008
- **Cleanup Site ID:** 15278
- **VCP Project No.:** SW1728

Dear Pete Stoltz:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your proposed independent cleanup of a Property associated with the Asarco Tacoma Smelter Site (Asarco 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]

Issues Presented and Opinion

Ecology has determined that no further remedial action will likely be necessary at the Property to clean up contamination associated with the Asarco Site.

Ecology has determined that further remedial action will likely still be necessary elsewhere at the Asarco Site, but no further remediation will be necessary for the Property.

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://fortress.wa.gov/ecy/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

Description of the Property and the Asarco Site

This opinion applies only to the Property described below within Asarco Site. This opinion does not apply to any other sites that may affect the Property. Any such sites, if known, are identified separately below.

1. Description of the Property.

The Property includes the following tax parcels in Pierce, which were affected by the Asarco Site will be addressed by your cleanup:

- 0119233011 (38 acres)
- 0119233014 (20.32 acres)
- 0119233015 (20.23 acres)
- 0119262016 (33.92 acres)
- 0119233016 (20 acres)
- 0119233017 (20.04 acres)
- 0119262015 (24.71)
- 0119232012 (Kettle wetland; 1.78 acres)

Enclosure A includes a legal description of the Property and details of the Property as currently known to Ecology.

2. Description of the Asarco Site.

The Asarco Site is defined by the nature and extent of contamination associated with the following releases:

- Arsenic into the Soil.
- Lead into the Soil.

Those releases have affected more than one parcel of real property, including the parcels identified above.

Enclosure B includes a detailed description and diagram of the Asarco Site, as currently known to Ecology.

3. Identification of Other Sites that may affect the Property.

A parcel of real property can be affected by multiple sites. A portion of his Property was also affected by the Former DuPont Works Site (FSID 1269).

Basis for the Opinion

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

1. Aspect Consulting LLC (Aspect), *Cleanup Action Plan DuPont South Parcel, Tacoma Smelter Plume*, April 22, 2020.

2. Ecology Southwest Region Office Toxic Cleanup Program, *Periodic Review Report Final, Weyerhaeuser DuPont – 1 & 2 Facility Site ID#: 1269 & 19825, Cleanup Site ID#: 3555 & 2519, 2300 Golf House Drive DuPont, WA 98372*, July 2016.

3. Pioneer Technologies Corporation, *Groundwater Monitoring Results for 2014, Former DuPont Works Site*, July 2014.

4. Ecology, *Opinion on the Proposed Cleanup of a Property associated with the Tacoma Smelter Plume, Glacier Northwest, North Parcel*, November 25, 2013.

5. Pacific Environmental and Redevelopment Corporation, *Closure Report Former DuPont Works Site DuPont, Washington*, March 2007.

6. URS and Pioneer Technologies Inc., *Final Remedial Investigation for the Former DuPont Works Site*, July 2003.

7. Hart Crowser Inc., *Draft Remedial Investigation, Former DuPont Works Site, DuPont, Washington*, December 22, 1994.

8. Ecology, *Consent Decree No. 91-2-01703-1, State of Washington Department of Ecology v. Weyerhaeuser Company and DuPont Company*, July 17, 1991.

The documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. Information on viewing these 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.

[4] https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests.
[5] https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=15278.

Analysis of the Cleanup

1. Cleanup of the Property located within the Asarco Site.

Ecology has concluded that, upon completion of your proposed cleanup, **no further remedial action** will likely be necessary at the Property to clean up contamination associated with the Asarco Site. That conclusion is based on the following analysis:

a. Characterization of the Asarco Site.

The Asarco Site is described in **Enclosure B**.

Glacier Northwest, Inc. is conducting mining operations as CalPortland (Glacier). Glacier proposed to expand their mining operations to an adjacent 178 acre area in DuPont, Pierce County, described as the South Parcel. The South Parcel is located to the south and east of the existing mine area and southeast of the North Parcel (Figure 1), which is also operated by Glacier.

Figure 1. Vicinity map

In 2013, Glacier enrolled the North Parcel in the Voluntary Cleanup Program (VCP) under an agreement No. SW1323 and requested an opinion on the proposed cleanup. Ecology issued an opinion on the proposed cleanup in November 2013. The cleanup of the North Parcel began in 2014 and will continue as part of the ongoing mining operations.

The South Parcel and the existing mine are owned by Weyerhaeuser NR Company (Weyerhaeuser), but are leased and operated by Glacier. Similar to the North Parcel, the cleanup of the South Parcel will occur in stages corresponding to the ongoing mining operations that are anticipated to take more than 20 years. The stages will consist of mining segments of land ranging from 8 to 20 acres.

The South Parcel includes areas to be mined; however, a 3.3 acre Saequalitchew Creek Open Space Area (SCOA) along the southwestern border, and a 7.8 acre Mine Setback Area, will not be mined and will remain forested. The 20-foot-wide trail transecting the western edge of the SCOA is under the public access easement agreement, established in August 2011. This agreement allows for public access along the trail.

In addition to the South Parcel, the cleanup area will include portions of an existing mine along the western border and a small isolated wetland (Kettle Wetland) northwest of the South Parcel (Figures 2 and 3). Kettle Wetland will be removed to facilitate the mine expansion into the South Parcel and deeper within the existing mine.

The cleanup area is referred to as the Cleanup Unit in the Cleanup Action Plan (CAP). The Cleanup Unit includes 167 acres within South Parcel and 26 acres within the existing mine.

This opinion letter pertains to all the areas within the South Parcel (including the Mine Setback areas and the SCOA), which will be referred to as the Property for the remainder of this opinion letter.

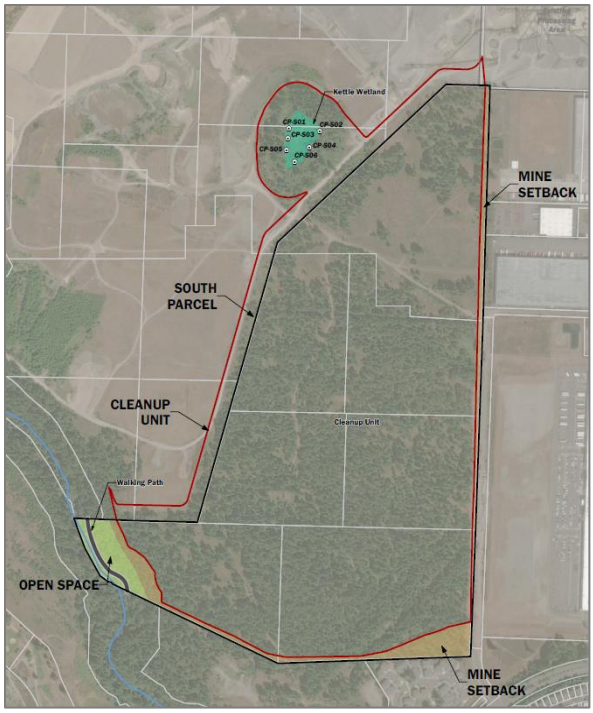


Figure 2. Aerial view of the Property displaying the South Parcel in relation to the Cleanup Unit.

Glacier may reuse the wetland sediments in the creation of a mitigation wetland on the Property after the completion of the mining. For that reason, they characterized the sediments for arsenic and lead concentrations. The soils stripped from areas in the existing mine outside of South Parcel, but within the Cleanup Unit, will be characterized for the Tacoma Smelter Plume contamination if reused on the Property.

The middle and southern portions of the Property are located within the boundary of the Former DuPont Works Site, a historical explosives and commercial munitions facility that operated from 1909 through 1976 (Figure 3). Weyerhaeuser purchased the munitions facility in 1976 and closed its operations in 1977.

Intitial Site Investitations from 1985 through 1989 addressed impacts to soil and groundwater associated with the operations and demolition of the munitions facility. The investigations divided the Former DuPont Works Site into two geographical areas: Parcel 1 and Parcel 2 (Figure 3). Most of Parcel 1 encompassed areas south of Sequalitchew Creek and a small area north of the creek—identified as the Industrial Unit. Part of Parcel 2 was identified as Black Powder Area. This area is located north of Parcel 1, occupying southeastern and central parts of the Property.

Most of the overlap between the Property and the Former DuPont Works Site falls within Parcel 2. Only 16 acres of the Industrial Remediation Unit of Parcel 1 falls within the Property (Figure 3).

In 1991, Weyerhaeuser and DuPont Company (DuPont) entered into Consent Decree 91-2-01703-1 with Ecology to complete a Remedial Investigation (RI), Health Risk Assessment (HRA), and Feasibility Study (FS) for the Former DuPont Works Site.

Results of the Remedial Investigation (RI) revealed concentrations of aldrin, dinitrotoluene, nitrobenzene, 2,4,6-trinitrotoluene, arsenic, copper, mercury, and motor oil exceeding the MTCA Method B cleanup levels for soil and groundwater.

Arsenic and lead were the prevalent contaminants in the portions that overlap with the Property, on Parcel 2, and the Industrial Unit, in Parcel 1. The RI resulted in the collection of more than 500 soil samples to evaluate arsenic and lead in the surface soil (0 to 6 inches below the ground surface [bgs]), and shallow subsurface soil (up to 2 feet bgs). The results of the historical characterization and a sampling map are included in the Appendix C of the CAP.

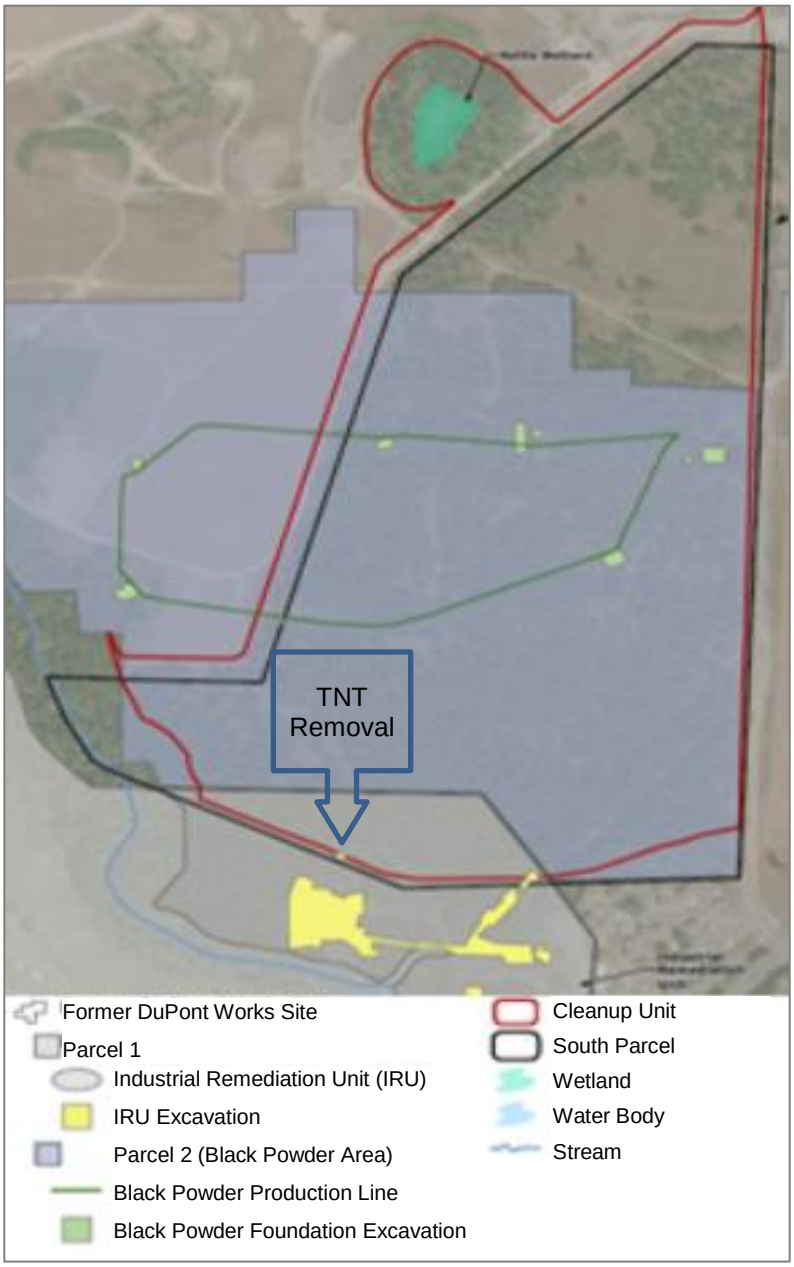


Figure 3. Former DuPont Works Site in Relation to the South Parcel

Cleanup at the Former DuPont Works Site was completed under two Consent Decrees. The second Consent Decree was entered into with Ecology in 2003 (No. 03-2-10484-7). In 1993, work completed under the 1991 Consent Decree resulted in interim source removal of soil with lead concentrations exceeding 1,000 milligrams per kilogram (mg/kg) in Parcel 1 and at the Black Powder Production Line foundations in Parcel 2 (Figure 3).

The interim source removal resulted in concentrations of lead, arsenic, and other contaminants below the site-specific soil cleanup levels for industrial land use. The site-specific cleanup level for arsenic and lead were established at 90 mg/kg and 1,000 mg/kg, respectively. In 1996, based on the results of interim source removal, Ecology approved a Cleanup Action Plan for Parcel 2 that provided for no further remediation activities except for institutional controls to maintain the industrial use of Parcel 2. In 1997, Parcel 2 was removed from the 1991 Consent Decree.

The average concentrations of lead and arsenic remaining on the Property after the interim source removal fall within the ranges of estimated arsenic and lead concentrations associated with the Tacoma Smelter Plume (TSP) contamination in the general DuPont area. They are shown in Table 1. The comprehensive results of the historical characterization sampling are included in Appendix C of the CAP.

The northern part of the Property that falls outside of Parcel 2 was not characterized for the TSP contamination. Ecology did not request additional soil sampling prior to Property cleanup. Ecology reasoned that the concentrations of arsenic and lead are similar to the concentrations found in the North Parcel and that the extensive mixing of soil during mining will be sufficient to reduce arsenic and lead concentrations to below their respective cleanup levels. Ecology did not request soil sampling in the North Parcel for the same reasons. Ongoing, periodic cleanup reports for the North Parcel since 2014 have shown that the remedial approach was successful.

Table 1. Average Arsenic and Lead Concentrations Remaining on the Property Following the Interim Remedial Action on the Property

Parcel	Location	Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
Parcel 2	Black Powder Area	0-6	19	132
	Outside of Black Powder Area	0-6	43	191
Parcel 1	Industrial Unit	0-18	38.1	120.7
	Industrial Unit	18-36	10	98.5

Additional remedial actions completed between 1999 and 2001 were conducted in the Industrial Unit of Parcel 1 that falls within the Property. They included the removal of soil with concentrations of 2,4,6-Trinitrotoluene (TNT) above the site-specific cleanup level from Area 10 of the Industrial Unit. The site-specific cleanup level for TNT was established at 1.75 mg/kg based on Ecology Agreement (Ecology letter from Mike Blum to Jim Odendahl and Ron Buchanan, January 11, 2001, included in Enclosure C). This site-specific value was designated by Ecology for the protection of groundwater.

Eight confirmational samples (10-VS-1 through 10-VS-8) from the bottom and sides of the excavated hot spots in Area 10 were collected in 1993. The comprehensive results of confirmational sampling documenting the concentrations of metals and TNT that remained in place in the Industrial Unit of Parcel 1 are included in Appendix B of the March 2007 Closure Report for Parcel 1 of the Former DuPont Works Site. The confirmational sampling for TNT within the Property boundary is shown in Table 2. The confirmational sampling for TNT following the hot spot removal is shown in Figures 4 and 5 (Area 10). Ecology issued a certification of completion of the active cleanup elements for the Former DuPont Works Site on April 26, 2007.

Table 2. Soil Verification Sample Results for Hot Spot Removal Area 10

Sample Number	Short ID	Analyte	Result (mg/kg)
02-IN01-SS[10-VS-6]D2-5.0	10-VS-6	Dinitrotoluene, 2,4-	0.046
02-IN01-SS[10-VS-6]D2-5.0	10-VS-6	Dinitrotoluene, 2,6-	0.046
02-IN01-SS[10-VS-6]D2-5.0	10-VS-6	Dinitrotoluene, 2,4,6-	1
02-IN01-SS[10-VS-6]D2-5.0	10-VS-6	DNT-Total	0.092
02-IN01-SS[10-VS-8]D2-5.0	10-VS-8	DNT-Total	0.088
02-IN01-SS[10-VS-8]D2-5.0	10-VS-8	Dinitrotoluene, 2,4-	0.044
02-IN01-SS[10-VS-8]D2-5.0	10-VS-8	Dinitrotoluene, 2,6-	0.044
02-IN01-SS[10-VS-8]D2-5.0	10-VS-8	Dinitrotoluene, 2,4,6-	0.073
02-IN01-SS[10-VS-9]D2-5.0-DAVG	10-VS-9	Dinitrotoluene, 2,6-	0.044
02-IN01-SS[10-VS-9]D2-5.0-DAVG	10-VS-9	Dinitrotoluene, 2,4-	0.044
02-IN01-SS[10-VS-9]D2-5.0-DAVG	10-VS-9	Dinitrotoluene, 2,4,6-	0.13
02-IN01-SS[10-VS-9]D2-5.0-DAVG	10-VS-9	DNT-Total	0.088
03-IN01-SS[10-VS-11]-C2-100	10-VS-11	DNT-Total	0.094
03-IN01-SS[10-VS-11]-C2-100	10-VS-11	Dinitrotoluene, 2,4-	0.047
03-IN01-SS[10-VS-11]-C2-100	10-VS-11	Dinitrotoluene, 2,6-	0.047
03-IN01-SS[10-VS-11]-C2-100	10-VS-11	Dinitrotoluene, 2,4,6-	0.2
03-IN01-SS[10-VS-12]-C2-050	10-VS-12	Dinitrotoluene, 2,4,6-	0.048
03-IN01-SS[10-VS-12]-C2-050	10-VS-12	DNT-Total	0.096
03-IN01-SS[10-VS-12]-C2-050	10-VS-12	Dinitrotoluene, 2,4-	0.048
03-IN01-SS[10-VS-12]-C2-050	10-VS-12	Dinitrotoluene, 2,6-	0.048

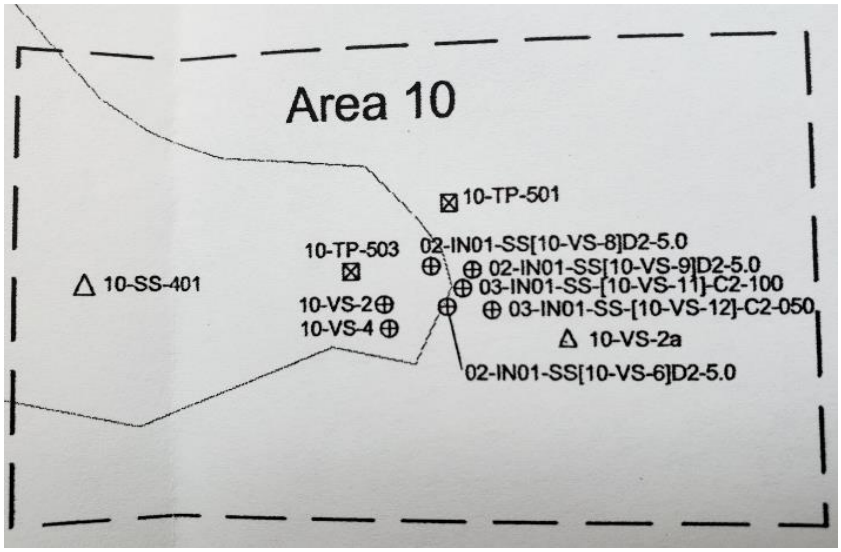


Figure 4. Approximate Locations of Confirmational Samples in the Area 10 of the Industrial Unit.

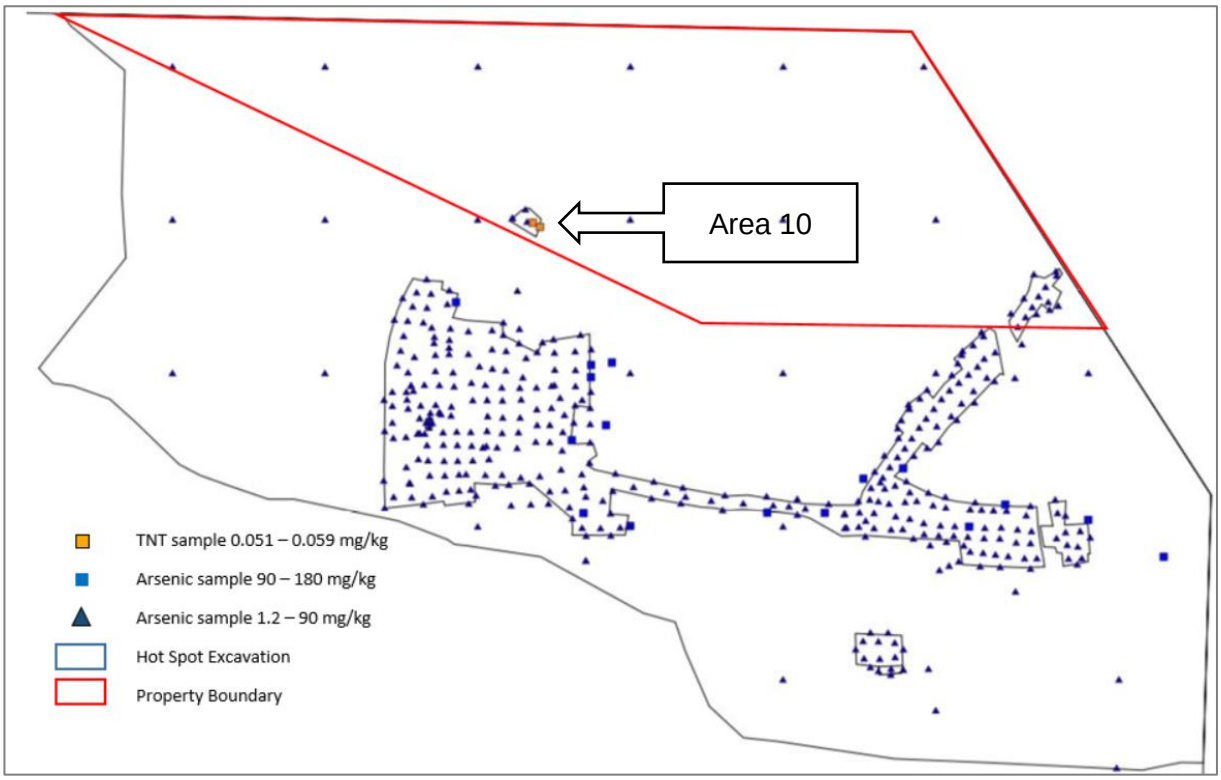


Figure 5. Approximate Locations of Confirmational Samples in the Industrial Unit Following Hot Spot Excavation.

Groundwater: The total dinitrotoluene (total DNT), which was the sum of 2,4-dinitrotoluene and 2,6-dinitrotoluene was the only contaminant that was of potential concern in groundwater within the Former DuPont Works Site. Groundwater monitoring data of 30 wells (from October 1988 through March 2001) has shown that the levels of total DNT met the groundwater decision criteria and likely pose no concern to human health or the environment. Four of the groundwater monitoring wells within the Property boundary were abandoned and backfilled with bentonite (Figure 6). Soil leaching tests have shown no arsenic or lead in the groundwater. In addition, the groundwater flow is to the northwest, away from the City of DuPont drinking water wells.

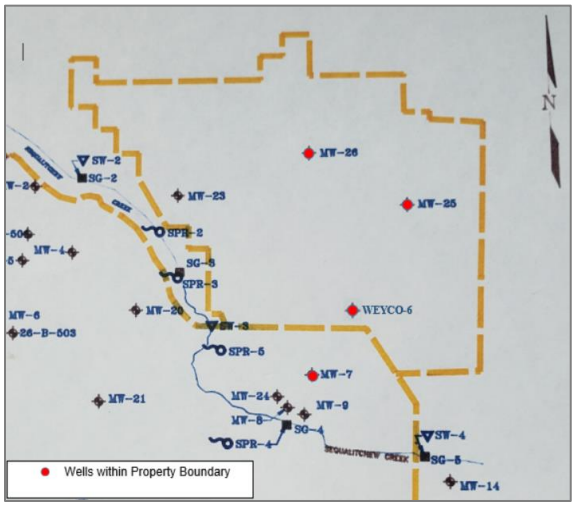


Figure 6. Locations of wells on the Property

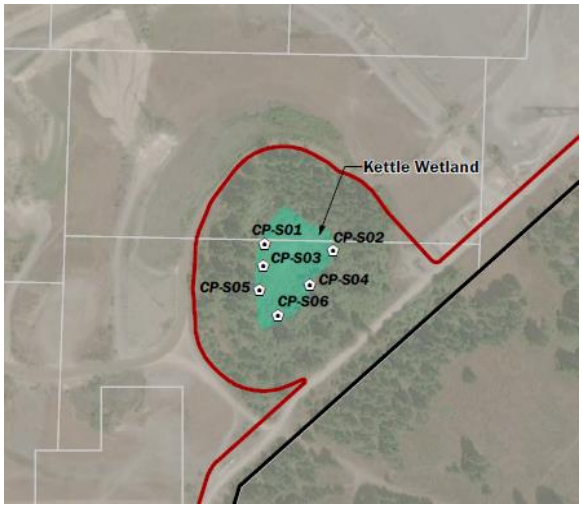


Figure 7. Sediment Sampling Locations within Kettle Wetland

The Former DuPont Works Site is under a restrictive covenant that limits development to industrial use within Parcels 1 and 2. Ecology conducts periodic reviews of both Parcel 1 and Parcel 2 every five years to ensure continued protectiveness of the completed cleanup action and compliance with the restrictive covenant. In its 2016 periodic review, Ecology determined that the remedial actions conducted within Parcel 1 and 2 continue to be protective of human health and the environment.

Kettle Wetland: On December 5, 2019, Anchor QEA (Anchor) conducted sediment sampling in Kettle wetland adhering to the TSP Model Remedies Guidance (MR Guidance). Anchor established six random sampling stations within the 1.78 acre wetland and collected 12 samples at two depth intervals:

- Six samples at 0 to 4 inches bgs.
- Six samples that ranged from 4 to 6.5 inches bgs to 4 to 8 inches bgs (Figure 7).

Anchor submitted the samples to Analytical Resources Incorporated laboratory for analysis of arsenic and lead by Environmental Protection Agency (EPA) Method 6020A.

Results of Sediment Sampling in Kettle Wetland

Samples collected at 0 to 4 inches bgs: None of the samples exceeded the Sediment Cleanup Objective (SCO) of 14 mg/kg for arsenic or 360 mg/kg for lead (Table 3). Arsenic concentrations ranged from 2.04 mg/kg to 8.5 mg/kg. The average arsenic concentration was 4.79 mg/kg. Lead concentrations ranged from 4.61 mg/kg to 91.6 mg/kg. The average lead concentration was 36.83 mg/kg.

Samples collected at 4 to 8 inches bgs: None of the samples exceeded the Sediment Cleanup Objective (SCO) of 14 mg/kg for arsenic or 360 mg/kg for lead. Arsenic concentrations ranged from 1.44 mg/kg to 12.3 mg/kg. The average arsenic concentration was 6.56 mg/kg. Lead concentrations ranged from 6.2 mg/kg to 79.6 mg/kg. The average lead concentration was 44.7 mg/kg.

All the concentrations of arsenic and lead were below the SCO levels. Ecology analyzed the sediment sampling data and determined that there were no sediment station clusters of potential concern.

Table 3. Results of Sediment Sampling in Kettle Wetland

Sample Station	Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)
CP-SO1	0-4	6.39	91.6
CP-SO2	0-4	4.64	19.7
CP-SO3	0-4	4.63	6.37
CP-SO4	0-4	8.5	88.4
CP-SO5	0-4	2.04	4.61
CP-SO6	0-4	2.53	10.3
Average of the highest three:		6.51	66.57
Average all samples in 0-4 inches bgs:		4.79	36.83
CP-SO1	4-7.75	5.13	45.9
CP-SO2	4-6.5	8.48	79.6
CP-SO3	4-6.75	12.3	58.8
CP-SO4	4-6.5	2.84	6.2
CP-SO5	4-7	9.16	65.4
CP-SO6	4-8	1.44	12.3
Average of the highest three:		9.98	67.93
Average all samples in 4-8 inches bgs:		6.56	44.7

b. Establishment of Cleanup Standards for the Asarco Site.

Ecology has determined the cleanup levels and points of compliance established for the Asarco Site will likely meet the substantive requirements of MTCA.

As part of the Interim Action Plan for the Asarco Tacoma Smelter Site (June 2012) (IAP), Ecology completed a terrestrial ecological evaluation for properties with only Tacoma Smelter Plume contamination. Ecology determined the MTCA Method A cleanup levels for both arsenic and lead were protective of both human health and the environment. The MTCA Method A cleanup levels for soil are as follows:

- Arsenic is 20 mg/kg.
- Lead is 250 mg/kg.

The IAP determined that the soil and duff cleanup levels protective of human health and the environment for properties within the Asarco Tacoma Smelter Site are the following:

- Average arsenic detected in the soil is less than 20 mg/kg.
- Average lead detected in the soil is less than 250 mg/kg.
- Duff composite sample is less than 20 mg/kg for arsenic.
- Duff composite sample is less than 250 mg/kg for lead.
- No single soil sample has arsenic above 40 mg/kg.
- No single soil sample has lead above 500 mg/kg.

Ecology agreed to use the cleanup standards established for the Asarco Site for the following reasons:

- The use of heavy machinery associated with the production of black powder in the Former DuPont Works Site is thought to have resulted in Site-wide surface soil contamination with arsenic and lead. The spot discharge from batteries used in the electric locomotives, gas, diesel leaks, and wear of Babbit bearings used for railroad stock were the likely source of elevated conctentrations of lead in certain areas. Arsenic concentrations; however, showed limited apparent relationship to the source of operational areas. Elevated arsenic was largerly restricted to the upper six inches of soil except in areas where acid was discharged, drywell locations, and some production related foundations.

- This pattern of Site-wide arsenic and lead limited to the top upper 6 to 12 inches of soil is similar to the TSP contamination. The RI; however, occurred prior to the recognition of the area-wide TSP contamination and did not consider it as a potential source of the contamination.

- The concentrations of arsenic and lead remaining on the Property within the Former DuPont Works Site are within the estimated ranges of arsenic and lead in the area. The interim remedial actions removed soil in areas of former plant operations where lead concentrations exceeded 1,000 mg/kg.

- Only one area within the Property had elevated concentrations of TNT. The removal of soil in that area reduced the concentration of TNT to below the cleanup level of 1.75 mg/kg.

- Groundwater, as shown by monitoring data, was not affected on the Property.

The IAP does not set cleanup levels for freshwater sediments. The Washington State Sediment Management Standards, chapter 173-204 WAC set standards for sediment quality. Under WAC 173-204-560, the freshwater sediment cleanup objective and cleanup screening levels are based on the protection of the benthic community within the upper four inches of sediment layer. The sediment cleanup objectives establish levels at or below which no adverse effects to benthic community occur. The cleanup screening levels establish minor adverse effects to the benthic organisms in sediments.

For arsenic and lead, the freshwater sediment cleanup objective and cleanup screening levels are:

Contaminant	Cleanup Objective Level	Cleanup Screening Level
Arsenic	14 mg/kg	120 mg/kg
Lead	360 mg/kg	>1,300 mg/kg

c. Selection of Cleanup for the Property.

Ecology has determined the cleanup you proposed for the Property will likely meet the substantive requirements of MTCA and the IAP. Your proposed cleanup meets the minimum cleanup requirements and will not exacerbate conditions or preclude reasonable cleanup alternatives elsewhere at the Asarco Site.

Ecology proposed four model remedies in the IAP:

- Excavation and removal.
- Mixing.
- Capping in place.
- Consolidation and capping.

Glacier decided to use mixing on the Property.

Property Cleanup: Glacier will conduct the soil cleanup at the Property in conjunction with its mining operations. On April 22, 2020, on behalf of Glacier, Aspect developed a CAP for the Property. The CAP described the use of the selected model remedy—mixing as a way to remediate the contamination associated with the Tacoma Smelter Plume on the Property. Ecology based this opinion letter on the information provided in this CAP.

Glacier will remove all the trees from the entire Property in preparation for mining. They will clear the Property in segments, as the mining operations progress across the Cleanup Unit. Glacier will pile all the stumps and remaining vegetation into a pile. They will grind the vegetation and stumps into woodchips to be used as soil amendment in land reclamation. The sandy and gravelly soil will most likely fall to the ground before reaching the grinders. Glacier will inspect the root wads prior to grinding. If there are considerable amounts of soil left on the root wads, Glacier will shake the root wads to remove the soil, prior to grinding.

After the removal and disposal of the vegetation, Glacier will excavate the top layer of soil from the segment, which may also include limited layer of duff, into stockpiles. The estimated thickness of the soil and duff is approximately 20 inches. The mining segments typically range from 8 to 20 acres, depending on market needs. Glacier will store the stockpiled soil for soil sampling, analysis, and its reuse in reclamation pending analytical results. They will include the duff in the stockpiles.

Although the concentration of arsenic and lead in the duff layer is potentially above the cleanup level, Ecology agreed to allow mixing of the duff into the soil. Glacier is uniquely equipped to handle mixing large quantities of soil. Large-scale bulldozers, loaders, and dump trucks used in mining operations can mix and amend large quantities of soil effectively.

Ecology expects that the extensive mixing of duff with the soil will reduce the concentration of arsenic and lead to below their respective cleanup levels, which they will verify by the final confirmational sampling.

The RI also identified demolition debris (cement, lumber, sheet metal, steel pipe fragments, and wire) that may remain in some areas within Parcel 2. Glacier will document their occurrence and disposal. If there is any evidence of contaminants other than arsenic and lead associated with the debris, Glacier will take the necessary steps to document, sample, and remediate as necessary—in coordination with Ecology.

Glacier intends to sample the stockpiles within one month of excavation, minimizing the stockpile storage time. If the stockpiles need to be stored longer, Glacier will implement erosion control measures, such as surface roughening, mulching, or temporary seeding. If high winds or heavy rains occur during the first month after stockpiling, Glacier will cover the stockpiles to minimize erosion.

Glacier will sample the stockpiles adhering to the MR Guidance for stockpile sampling. They will submit the samples to an Ecology-accredited laboratory for analysis of lead and arsenic. If any of the samples exceed 20 mg/kg for arsenic or 250 mg/kg for lead, Glacier will conduct additional round of mixing of that stockpile or the portion of the stockpile.

They may amend the stockpile with filter press fines (silt and clay), which they sort and wash out of the usable aggregate. The likelihood of elevated arsenic and lead in the filter press fines is low, as they have been excavated from deeper layers, where concentrations of arsenic and lead are below their respective cleanup levels. Glacier will conduct additional round of stockpile sampling until all the composite samples are below 20 mg/kg for arsenic and 250 mg/kg for lead.

Glacier will use the clean stockpiled soil amended with woodchips and filter press fines in reclamation of land, which will include returning the mined slopes to forest and leaving a relatively flat mine floor for future development. As a component of mitigation, they will route the seep flows to form a larger mitigation wetland. They may use the sediments from the Kettle Wetland in wetland creation if feasible. The arsenic and lead concentrations were below their respective cleanup levels for sediments.

Glacier does not anticipate importing additional soil during land reclamation. They will sample any imported soils according to Imported Soil Sampling methods in the MR Guidance.

Glacier will report on the progress of the cleanup annually. The annual report will be due by November 15 of every year. The first annual report is due on November 15, 2021. Each annual report will include summary of the excavation, sampling, laboratory analysis, and reclamation performed during the reporting period. Glacier will submit the data collected for the annual report into Ecology’s Environmental Information Management System (EIM) annually.

The cleanup of the Property will reduce the concentrations of arsenic and lead to MTCA Method A cleanup levels for unrestricted land use. The need for the existing Former DuPont Works Site restrictive covenants, limiting the development to industrial uses because of residual arsenic and lead contamination, will no longer be needed within the Property after the successful cleanup.

However, prior to the removal of restrictive covenant restrictions, a No Further Action (NFA) letter must be obtained for the Property through Ecology's Voluntary Cleanup Program (VCP). After obtaining the NFA letter, the legal property owner, Weyerhaeuser, must make a request to Ecology for the removal of the land use restrictions for the cleaned up portions of Parcel 1 and Parcel 2 following a 30-day public comment period.

Prior to obtaining a NFA determination with Ecology Glacier will:

- Characterize the SCOA and the Mine Setback Area for Tacoma Smelter Plume contamination. The RI calculated the background levels of arsenic sampling outside of the Former DuPont works Site in nearby undisturbed areas at 32 mg/kg. Not considering the TSP contamination as one of the potential sources of elevated arsenic and lead levels, the RI established the soil cleanup level for open areas for arsenic at 32 mg/kg.

  The SCOA and the Mine Setback Area need to be characterized for the Tacoma Smelter Plume contamination adhering to Chapter 10 (Natural Areas) of the MR Guidance. If sampling shows elevated arsenic or lead, Glacier will develop a remediation plan in coordination with Ecology. The remediation plan may include the use of the Net Environmental Benefit Analysis and institutional controls, such as restrictive covenants, signs, and fences in place of active remediation if deemed the best option.

- Provide Ecology with a final cleanup report, summarizing all the cleanup on the Property, including the Mine Setback Area and the SCOA.

As a reminder, in accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840[6] (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format. For additional information regarding electronic format requirements, see Ecology's EIM website.[7]

Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-site activities is submitted pursuant to this policy.

[6] https://fortress.wa.gov/ecy/publications/SummaryPages/1609050.html.
[7] http://www.ecy.wa.gov/eim

Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination. Please be sure to submit all soil data collected to date, as well as any future data, in this format. Be advised that Ecology requires up to two weeks to process the data once it is received.

2. Cleanup of the Asarco Site as a Whole.

Ecology has concluded that **further remedial action** will still be necessary elsewhere within the ASARCO Site (Asarco Tacoma Smelter Site) upon completion of your proposed cleanup. In other words, while your proposed cleanup may constitute the final action for the Property, it will constitute only an **"interim action"** for the Asarco Site as a whole.

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 Property. This opinion **does not**:

- Change the boundaries of the Asarco Site.
- 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.

3. Opinion is Limited to Proposed Cleanup.

This letter does not provide an opinion on whether further remedial action will actually be necessary at the Property upon completion of your proposed cleanup. To obtain such an opinion, you must submit a report to Ecology upon completion of your cleanup and request an opinion under the Voluntary Cleanup Program (VCP).

4. State is Immune from Liability.

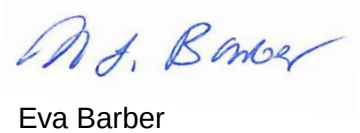
The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70A.305.170 (6).

Contact Information

Thank you for choosing to clean up your Property under the VCP. As you conduct your cleanup, please do not hesitate to request additional services. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our website: Voluntary Cleanup Program.[8] If you have any questions about this opinion, please contact me at eva.barber@ecy.wa.gov or (360) 407-7094.

Sincerely,



Eva Barber
Technical Assistance Coordinator
Toxics Cleanup Program
Southwest Regional Office

EB/tm

Enclosures: A – Legal Description and General Description of the Property
B – Site Description of the Asarco Tacoma Smelter Site
C – Site Specific Cleanup Level for TNT (Mike Blum, 2001)

cc by email: Carla Brock, Aspect Consulting, cbrock@aspectconsulting.com
Nick Acklam, Ecology, nicholas.acklam@ecy.wa.gov
Connie Groven, Ecology, connie.groven@ecy.wa.gov
Carol Serdar, Ecology, carol.serdar@ecy.wa.gov
Ecology Site File

[8] http://www.ecy.wa.gov/vcp.

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Enclosure A

Legal Description and General Description of the Property

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Legal Description of the Property

Parcel 0119233011: Section 23 Township 19 Range 01 Quarter 31 L 14 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-09-07BL

Parcel 0119233014: Section 23 Township 19 Range 01 Quarter 31 L 14 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-09-07BL

Parcel 0119233015: Section 23 Township 19 Range 01 Quarter 34 L 19 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-10-07BL

Parcel 0119233016: Section 23 Township 19 Range 01 Quarter 33 L 20 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-10-07BL

Parcel 0119233017: Section 23 Township 19 Range 01 Quarter 34 L 21 ROS 2006-09-18-5006 OUT OF 3-005 SEG 2007-0818BL 04-10-07BL

Parcel 0119262015: Section 26 Township 19 Range 01 Quarter 22 L 22 ROS 2006-09-18-5006 OUT OF 2-012 & 2-013 SEG 2007-0818BL 04-10-07BL

Parcel 0119262016: Section 26 Township 19 Range 01 Quarter 21 L 23 ROS 2006-09-18-5006 OUT OF 2-012 & 2-013 SEG 2007-0818BL 04-10-07BL

General Description of the Property

The current topography is generally flat, at elevations on the order of 210 to 220 feet above mean sea level, with two exceptions. A natural steep slope on the southwest side of the South Parcel dips southwest to Sequalitchew Creek, which is located approximately 100 feet lower in elevation than the South Parcel. There is a northeast-southwest trending linear topographic features, which is likely a former railroad track (based on regional historical use), where intermittent surface water has reportedly been observed.

The geology consists primarily of Vashon-age recessional sand and gravel, known locally as the Steilacoom Gravel. Exploration drilling across the Property indicates the Steilacoom Gravel extends to depths between 40 and 70 feet bgs. Older Vashon-age glacial Advance Outwash deposits, pre-Vashon non-glacial deposits identified as the Olympia beds, and pre-Vashon glacial and non-glacial deposits underlie this recessional glacial unit.

The Olympia beds are present at approximately 100 feet beneath the Property. The Olympia beds are truncated where the recessional outwash formed a delta into a glacial lake. The truncation of the Olympia beds is located west of the Property.

The proposed mining and reclamation would occur within the Steilacoom Gravel and Vashon Outwash members. Overlying the sand and gravel unit is several inches of topsoil with low organic and fines content, and, in the forest areas, forest duff.

The Vashon Aquifer is the primary hydrogeological unit beneath the Property. The aquifer is unconfined, and average water table depths range from 14 to 18 feet bgs on the east (upgradient) side of the Property, and 20 to 30 feet bgs on the west (downgradient) side. Over a monitoring period between 2004 and 2016, water table fluctuations ranged from 6 to 12 feet in response to seasonal and longer-term precipitation changes. Groundwater flow is to the west toward the truncation of the Olympia beds.

In the southern portion of the Property, shallow groundwater may flow south-southwest and discharge as springs into the Sequalitchew Creek ravine. The aquifer is underlain by the Olympia beds aquitard, which separates the Vashon Aquifer within the Property by up to 75 feet to facilitate mining. Proposed mining will not penetrate to the Olympia beds, and no hydraulic connection with the Sea Level Aquifer is expected. The Vashon Aquifer is not used for water supply in the area of proposed mining.

Sequalitchew Creek is a small stream that flows in a steep ravine generally south and west of the Property. The southwest portion of the Property extends into this creek. The Sequalitchew Creek channel originates from Sequalitchew Lake, east of DuPont-Steilacoom Road, flows through wetlands located to the southeast of the Property, and continues to the west, draining into the Nisqually Reach of the Puget Sound. Most of the time, Sequalitchew Creek beaver activities prevent flow from the lake through the wetlands. During these periods, the creek flows at the southwestern corner of the Property for approximately 600 feet.

The Kettle Wetland is an enclosed depressional Category II wetland system that comprises 1.78 acres northwest of the Property. The Kettle wetland is hydrologically connected to the Vashon Aquifer and water levels range from winter highs of 4 to 6 feet to summer levels of 1 to 2 feet. If feasible, the wetland sediments will be kept intact and later used in the creation of a mitigation wetland if feasible.

Enclosure B

Site Description of the Asarco Tacoma Smelter Site

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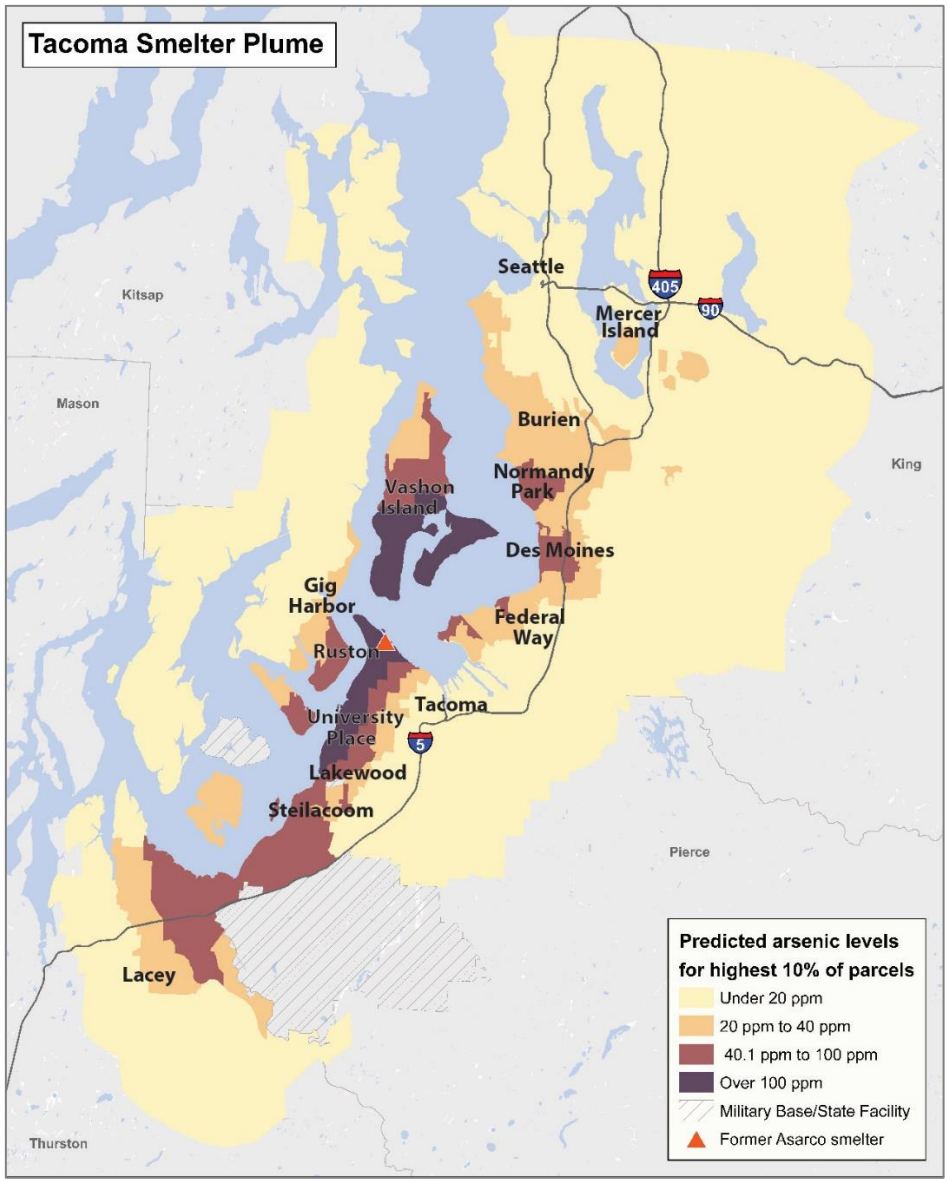
Asarco Tacoma Smelter Site



An interactive color map can be found at: https://dirtalert.info/

For almost 100 years, the Asarco Company operated a copper smelter in Tacoma. Air pollution from the smelter settled on the surface soil over a vast region—more than 1,000 square miles of the Puget Sound basin. Elevated levels of contamination are found as far south as the Nisqually Ridge and as far north as Seattle (West Seattle). Additionally, elevated levels of contamination are found as far west as the Kitsap Peninsula and as far east as Kent and Bellevue. Arsenic, lead, cadmium, and other heavy metals are still in the soil as a result of this pollution. The area has elevated levels of arsenic, lead, and cadmium in the soil due to air emissions from the Asarco smelter.

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Enclosure C

Site Specific Cleanup Level for TNT

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

January 11, 2001

Mr. Jim Odendahl
Weyerhaeuser Company
Post Office Box 100
DuPont, WA 98327-0100

Mr. Ron Buchanan
DuPont Specialty Chemicals
Barley Mill Plaza Building 27
Post Office Box 80027
Wilmington, DE 19880-0027

Re: Hot Spot Interim Action Report

Dear Jim and Ron:

The Ecology Team has reviewed the report entitled Hot Spot Interim Action Report dated October 4, 2000 and we have the following comments. I apologize for my delay in getting your our comments, as Dan Alexanian provided me with his comments a while ago.

1. Page 1, Section 1.1, Third paragraph: The Method C industrial soil cleanup level for trinitrotoluene (TNT) is identified in the report as 33 mg/kg. That level is the Method B concentration based on direct contact as a carcinogen. The Method C industrial cleanup levels are as follows:
Direct contact as a carcinogen - 4,380 mg/kg
Direct contact as a non-carcinogen - 1,750 mg/kg
Protective of groundwater as a carcinogen (100x the groundwater standard) - 2.92 mg/kg
Protective of groundwater as a non-carcinogen (100x the groundwater value)- 1.75 mg/kg
Based on protection of groundwater, the cleanup level would be 1.75 mg/kg, not 33 mg/kg. If you have some site-specific data on TNT and the leachability, that cleanup level might increase or decrease. It does look however, based on the existing sampling data, that TNT is not an issue anymore in the industrial area located north of Sequalitchew Creek. Prior sampling revealed higher TNT concentrations in Area 10 north of the creek.

2. Page 2, 2nd paragraph (and other locations in the report): "Sample 26-B-503-S-1 is located in a future Placement Area and was not removed because it will be covered with more than 15 feet of fill." The Ecology Team has some philosophical concerns about burying high levels of hazardous substances (25,000 mg/kg lead, for example), even when it is buried 15 feet or more and does not pose a threat to ground water. We should discuss this more in the near future. While it does comply with the Model Toxics Control Act regulations, it seems that if the material is easily accessible, it should be dealt with rather than just covering it over. If you continue with your proposal, you need to ensure that a minimum of 15 feet of fill is placed over those locations with "higher" contaminant concentration.

3. Page 17, Section A3: "In selected cases where the impacted soils are greater than 1.5 feet deep, the initial excavation was 10 feet by 10 feet." Why was 10 by 10 chosen rather than 50 by 50?

4. Pages 21 and 22, Section B7, the bullets: Please explain the statement "...therefore, no data were qualified." I appears from the various statements that there were problems in the lab with lead matrix spike recovery or control limits, but "no data were qualified". Only 2 of 17 bullets identified data that were qualified, though it appears that all the matrix spikes/blank spikes had problems.

5. General comment: It is hard to figure out how to compare original samples with post-excavation confirmational samples.

If you have any questions regarding the above comments, please give me a telephone call at (360) 407-6262.

Sincerely,

Mike Blum

Mike Blum
Site Manager
Toxics Cleanup Program

MB:dj

cc: Izzy Zanikos, DuPont Company
Marian Wineman, URS
Jeff King, West Shores Corporation
Brad Grimsted, Pioneer Technologies Corporation
Ecology's Weyerhaeuser/DuPont Site Team