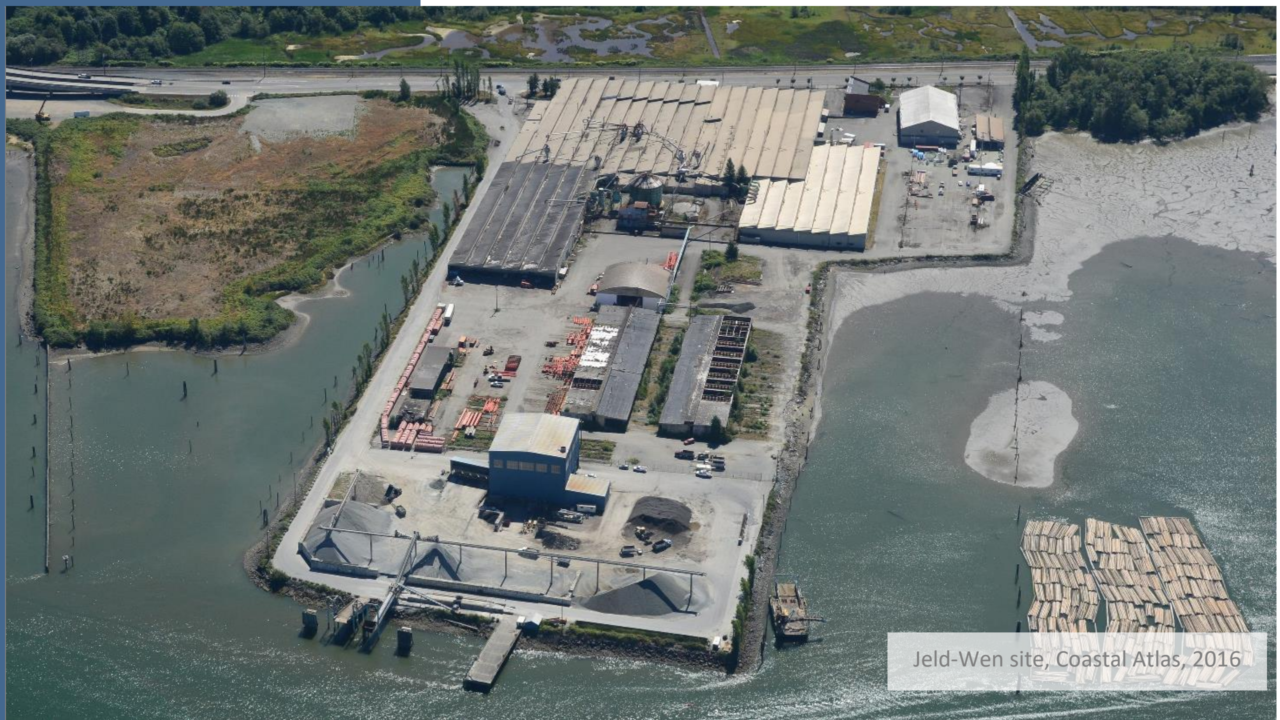

Response to Comments

Draft Remedial Investigation and Feasibility Study

Draft Public Participation Plan

Jeld Wen Cleanup Site
Everett, WA

Toxics Cleanup Program

Washington State Department of Ecology
Northwest Regional Office
Lacey, Washington
December, 2021

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- Washington State Coastal Atlas

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- Facility site ID: 2757

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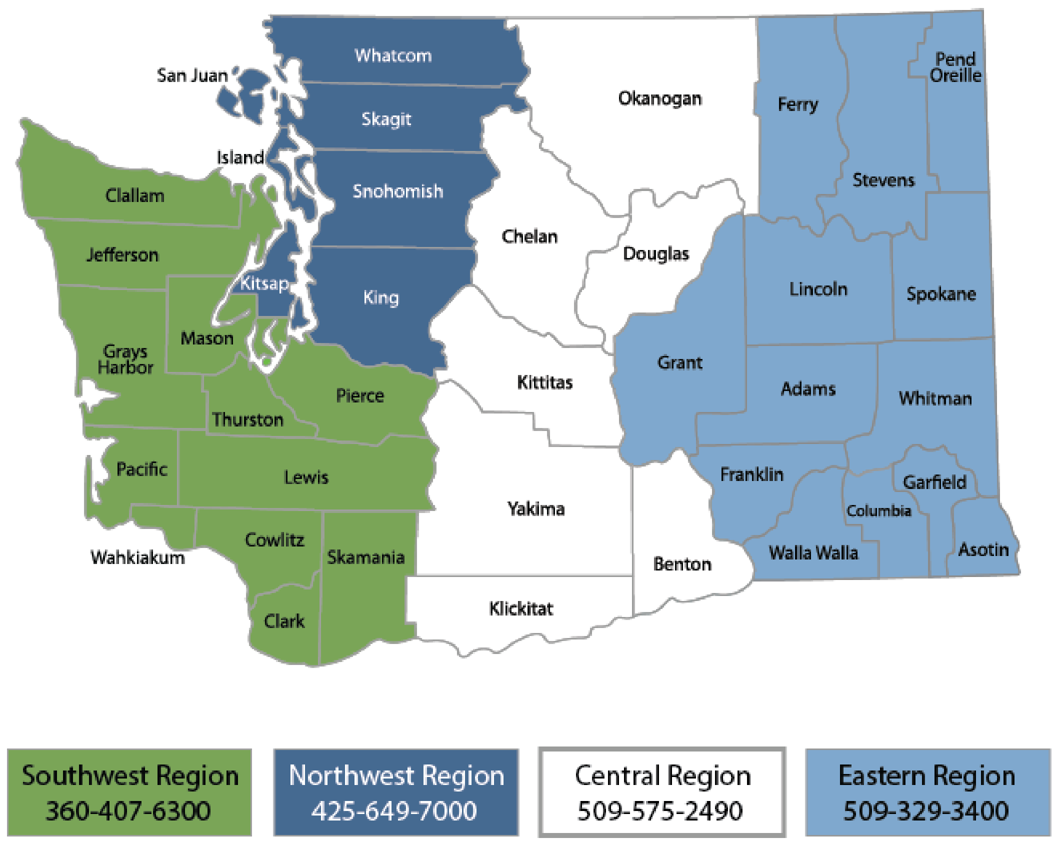
[1] www.ecology.wa.gov/contact

Department of Ecology's Regional Offices

Map of Counties Served



Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	3190 160th Ave SE Bellevue, WA 98008	425-649-7000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

Response to Comments

Draft Remedial Investigation and Feasibility Study and Draft Public Participation Plan

Jeld Wen Cleanup Site
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Lacey, WA

December 2021

DEPARTMENT OF
ECOLOGY
State of Washington

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Figures

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Public Outreach Summary

The Jeld Wen cleanup site, located on the Snohomish River waterfront in Everett, WA is beginning the Cleanup Action Plan phase of Washington State's formal cleanup process[2] as directed under the Model Toxics Control Act (MTCA[3]). Jeld-Wen Inc. is the owner of the site and operated on it until 2005; Cadman is the current lessee and operator on the site.

The Department of Ecology's public involvement activities related to this Site's extended 64-day comment period (June 3 – August 5, 2021) included:

- **Fact Sheet:**
  - US mail distribution of a fact sheet providing information about the cleanup documents and the public comment period to approximately 9,280 people including neighboring businesses and other interested parties.
  - Email distribution of the fact sheet to approximately 57 people, including interested individuals, local/county/state/federal agencies, tribes, and community groups.
- **Legal Notices:**
  - Publication of one paid display ad in *The Snohomish County Tribune*, dated Wednesday, June 2, 2021.
  - Publication of one paid display ad in *The Daily Herald*, dated Thursday June 3, 2021.
- **Site Register:**
  - Publication of 5 notices in Ecology's Toxics Cleanup Site Register:
    - Comment Period Notice:
      - June 3, 2021
      - June 17, 2021
      - July 1, 2021
      - July 15, 2021
      - July 29, 2021
    - Response Summary Notice: December 16, 2021
    - Visit Ecology's Site Register website[4] to download PDFs.
- **Websites**:
  - Announcement of the public comment period and posting of the fact sheet and associated documents for review on Ecology's Jeld-Wen website[5] and Ecology's Public Inputs & Events webpage[6].

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[2] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-process
[3] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Rules-directing-our-cleanup-work/Model-Toxics-Control-Act
[4]https://fortress.wa.gov/ecy/publications/UIPages/PublicationList.aspx?IndexTypeName=Program&NameValue=Toxics+Cleanup&DocumentTypeName=Newsletter
[5] https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=4402
[6] https://10ecology.wa.gov/Events/Search/Listing

- **Document Repositories:** Ecology's electronic document repository for the Jeld Wen site, accessible through the Jeld-Wen website.[7]
    - During the public comment period, many repository locations such as Ecology offices and public libraries were not open to the public in response to the COVID-19 pandemic. During this time, documents were only available online. People who had concerns or questions about accessing information were asked to contact Megan MacClellan at 360-688-3730 or megan.macClellan@ecy.wa.gov

Comment Summary

From June 3 to August 5, 2021, Ecology solicited public comments on a draft Remedial Investigation and Feasibility Study and draft Public Participation Plan for the Jeld-Wen cleanup site.

Ecology received eight comments during the extended 64-day comment period.

Table 1: List of Commenters

	First Name	Last Name	Agency/Organization/Business	Submitted By
1	Alex	Facholas		Individual
2	Windward Environmental and Aspect Consulting		The Port of Everett	Organization
3	Brad	Corradi		Individual
4	Carl	King		Individual
5	Todd	Gray	The Tulalip Tribes	Organization
6	Susan	Decker		Individual
7	Lisa	Parker		Individual
8	Jennie	Lindberg		Individual

Next Steps

Ecology has reviewed and considered all public comments received on the draft Remedial Investigation and Feasibility Study and draft Public Participation Plan. Based on Ecology's

[7] https://apps.ecology.wa.gov/gsp/CleanupSiteDocuments.aspx?csid=4402

evaluation of the comments, changes were necessary in the document. These changes are not substantial and do not change the evaluation of the alternatives. The changes were incorporated in the final document, which can be found in Ecology's Jeld-Wen webpage.[8]

Work will begin on the Cleanup Action Plan. See graphic below and visit Ecology's cleanup process webpage[9] to learn more about Washington's formal cleanup process.

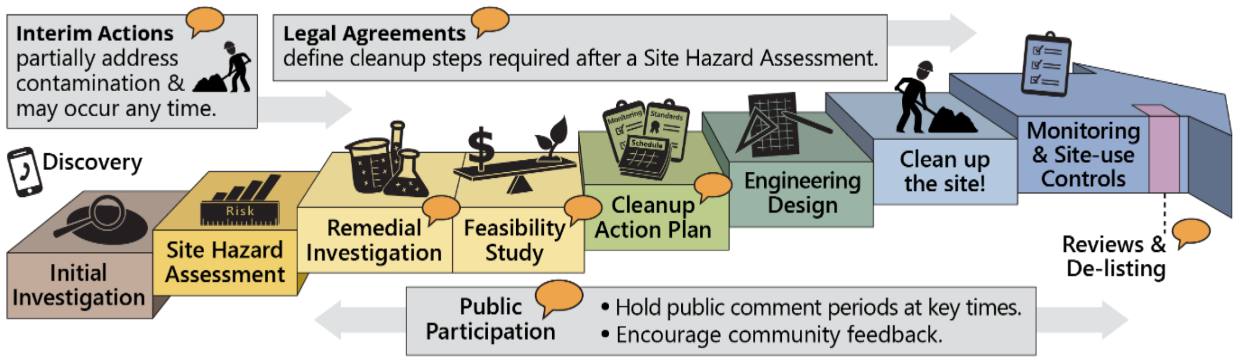


Figure 1: Washington's formal cleanup process

Ecology will provide public meeting details during future public outreach and will notify all commenters who have provided contact information.

Comments and Responses

The public comments are presented below, along with Ecology's responses in italics. In some cases, we have added numbers to the original comments in order to organize our responses. Appendix A contains the comments in their original format.

Ecology response to public meeting requests

We did not receive requests for a public meeting during this comment period.

[8] https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=4402
[9] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-process

Comment from: Alex Facholas

Rev 11:18b

https://www.jw.org/en/library/bible/study-bible/books/revelation/11/#v66011018

I trust your group will act & govern yourselves accordingly. If you need volunteers to help clean up the area please let me know what I can do to help.

Thank you, -Alex

@1914.preacher.2024

https://www.youtube.com/watch?v=dUmQ-EIr4j8

Response:

Comment noted. Thank you for your offer to help. Ecology will contact you, if necessary.

No changes to the Final RI/FS document were made due to this comment.

Comment from: The Port of Everett (Windward Environmental and Aspect Consulting)

MEMORANDUM

To: Mahbub Alam, PhD, PE, Washington Department of Ecology

From: Windward Environmental and Aspect Consulting on behalf of the Port of Everett

Subject: Comments on the Jeld-Wen Public Review Draft RI/FS

Date: August 3, 2021

The Port of Everett (Port) appreciates the opportunity to provide comments on the public review draft of the Jeld-Wen/Former Nord Door Facility Site (Site) remedial investigation/feasibility study (RI/FS) dated April 2021. The comments herein, prepared by Windward Environmental LLC and Aspect Consulting LLC on behalf of the Port, have been grouped to focus on the sediment characterization, the upland characterization, and the preferred remedy for each. You can fine a summary of the requested action items can be found.

The comments presented below focus on the presentation of information in the report and the anticipated effectiveness of the preferred remedy; they do not address the remedy's selection or development. The draft RI/FS was prepared pursuant to Agreed Order DE 5095 (AO) between Jeld-Wen and the Washington State Department of Ecology (Ecology) and, although the Port is a potentially liable person (PLP) for the Site, it is not a party to the AO. The Port was named as a potentially liable person (PLP) very recently—on June 7, 2021—and has not been involved in the Site characterization or other facets of the 13-year Model Toxics Control Act (MTCA) process that has occurred since Jeld-Wen signed the AO in 2008. Per Ecology's PLP determination letter to the Port, the Port was named as a PLP because it is the current owner of parcel number 29050700100500, which comprises the intertidal inlet that lies between the Jeld-Wen and Bay Wood peninsulas, and which is part of the Site. As stated in Ecology's PLP determination letter to the Port, "Based on Ecology's understanding of the historical operations at and releases of hazardous substances from the former Nord Door/Jeld Wen manufacturing facility, contamination from those releases has come to be located on the Port's parcel in this inlet."

The Port has a responsibility as a public agency to ensure that its property is properly remediated, not re-contaminated by hazardous substances at the Site after the remedy is complete, and that its current and future uses of the inlet are not restricted. Additionally, for the future economic and environmental health of the waterfront, the remedies selected in the RI/FS must be effective. Ineffective remedies can have lasting effects on a community and inhibit the successful revitalization of the surrounding properties.

The Port looks forward to engaging with Ecology on the comments presented in this memorandum in order to better understand the agency's plans to ensure that the Site undergoes an MTCA-compliant cleanup in a timely manner.

Response:

Comment noted. Ecology thanks the Port for the useful comments. These will help to clarify the remedial investigation and objectives of cleanup at the site. Ecology will work with the Port and other PLPs to clean up the site per the appropriate cleanup requirements and together we will serve the residents of the state.

No changes to the Final RI/FS document were made due to this comment.

SEDIMENT CHARACTERIZATION AND REMEDY

As stated in Section 11.2 of the RI/FS, of the seven alternatives identified, Alternative M5 was selected as the preferred alternative, because it was "determined to be the most permanent and protective" in the disproportionate cost analysis. Although their treatment of south side sediments differs, Alternatives M4 and M5 appear to be the same in the inlet: removal of the "bulkhead," removal of 2 ft of sediment followed by placement an engineered cap, enhanced natural recovery (ENR), and monitored natural recovery (MNR). Alternative M5 was preferred to M4 because, when the south side sediments are included, overall it will remove a greater volume of contaminated sediment and "less contaminated material will be left in place along the shoreline."

Comments related to sediment characterization and the selected remedy are listed below.

1. **It is not clear how the sediment removal depth in the inlet was determined in any of the alternatives because no subsurface data were collected**. The executive summary states "Elevated sediment concentrations adjacent to outfalls are present within mudflats both north (inlet area) and south of the upland property. Elevated dioxin/furan concentrations were detected at greater depths (up to 7 feet below mudline) than the total PCBs." Based on Figure 4.3-7, it does not appear that the subsurface in the inlet has been sampled next to the outfall and seeps adjacent to the contaminated creosote and Woodlife upland areas. Therefore, dioxin/furan data should be collected at depth near the surface sampling location with the highest dioxin/furan toxic equivalent (TEQ) at the Site (i.e., 144.4 ng/kg at 3SED8-b), and the basis for selecting 2 ft as the removal depth in Alternatives M4 and M5 should be discussed since it does not appear to account for the increase in dioxin/furan contamination with depth (at JW-EA02-SC05) (Figure 4.3-8). Note also that Figure 8.5-5 indicates some 4-ft removal in in the inlet area, which is inconsistent with the text and Exhibit 8.5. Please clarify Alternative M5 and the depth of removal.

Please confirm that comprehensive contaminant data (surface and vertical extent data for dioxins/furans, carcinogenic polycyclic aromatic hydrocarbons [cPAHs], and polychlorinated biphenyls [PCBs] [Aroclors and congeners]) will be collected to ensure that contaminated sediment will be removed from the inlet and the remedy will be protective of current and future uses. These data could be collected during design.

Response:

Sediment removal depths in the inlet are based on data from three sediment cores collected in the inlet and mouth of the inlet (JW-EA04-SC13, JW-EA02-SC05, and JW-SC402) as well as by using surface sediment samples. See Figure 2 below for the locations of subsurface core sampling. Exceedances of dioxins/furans and cPAHs were identified down to seven feet in two of the cores. Because subsurface data in the inlet is limited, Alternative M5 assumed an engineered cap would be necessary for some areas with higher levels of surface sediment exceedances; those areas are assumed to have subsurface contamination. The orange line in Figure 8.5-5 represents bulkhead removal, rather than a 4-foot removal depth. The removal depth in the inlet for Alternative M5 is nominally 2 feet, with an engineered cap.

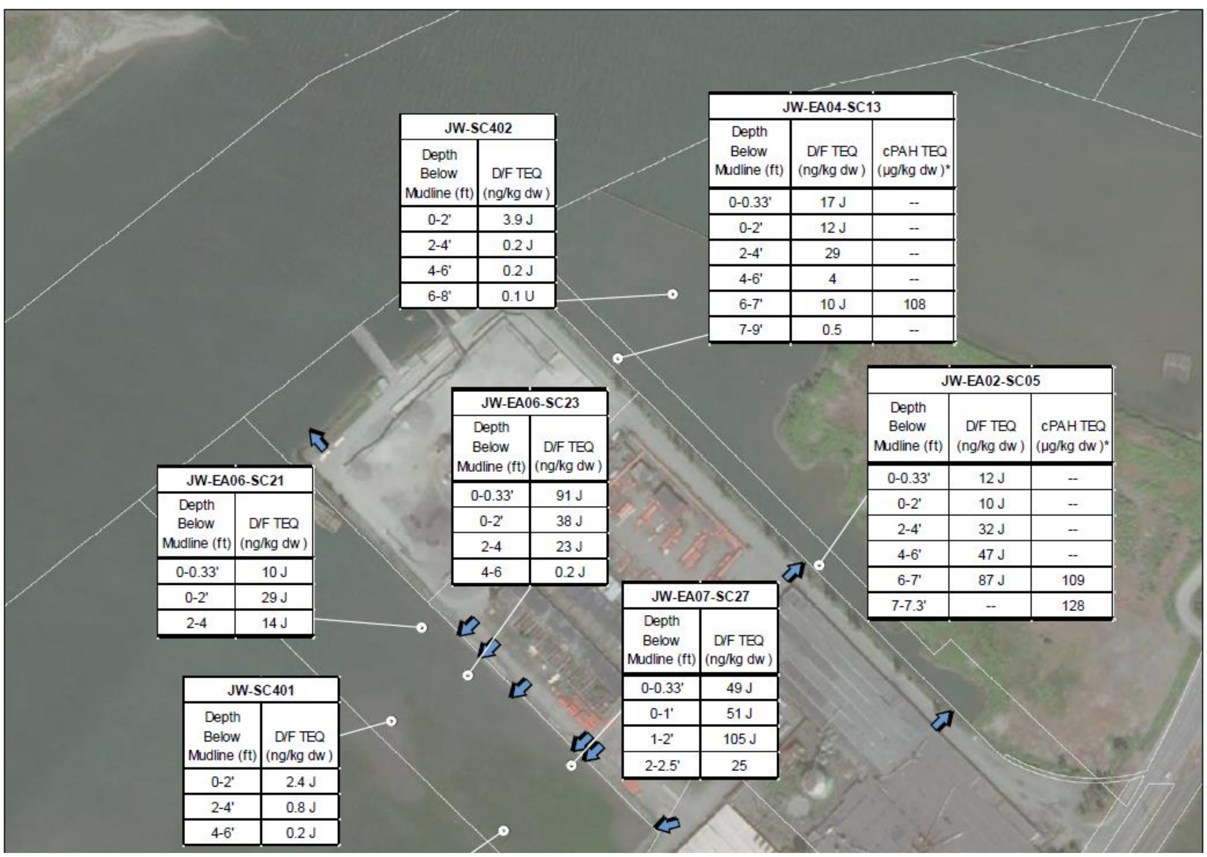


Figure 2: The location of sediment cores collected from the inlet and mouth of the inlet. The locations of all sediment cores are depicted in Figure 4.3-8 of the Draft Final RI/FS.

Additional surface and subsurface data from the inlet will be collected during remedial design phase to further characterize exceedances and physical characteristics. This information will be used to refine the remedial footprint in the inlet. Based on available sediment data, a two to three foot thick engineered cap is anticipated to provide adequate protection to human and ecological health in the inlet. The horizontal or vertical extent of the cap may be adjusted based on additional information. Conversely, if subsurface contamination is not present in some areas currently designated for engineered capping, these areas may instead be excavated and backfilled with clean material (no engineered cap).

No changes to the Final RI/FS document were made due to this comment.

2. **The remedy at the head of the inlet appears overly complex for such a small area**. Please consider sediment removal throughout the head of the inlet, rather than a mix of removal/capping and ENR. The final remedy must be designed based on the surface and subsurface design data collected in this area (see comment 1).

Response:

Comment acknowledged. Ecology anticipates additional surface and subsurface data will be collected in the inlet prior to construction. The remedy design for the inlet will be refined and potentially simplified with using the additional information collected prior to construction.

No changes to the Final RI/FS document were made due to this comment.

3. **The former Port property to the north of the Site, now owned by a private company, has a newly permitted outfall that will discharge at the head of the inlet. The remedy in this area must be designed to accommodate this discharge and not erode at low tide during high-discharge conditions**. Details of the new outfall are included in Attachment 1 [see pages 30 - 34].

Response:

Comment noted. During remedial design, Ecology will take into account discharges from the newly permitted outfall at the head of the inlet so that the remedy remains protective over time. Extreme weather events and climate change impacts (e.g., unusually high flow events) will be taken into consideration. Long-term monitoring will be necessary to ensure recontamination from stormwater does not occur.

No changes to the Final RI/FS document were made due to this comment.

4. **It is important to conduct sufficient source control prior to the remedy to ensure that sediment in the inlet (and throughout the Site) is not re-contaminated**. The stormwater lines

at the Site should be cleaned and stormwater solids should be analyzed prior to conducting the remedy. If the solids show contaminant concentrations greater than remedial action levels (RALs), an analysis must be conducted to ensure that the upland cleanup will address the sources of the contamination.

Response:

Ecology agrees sufficient source control is needed prior to remedy construction. The PLP will clean stormwater lines prior to sediment cleanup and regularly maintain to prevent recontamination. Ecology expects the solids from the initial line cleaning will be analyzed for contaminants of concern to inform both recontamination potential and disposal. Long term monitoring will be required to ensure the sediment is not recontaminated.

No changes to the Final RI/FS document were made due to this comment.

5. **The sources of dioxins/furans in sediment near Site outfalls are clearly related to upland activities at the Site**. The following statement in the executive summary of the RI/FS should be edited as follows: "Elevated concentrations of dioxins/furans were detected in surface and subsurface sediments in tidal mudflats immediately adjacent to historical and/or current stormwater outfalls draining upland areas of the Site. The primary source of dioxins/furans to Site sediments is likely from former ~~area-wide~~ hog fuel burner emissions and/or upland manufacturing activities."

On-site hog fuel burner ash and Woodlife wood treatment solution are clearly the sources of the dioxin/furan contamination (see Sections 5.1[1] and 5.3[2]). Furthermore, in Section 8.2.3, the following statement should be edited as follows: "Sediment dioxin/furan concentrations that exceed cleanup levels are due to historical upland manufacturing activities at the Site and ~~historical~~ legacy releases (e.g., hog fuel burner emissions from historical wood products manufacturing operations ~~in~~ at the Site ~~vicinity~~)"

Footnotes:

[1] Section 5.1 states "Past activities at the Site including door manufacturing, casket manufacturing, pole treating, and mill operations have resulted in likely releases of hydraulic fluids, creosote, fuel oil, toluene, other petroleum hydrocarbon constituents, and dioxins/furans (from former hog fuel burner emissions and associated ash from the historical mill)."

[2] Section 5.3 states "Characterization data and history indicate that the primary source of COPCs in soil and groundwater in the Woodlife Area is attributed to an approximately 10,000-gallon AST containing Woodlife wood treatment solution (which contained PCP) that was formerly located northeast of the main manufacturing building (see Figure 5.3-1)."

Response:

Deposition to sediments from nearby hog fuel burners cannot be ruled out. Ecology agrees that hog fuel burning at the facility is likely to have had a greater impact on sediment contamination at the Site compared to burning at facilities farther away.

Ecology will modify text in the executive summary to:

> *"Elevated concentrations of dioxins/furans were detected in surface and subsurface sediments in tidal mudflats immediately adjacent to historical and/or current stormwater outfalls draining upland areas of the Site. The primary source of dioxins/furans to Site sediments is likely from former hog fuel burner emissions at the site and/or upland manufacturing activities. Area-wide hog fuel burner emissions may have also contributed to sediment contamination."*

Ecology will modify Section 8.2.3 to align with the executive summary text and the language in Sections 5.1 and 5.3. The modified text in Section 8.2.3 is as follows: "Sediment dioxin/furan concentrations that exceed cleanup levels in the tidal mudflats are due to former hog fuel burner emissions and/or surface drainage from upland manufacturing activities.

Changes were made in the Final RI/FS document due to this comment.

6. **The Woodlife area appears to have been a dioxin/furan source to sediment in the past, based on dioxin/furan distribution in the sediment, and more source identification is needed to ensure that sources are being addressed through the upland remedy**. Section 5.3 notes that the Woodlife area had a 10,000-gal. aboveground storage tank of Woodlife wood treatment solution that contained pentachlorophenol (PCP) with dioxin contamination. The RI/FS states "identified dioxin impacts identified in the Woodlife Area at the Site are associated with historical sap stain PCP formulations used in the manufacturing process" and also "it is likely that residual dioxins/furans are more persistent than the PCP that was used in the solution and is an apt constituent to trace the horizontal and vertical extent of Woodlife-associated impacts."

Relative to dioxin/furan contamination, Section 5.3.5 states "Investigations at the Woodlife Area to further characterize dioxin/furan impacts found that soil and groundwater impacts were generally shallow (less than 5 feet bgs) and appeared to be localized." The RI/FS should more clearly state (and map) that dioxin/furan TEQs as great as 26,817 ng/kg dry weight have been reported for soil (Table 4-1.11).

While the RI/FS discusses at length the distinction between wood preservation and wood surface protection, it does not provide a conceptual site model for how the highest dioxin/furan TEQ came to be located near the stormwater outfall discharging from this area of the Site. Instead, it states "groundwater migration/seepage to surface water does not appear to be a significant release mechanism for dioxin/furan impacts in the Woodlife Area" and "overland transport/surface runoff is not considered a significant release mechanism for the dioxin/furan impacts in the Woodlife Area" despite the fact that high concentrations of the chemical were previously reported in Site stormwater. Specifically, Appendix B to the RI/FS documents the presence of high concentrations of PCP in Woodlife Area stormwater in 1991 (140,000 µg/L); given such high PCP concentrations, it is likely that the stormwater also contained appreciable concentrations of dioxins/furans. Additional source identification is needed.

The likelihood that the Woodlife area is a primary source to the inlet sediments is supported by a preliminary examination of the dioxin/furan congener patterns using toxic equivalency factor-scaled data from locations with elevated dioxin/furan TEQs. Figures 1 and 2 were prepared as an exploratory first step in fingerprinting.

The congener patterns of dioxins/furans in soils and sediments within the inlet suggests that the patterns in sediment are consistent with the pattern in soil in the Woodlife area. The patterns in both the soil and sediment samples from the Woodlife area are dominated by the contribution of 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin (HpCDD) (Figure 1). It is also important to note that the patterns in both surface and subsurface sediment in the inlet are similar (i.e., HpCDD dominated), suggesting a continuing source. The eroding bank should be characterized during design.

Samples with elevated dioxin/furan TEQs from sediment near outfalls south of the Site had a different pattern (Figure 2). Both the surface and subsurface sediment patterns had greater contributions from 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin. It would be helpful to compare this pattern with that of upland sample SS-301, which is a boiler ash sample. However, the congener data for this sample are not provided in Table 5.3-1. These results should be added.

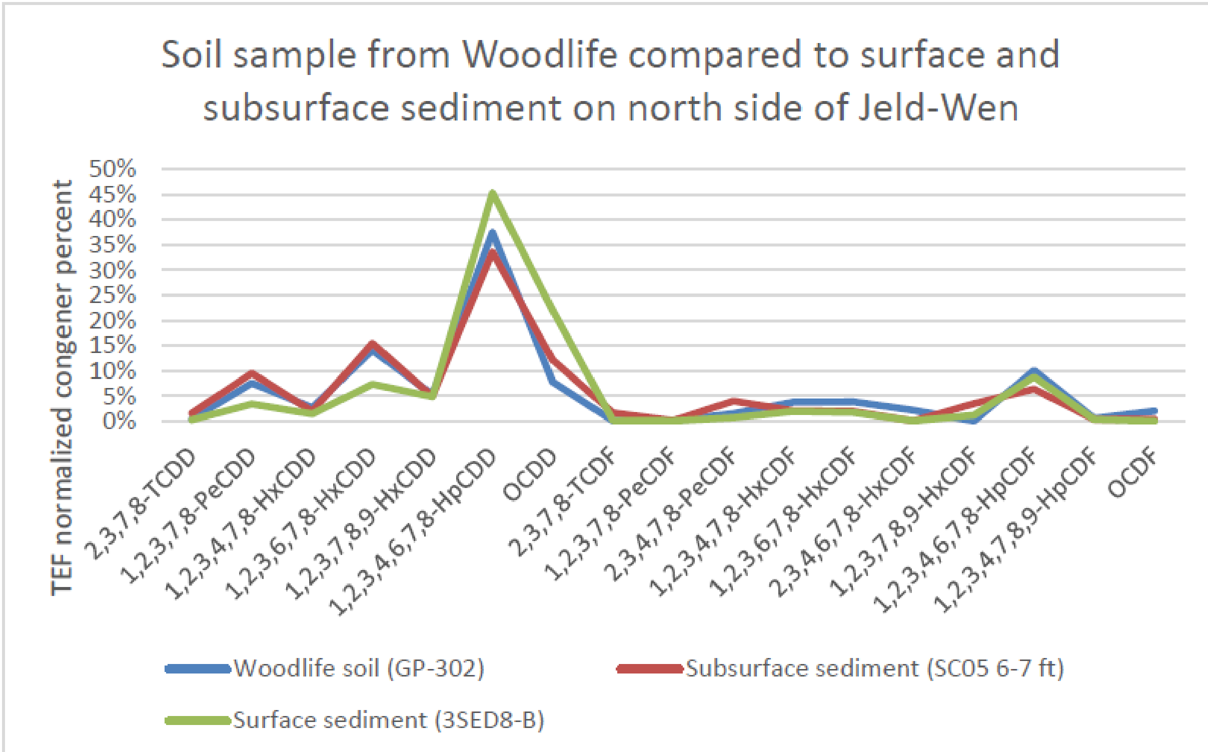


Figure 1. Comparison of dioxin/furan patterns in inlet sediment and Woodlife soil

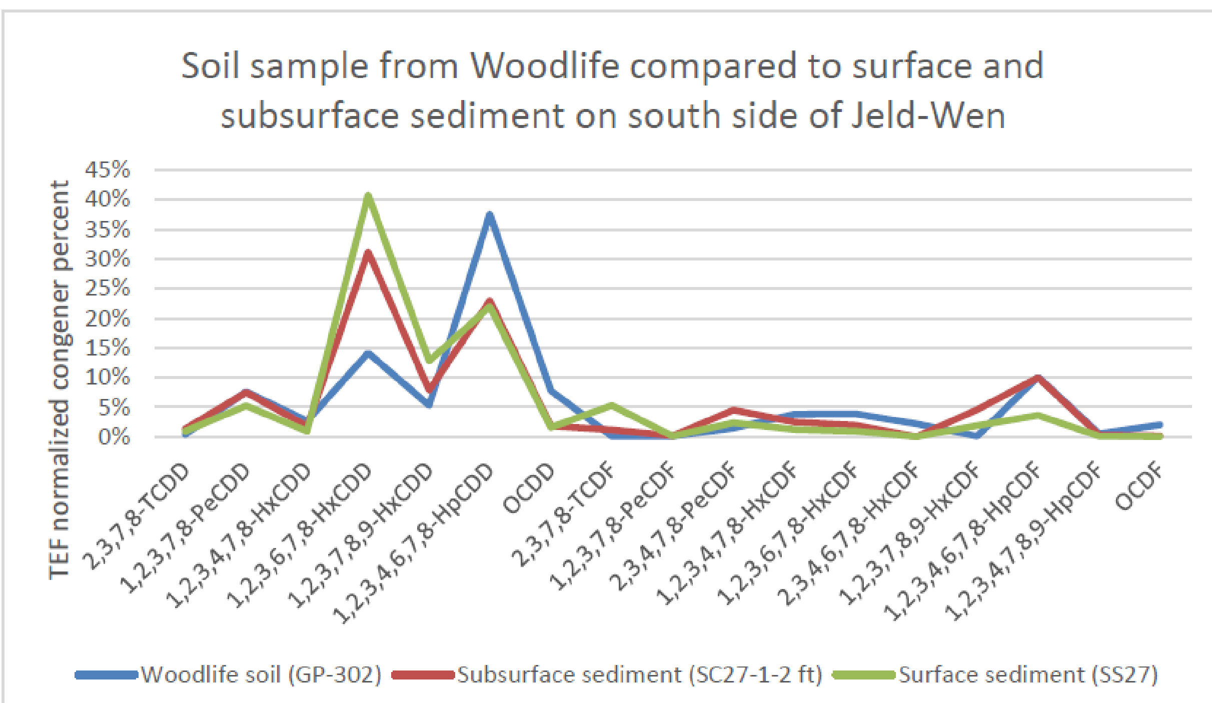


Figure 2. Comparison of dioxin/furan patterns in south sediment and Woodlife soil

Response:

Ecology does not believe a chemical source tracing/fingerprinting is necessary to pinpoint the Woodlife area as a source to the sediment. Use of Woodlife solution, which contained dioxins and furans, has contaminated the northeast corner of the property where the PCP tank and piping was located. Spills, leaks, and/or activities associated with the Woodlife solution may have migrated to sediment through surface runoff, building drainage, and stormwater outfall discharge. The RI did not find a soil to groundwater to sediment pathway for dioxins and furans. In addition, the sediment dioxins and furans contamination is also influenced by hog fuel burning. Ecology has concerns about the methodology of the limited fingerprinting analysis provided by the Port; however, Ecology also believes a fingerprinting analysis is not necessary to define the nature and extent of contamination and the ultimate cleanup need.

No changes to the Final RI/FS document were made due to this comment.

7. **Sediment data are inadequate for several locations**. The following data should be collected as part of design:

◆ Core data near each outfall, including dioxin/furan analysis in a core off the western shoreline, and dioxin/furan, PCBs, and cPAH data in a core off the inlet outfall

◆ Deeper cores along the southern shoreline at two locations in order to “tag clean” (i.e., JW-EA07-SC27 is only 2.5 ft deep with a bottom TEQ of 25 ng/kg, and JW-EA06-SC21 is only 4 ft deep with a bottom TEQ of 14 ng/kg)

◆ PCB congeners in the surface sediment in the inlet where both PCBs and dioxins/furans are elevated

Response:

During remedial design, additional sediment cores will be collected to further refine the nature and extent of contamination. Ecology anticipates that additional sediment cores will be collected within the inlet as well as along the southern shoreline. Exact locations will be determined during the Draft Cleanup Action Plan and/or Cleanup Action Plan/Engineering Design Report stage.

No changes to the Final RI/FS document were made due to this comment.

8. **Additional detail should be added regarding future monitoring (analytes and media) and contingencies should the remedy not be effective. The overall remedy cost estimate should include these items**. The footprint of the sediment remedy is based on dioxin/furan TEQs relative to the practical quantitation limit, although PCBs and cPAHs will also be monitored. It is unclear if the full Washington State Sediment Management Standards (SMS) analyte list

(including PCP) has been analyzed as part of the RI/FS in locations outside the remediation footprint. It is standard practice to do so.

Response:

It is Ecology's position that sufficient information regarding future monitoring, contingencies and costs related to those items is included in the document. As described in Section 8.5 "Development of Marine Cleanup Action Alternatives" the scope and details of long-term monitoring will be determined during development of the draft CAP and may be refined as part of remedial design. A future post-construction monitoring plan will detail analytes, media and other specifics related to long-term monitoring. The potential need for contingency actions is considered in Section 10.2.1 "Detailed Evaluation and Comparison of Marine Alternatives" primarily through evaluation of the Permanence and Long-Term Effectiveness criteria. Cost considerations for long-term monitoring and contingency actions are described in Section 9.3.7 "Cost" and more specifically in Appendix N "Summary of Marine FS Costs". For the purposes of estimating remedial costs, a contingency of 30% of the direct construction costs of each alternative was incorporated its total cost. Estimated long-term monitoring costs for each alternative are documented in Table N-1 "Unit Cost Assumptions".

The site was characterized over multiple sampling events, in a step-wise approach that is typical for cleanup sites that fall under the Model Toxics Control Act (MTCA) or Washington's Sediment Cleanup Standards (SMS). Surface samples collected in 2009 were characterized for the full SMS suite (see Appendix H, Table H-1). Section 4.3 "Marine Sediment Characterization" provides a narrative of sediment data collection over time. Surface and subsurface samples collected after 2009 were analyzed primarily for PCBs, cPAHs, and dioxins/furans, based on the results of the 2009 sampling event. Some subsurface cores were analyzed for the full SMS suite. Because of the frequent detection of dioxins/furans, PCBs and cPAHs and the contribution of risks from these contaminants compared to other SMS constituents, they primarily define the marine sediment cleanup footprint. Additional samples will be collected as needed during future phases to verify that the cleanup footprint and remedy design adequately captures and addresses risks from all SMS constituents.

In regards to pentachlorophenol (PCP), 34 surface sediment samples and three subsurface sediment samples were analyzed for PCP. None of the samples exceeded the Marine Sediment Cleanup Objective for PCP, which is protective of benthic community health. The results of the marine sediment surface and subsurface samples can be found in Tables 4.2-1 through 4.2-22 and Appendix H.

No changes to the Final RI/FS document were made due to this comment.

9. **It should be clarified that the Port owns only some of the free-standing piles at the Site and does not own the bulkhead properties on the upland portion**. Text in Section 6.2.1.3 should be revised as follows: "Two bulkhead structures containing an unknown number of piles and lagging, a remnant wooden barge, and approximately 45 free standing piling or dolphins have

been identified within the Site boundary. As depicted on Figure 3.6, some of the structures and pilings are on properties that are owned by the Wick Family Trust and some of the free standing piles are owned by the Port of Everett." The fact that the bulkheads along the Jeld-Wen northern shoreline were not built and are not owned by the Port was documented in detail in the Port's January 2020 letter to Ecology.

Response:

Comment noted. The Port's suggested edit seems to suggest the Port owns the freestanding piles and not the bulkhead structures. Ecology would not get into the discussion of who owns the bulkhead structures, as it is not Ecology's purview. As such, Ecology revised the Section 6.2.1.3 text as follows:

> *"Two wood bulkhead structures containing an unknown number of piles and lagging, a remnant wooden barge, and approximately 45 free standing piling or dolphins have been identified within the Site boundary. As depicted on Figure 3.6, some of the structures and/or pilings are on properties that are owned by the Wick Family Trust and by the Port of Everett."*

Changes were made in the Final RI/FS document due to this comment.

10. **Alternative M5 appears to be less protective than M4 near the knoll**. Section 11.2 also states that "Alternative M5 removes a greater volume of sediments contaminated with PCBs adjacent to the knoll." Based on a comparison of Figures 8.5-4 (M4) and 8.5-5 (M5), both alternatives appear to have the same 2-ft removal footprint, but while Alternative M4 follows the removal with the installation of an engineered cap, Alternative M5 follows the removal with backfill only (less protective).

Response:

Thank you for your comment.

Available data indicate cleanup level exceedances near the knoll occur only within the top two feet of sediment. Therefore, an engineered cap is not necessary in areas where the top two feet is removed and backfilled with clean material. Figures for Alternatives M3 and M4 were revised to indicate that for knoll area sediments within Sediment Management Area (SMA) 3, the cleanup action is removal of the top two feet of sediment followed by backfill with clean material. Alternative M5 takes that same action for SMA-3 knoll area sediments, and also includes removal and backfill in knoll area SMA-2b, so it addresses a larger volume of PCB contaminated sediment (see Exhibit 8.5 in section 8.5 for reference). SMA-2b is anticipated to encompass roughly 0.35 acres; additional data will be collected to refine the extent of SMA-2b. For comparison, Alternatives M3 and M4 select a thin-layer sand cover for SMA-2b, resulting in a less protective remedy than M5 in the knoll area.

Changes to the Final RI/FS document were made due to this comment.

UPLAND CHARACTERIZATION AND REMEDY

As summarized in Section 11.1, upland evaluations were conducted for three upland assessment areas: the Creosote/Fuel Oil Area, Woodlife Area, and Knoll Fill Area. Alternative 7 was selected as the preferred alternative for the Creosote/Fuel Oil Area. This alternative would remove hotspot shallow soils and employs bioremediation.

Alternative 2, consisting of soil removal, was selected for the Woodlife Area, and no upland cleanup was selected for the Knoll Fill Area, which relies on the Alternative M5 remedy for the sediment to reduce concentrations in the upland, a somewhat unsupported concept. Specifically, Section 11.1.3 states "Implementation of the M5 remedy in the marine area could result in decreased PCB concentration in the groundwater. Knoll area PCBs will be re-evaluated during long-term monitoring and periodic review."

Specific comments are listed below.

11. **The RI does not present information clearly enough to readily understand environmental conditions for the entire upland area**. Although the upland area of the Site is composed of more than 35 acres, the RI narrative discusses conditions for the Creosote/Fuel Oil Area, Woodlife Area, and Knoll Fill Area only, which collectively comprise a relatively small percentage of the entire upland area. The RI/FS should present the data to show that the remaining majority of the upland area meets cleanup standards.

Response:

Ecology agrees that not all the upland data were presented within the document graphics, specifically for all individual PCB congeners, dioxin/furan congeners, PAHs, VOCs and SVOCs. Table 4.1-1 to Table 4.1-26 provide summary results and individual sample results for chemicals that were detected at higher frequency. Table 4.1-1 and 4.1-2 were updated to include chemicals that were analyzed for but not measured above the laboratory detection limit in any samples. The following additional text was added in Section 4.1.2.1 to discuss the selection of Indicator Hazardous Substances (IHS) for the upland property.

> *"Analytical data was screened to determine whether to eliminate individual substances based on the frequency that the hazardous substance had been detected at the Site. Individual substances were eliminated from consideration from remedial action if detected above the laboratory detection limit in less than 5% of analyzed samples. See Table 4.1-1 and Table 4.1-2."*

Graphics (Figure 4.1.3 – a through e) were added to Chapter 4 upland area investigation (similar to the sediment data graphics presentation) to better represent the contaminated soil and groundwater areas throughout the site. These graphics show where the IHS were sampled throughout the site and where these IHS exceed Preliminary Cleanup Levels (PCL). Those additional graphics are also included below as Figures 3 to 7.

The following text was added to Section 4.1.2.1 to characterize other isolated areas of impact.

"•Naphthalene was identified in groundwater samples from Geoprobe borings GP-307 and GP-308 in the central portion of the Site. Adjacent permanent monitoring wells MW-1 and MW-16 have not measured naphthalene above the laboratory detection limit in subsequent events.

•Dioxins were identified in soil samples from GP-309 and monitoring well MW-16 at concentrations of 5.8 pg/g and 8.3 pg/g, slightly above the PQL-based PCL of 5.7 pg/g.

Dioxins were identified in sample SS-301 above the PCL. This sample was collected from residual boiler ash material stored in a drum and its location as shown on Site figures in this report is relative to the location of the drum at the time of sampling. An additional boring, 404-P, was completed immediately adjacent to the drum and did not identify dioxins above the PCL."

Changes were made in the Final RI/FS document due to this comment.

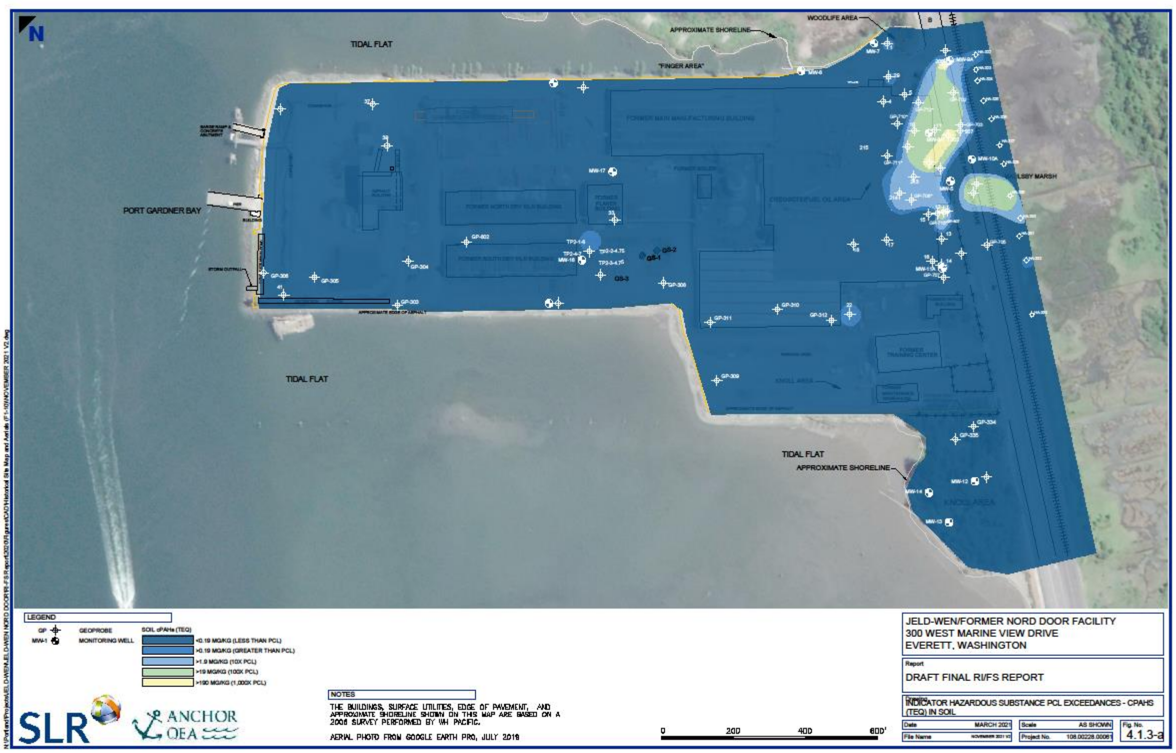


Figure 3: Indicator hazardous substance PCL exceedances – cPAHs (TEQ) in soil

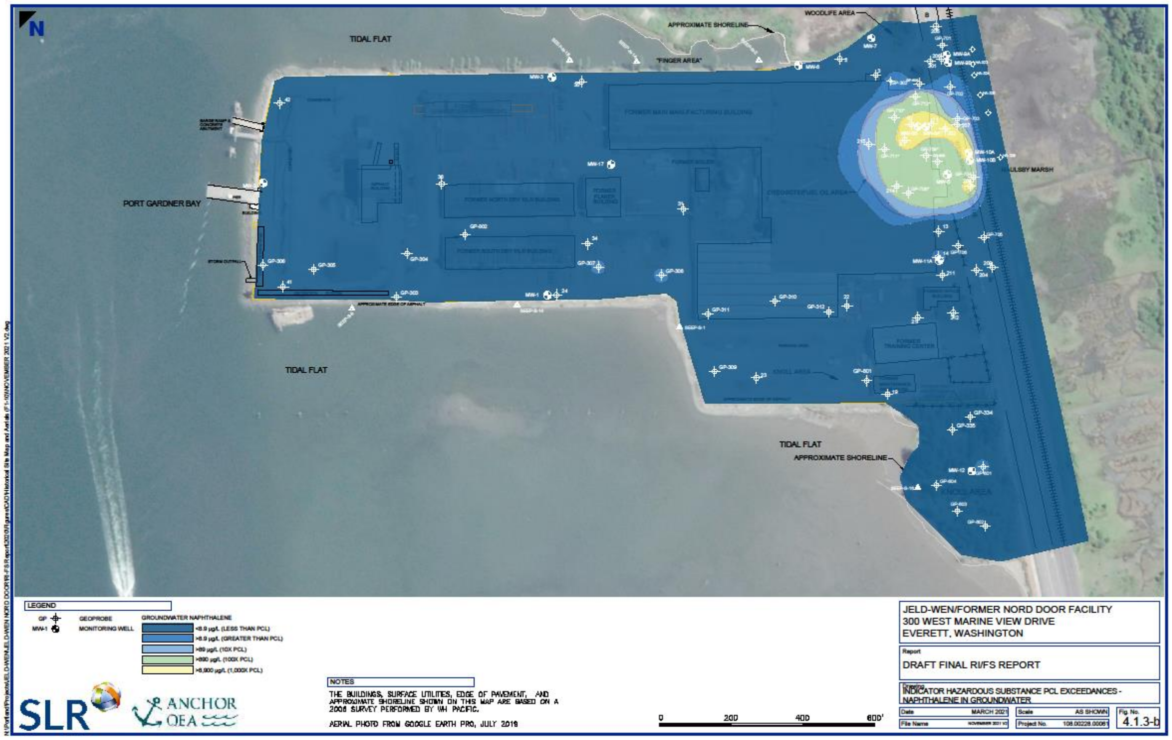


Figure 4: Indicator hazardous substance PCL exceedances – naphthalene in groundwater

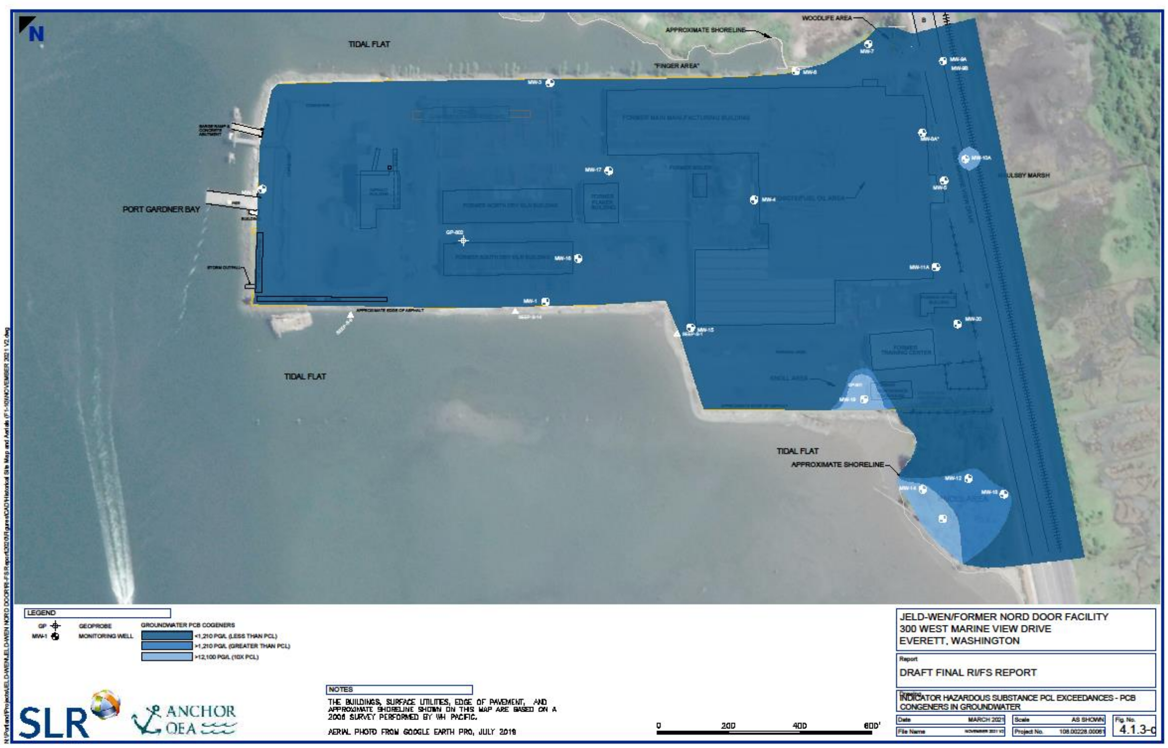


Figure 5: Indicator hazardous substance PCL exceedances – PCB congeners in groundwater

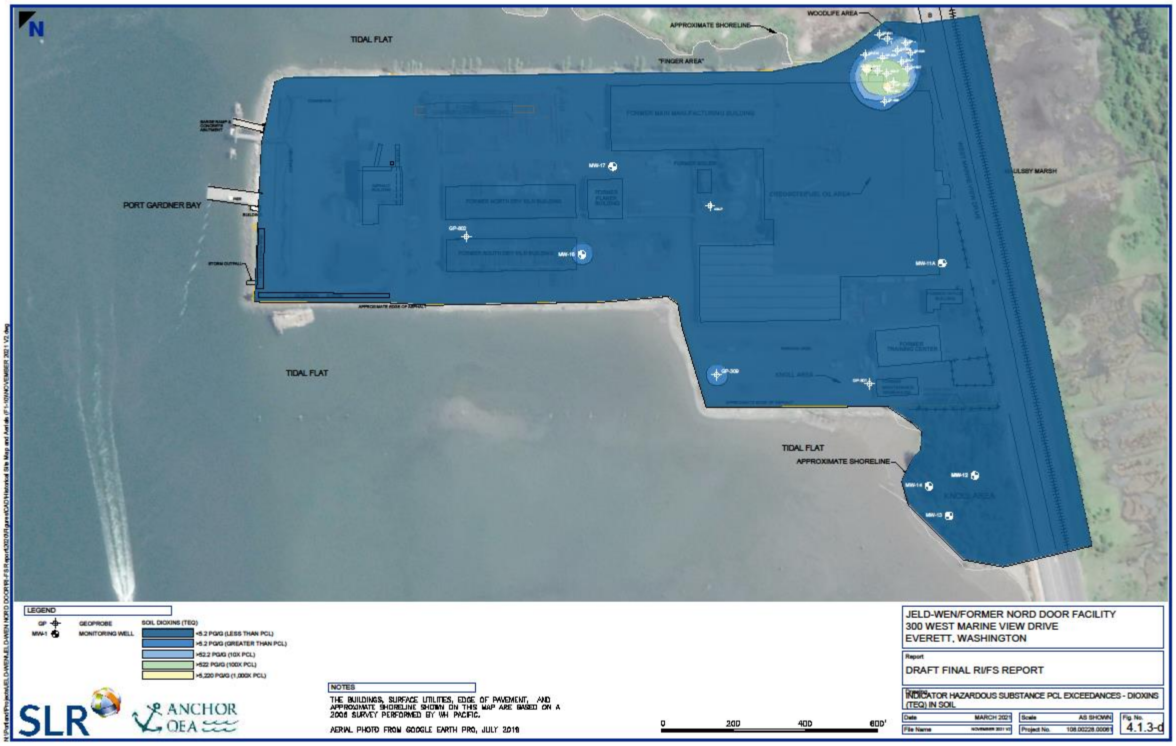


Figure 6: Indicator hazardous substance PCL exceedances – Dioxins and Furans (TEQ) in soil

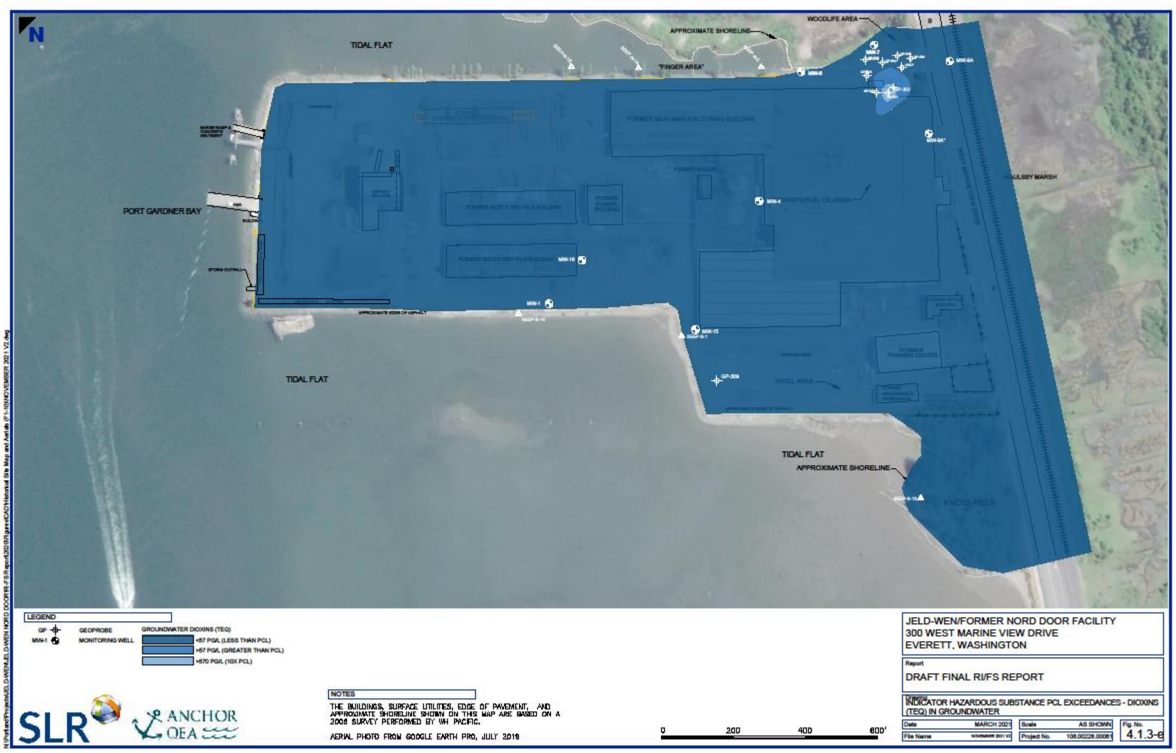


Figure 7: Indicator hazardous substance PCL exceedances – Dioxins and Furans (TEQ) in groundwater

12. **Upland data should be more clearly presented on maps (as was done for sediment).** The RI/FS currently lacks a map with concentrations of soil contaminants of potential concern (especially dioxin/furan TEQs, as presented in Table 4.1-11). Such a map is important in discussing the nature and extent of upland contamination. Without a map or discussion of the data, ascertaining the distribution of contamination in upland area soil is not as transparent as it should be, and it is difficult to relate the patterns to sediment contamination.

Response:

Ecology agrees. See the response to Comment #11.

Those graphics are also included below in this responsiveness summary document (Figures 3 to 7).

Changes were made in the Final RI/FS document due to this comment.

13. **Restoration timeframes are not clearly provided for the remedial alternatives, and the ability of Alternative 7 for the Creosote/Fuel Oil Area (preferred remedy) to meet cleanup levels in a reasonable restoration timeframe is highly uncertain**. Within the Creosote/Fuel Oil Area, dense non-aqueous-phase liquid (DNAPL) has produced high concentrations of dissolved-phase hydrocarbons to a depth of approximately 50 ft (e.g., 24,000 µg/L diesel-range organics and 8,650 µg/L naphthalene in groundwater at well MW-8B). The DNAPL at that 50-ft depth is mobile enough to accumulate in the bottom of that well. Based on the existing dataset, the lateral and vertical extents of DNAPL and associated dissolved-phase contamination below depths of approximately 15 ft are poorly defined, particularly to the west between well MW-8B and Port Gardiner Bay.

There are various forms of in situ thermal treatment (as included in FS Alternative 5) proven to be generally effective in treating DNAPL at depth. While in situ bioremediation (ISB) can be effective in treating dissolved-phase hydrocarbons generated by DNAPL, it likely will not be particularly effective in treating the DNAPL source material. As such, the Site restoration timeframe will likely exceed 10 years, perhaps greatly, if ISB is the sole means of addressing the source material at depth.

The FS should include a more definitive assessment of the preferred remedy's anticipated restoration timeframe in accordance with Washington Administrative Code (WAC) 173-340-360(4). In addition, the FS should define a decision-making process for assessing treatment performance over time, and for implementing a contingency action should monitoring indicate that the treatment will not achieve cleanup standards in a reasonable timeframe.

Response:

Comment acknowledged.

Ecology understands DNAPL at higher depth are not fully characterized. Additional geoprobe borings will be performed during the remedial design (RD) phase to better understand the nature and extent of DNAPL at greater depth. The in situ bioremediation system, as described in section 8.4.1.2, will include both injection and extraction wells. Vertical recirculation wells will be installed at known DNAPL locations and will be designed to facilitate collection of DNAPL at higher depth. Extracted water will be allowed to settle for separation of free products, mixed with nutrients and passed through sand filters before injection into subsurface. Pilot testing of the in situ bioremediation system will also be performed during the RD phase. An Ecology-approved work plan will specify the performance criteria and objective of the pilot study. Demonstration and results of the pilot testing will dictate its full-scale installation. If feasible, the full-scale system will be operated for 5 years and monitored for a total 10 years (performance monitoring) as stated in section 8.4.1.7.

Ecology acknowledges cleanup levels may not be achieved within a reasonable restoration timeframe due to the inherent uncertainly of the in situ bioremediation system as with any biological treatment system. As such, Ecology will include a contingent remedial action (CRA) in the cleanup action plan (CAP). The CRA will be based on the next most permanent alternative evaluated in the FS, which is alternative 5 (Thermal Treatment). The triggers for the CRA will be detailed in the CAP.

No changes to the Final RI/FS document were made due to this comment.

14. **The Woodlife Area cleanup must explicitly address PCP in addition to dioxins/furans**. The Woodlife preservative released in this area contained PCP as its active ingredient, and the dioxins/furans targeted for cleanup in this area were impurities in the PCP created during its manufacture. PCP was detected sporadically in Woodlife Area soil samples at concentrations of up to 7.4 mg/kg, which is orders of magnitude greater than Ecology's soil concentration predicted to be protective of groundwater discharging to marine surface water (1.8 x 10-6 mg/kg per Ecology's CLARC database). In addition, that 7.4 mg/kg PCP detection occurred in a soil sample (GP29-8) collected from a depth of 8 ft, a fact that is never presented or discussed in the draft report. PCP data are not included in any tables or graphics, because the frequency of detection of PCP for the site as a whole (i.e., not just the Woodlife Area, where PCP was handled) was less than 5%. In fact, the reader must search the raw laboratory reports in Appendix P to find PCP data for the Site. Given the soil PCP exceedance at a depth of 8 ft, the planned 5-ft excavation depth for the Woodlife Area warrants reassessment to ensure that the proposed cleanup fully addresses the Woodlife-related contamination.

Additionally, although PCP was not detected in groundwater samples collected from wells MW-6 and MW-7 in the Woodlife Area, the laboratory reporting limits for the groundwater samples were as high as 10 µg/L, orders of magnitude greater than the 0.002 µg/L marine water quality standard for this bioaccumulative compound. Given the Woodlife Area's proximity to the shoreline, performance monitoring for PCP in the soil excavation, and confirmation groundwater monitoring for PCP, applying current industry-standard analytical reporting limits (typically 0.05 µg/L) is warranted as a component of the cleanup action to ensure that PCP does not pose a risk to the marine environment.

Response:

Comment acknowledged.

PCP was detected in 3 soil samples in the woodlife area, two of them exceeding MTCA method B cleanup levels. PCP in groundwater was not detected with laboratory reporting levels ranging from 1 to 10 ug/L. However, PCP was detected in 4 surface sediment (out of 34 samples) and 3 subsurface sediment below sediment cleanup objective (SCO) benthic criteria. Given the detection of PCP in the sediment, Ecology will require monitoring of PCP in existing groundwater monitoring wells with lower detection levels (if available) to verify if PCP results are still non-detect in groundwater. If PCP is detected in groundwater, and they are above applicable screening levels, cleanup levels will be established in soil and groundwater media during CAP development. If necessary, PCP analysis along with dioxins and furans will be added to monitoring during the remedial design phase sampling to refine the excavation footprint and evaluate whether PCP exists as a co-contaminant with dioxins and furans. PCP will also be added to the confirmational monitoring during remedial construction, as necessary.

No changes to the Final RI/FS document were made due to this comment.

15. **The preferred alternative needs to specify environmental capping as a required component of the upland cleanup action**. In accordance with MTCA, the draft RI/FS applies a Site-wide exclusion from performing a terrestrial ecological evaluation, because potential exposure to all contaminated soil is and will be prevented by man-made physical barriers (buildings, pavements, etc.). MTCA requires that a site applying that exclusion execute a restrictive environmental covenant under WAC 173-340-440 to ensure that the man-made barriers achieving soil containment are maintained in the future (WAC 173-340-7490(1)(b)). An environmental cap will also likely be required for the Creosote/Fuel Oil Area to contain residual contaminated soils between the planned 9-ft excavation depth and the 15-ft point of compliance for soil direct contact.

Response:

Comment acknowledged.

An appropriate environmental covenant will be specified wherever contamination is left behind after remedial construction, as determined by confirmational sampling. Surface capping will be specified as part of the remedy for terrestrial ecological evaluation (TEE) exclusion.

No changes to the Final RI/FS document were made due to this comment.

SUMMARY OF REQUESTED ACTION ITEMS

Below is a summary of the items requested in this comment letter. Thank you for your consideration of these requests.

- ◆ Revisions to text and tables:
  - ◆ Make requested edits in Sections 8.2.3 and 6.2.1.3.
  - ◆ Clarify Alternative M5 with respect to removal depths in the inlet and justify the depth the data.
  - ◆ Add dioxin/furan congener-specific data to Table 5.3-1 for upland sample SS301.
  - ◆ Add detail regarding future monitoring (analytes and media) and contingencies should the remedy not be effective.
  - ◆ Clearly present upland data for the full site to show that the upland area will meet cleanup standards after the remedy.
  - ◆ Include a more definitive assessment of the upland preferred remedy's anticipated restoration timeframe for the Creosote/Fuel Oil Area, and define a decision-making process for assessing treatment performance over time and for implementing a contingency action if needed.
  - ◆ Include an assessment to demonstrate that the planned 5-ft excavation depth in the Woodlife Area will address all of the Woodlife Area-related contamination.
- ◆ Remedy requests:
  - ◆ Consider sediment removal throughout the head of the inlet, rather than a mix of removal/capping and ENR.
  - ◆ Ensure that Alternative M5 would accommodate the discharge (i.e., would not result in erosion) from the new permitted Bay Wood outfall in the inlet.
  - ◆ Execute a restrictive environmental covenant to ensure that the man-made barriers achieving soil containment for human and terrestrial ecological exposure are maintained in the future.
- ◆ Additional source identification and control:
  - ◆ Clean out the stormwater lines and analyze stormwater solids prior to conducting the remedy in the inlet. If the solids show contaminant concentrations greater than sediment RALs, an analysis must be conducted to ensure that the upland cleanup will address the sources of the contamination.

◆ Additional data to collect, during design if not sooner:

> ◆ Collect and analyze a sediment core near each outfall, including dioxin/furan analysis off the western shoreline outfall and dioxin/furan, PCBs, and cPAH analysis off the inlet outfall.
>
> ◆ Characterize the quality of the eroding bank on the south shoreline in the inlet.
>
> ◆ Collect and analyze deeper sediment cores along the southern shoreline at two locations in order to "tag clean."
>
> ◆ Analyze PCB congeners in the surface sediment in the inlet where both PCBs and dioxins/furan concentrations are elevated.
>
> ◆ Analyze the full SMS analyte list (including PCP) in locations just outside the remediation footprint.
>
> ◆ Apply current industry-standard analytical reporting limits for PCP in monitoring.

Response:

See Ecology responses to the Port's numbered comments. These summary comments were addressed in those responses. ***No changes to the Final RI/FS document were made due to this comment.***

Attachment 1

PUMP DESIGN

An Oldcastle Onelift station with duplex pump system is proposed to pump the outflow from the Modular Wetland Systems to the bubble up outfall structure for the site. Pump flow rates were determined using WWHM to calculate the maximum 100-year flowrate (12.33 cfs → 5,535 gpm) and using WWHM to calculate the more common 2-year runoff rates (4.82 cfs → 2,165 gpm).

The duplex pump station made up of two (Flygt-NP3171 LT 3~615 Pumps) will pump runoff from an elevation of 3.25' to a discharge elevation of 13.18' through a 14" forcemain overcoming a total head of 10.38'. Please see the head loss calculation below. The pump system will operate based on float switches and on an automatic timer for long flow durations. A single pump is designed to operate with the second pump designed as an alternate pump that will switch on when the other turns off in order to reduce the continuous run time of each pump. Both Pumps will run simultaneously during very large runoff events such as 100-year events. Please see the pump details and Onelift detail located in the Appendix.

Total Head Calculation:

Total Head = Static Head + Dynamic Head

Static Head = 13.18 ft. – 3.25 ft. = 9.93 ft.

Dynamic Head, use the following equation to determine friction loss:

$$f = 0.2083\left(\frac{100}{C}\right)^{1.85}\left(\frac{Q^{1.852}}{D_i^{4.8655}}\right)$$

where: f = friction loss per 100 feet of pipe

C = flow coefficient → 150 for PVC

Q_{100}= 12.33 cfs flow rate, gpm → 5,535 gpm

D_i = inside diameter of pipe, in → 14

$$f = 0.2083\left(\frac{100}{150}\right)^{1.85}\left(\frac{5{,}53\ ^{1.852}}{14^{4.8655}}\right)$$ = 2.23 ft. per 100 feet of pipe

20 ft. of 14" pipe = 20

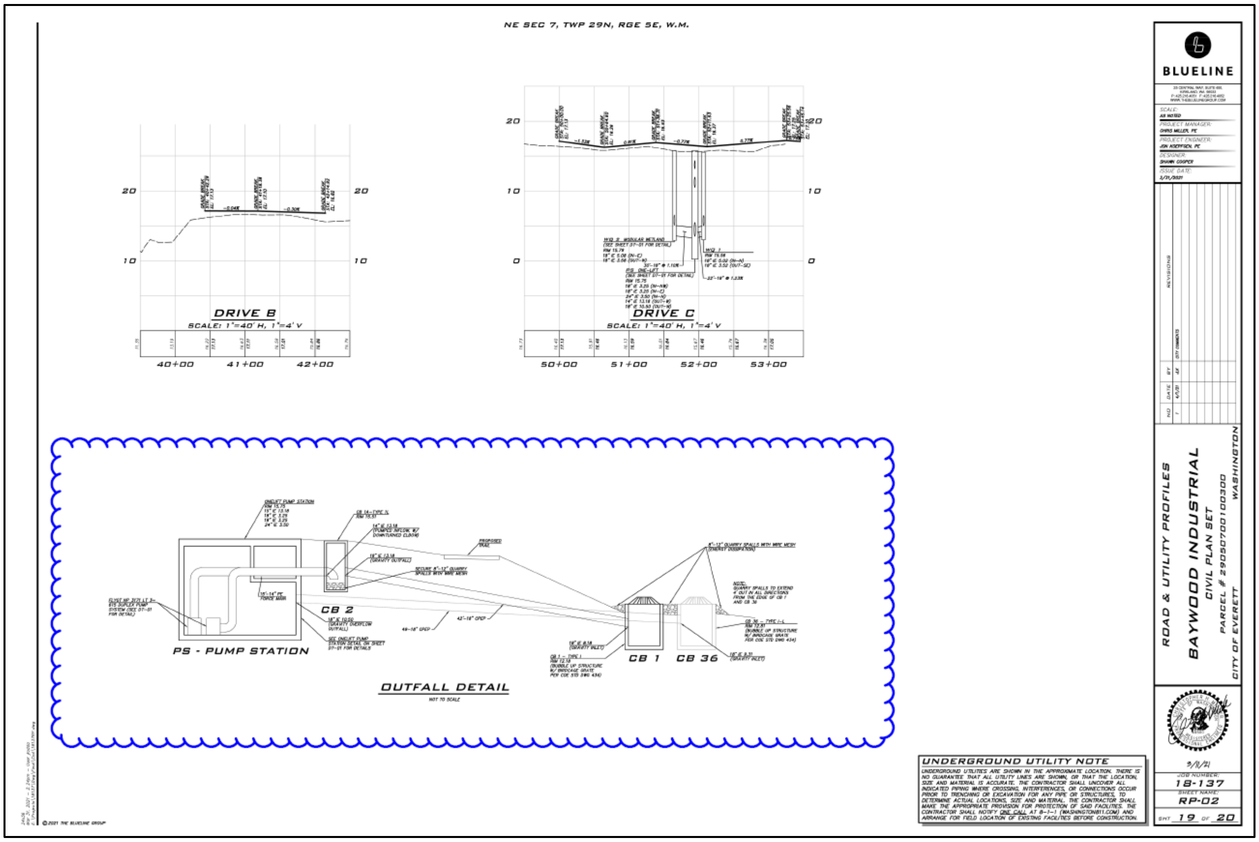
f= 2.23 * 20/100 = 0.446 ft.

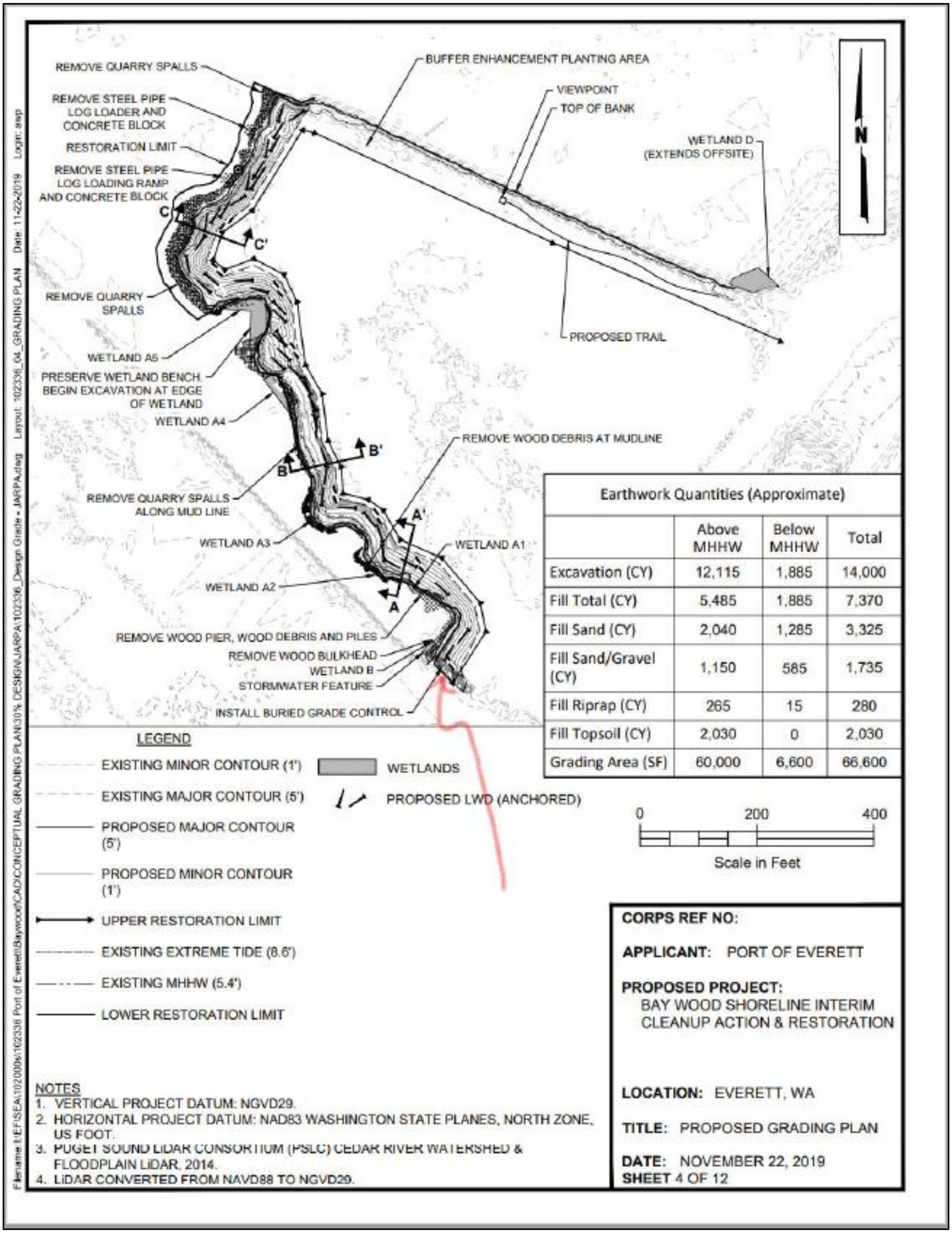
Total Head = 9.93 ft. (static) + 0.446 ft. (dynamic) = 10.38 ft.

Pump Requirements:

Pump Rate = 5,535 gpm

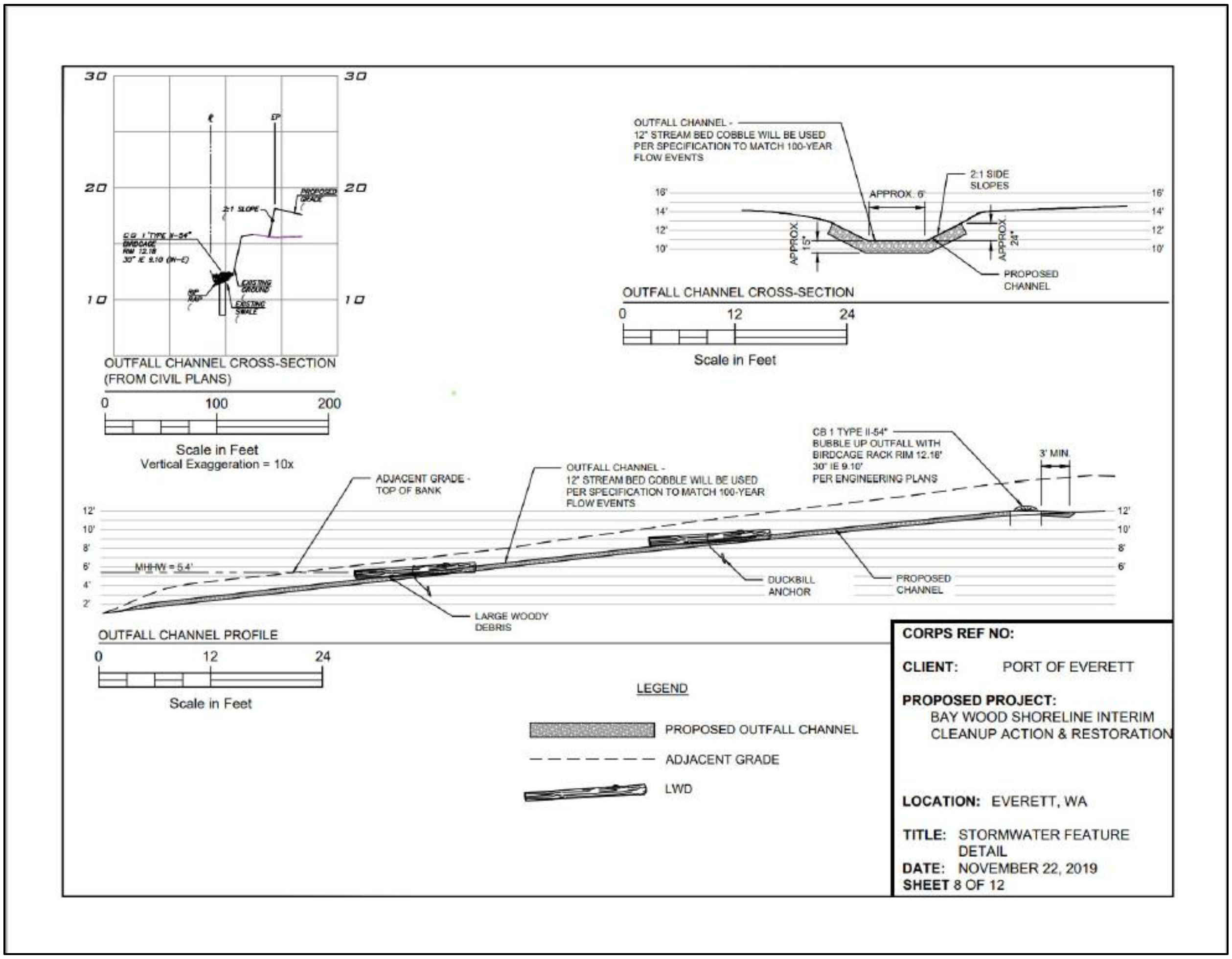
Total Head = 10.38 ft.


NE SEC 7, TWP 29N, RGE 5E, W.M.
DRIVE B
SCALE: 1"=40' H, 1"=4' V
40+00
41+00
42+00
DRIVE C
SCALE: 1"=40' H, 1"=4' V
50+00
51+00
52+00
53+00
PS - PUMP STATION
CB 2
CB 1
CB 36
OUTFALL DETAIL
BLUELINE
ROAD & UTILITY PROFILES
BAYWOOD INDUSTRIAL
CIVIL PLAN SET
PARCEL # 29050700100300
CITY OF EVERETT
WASHINGTON
UNDERGROUND UTILITY NOTE
18-137
RP-02
19 OF 20



Earthwork Quantities (Approximate)

	Above MHHW	Below MHHW	Total
Excavation (CY)	12,115	1,885	14,000
Fill Total (CY)	5,485	1,885	7,370
Fill Sand (CY)	2,040	1,285	3,325
Fill Sand/Gravel (CY)	1,150	585	1,735
Fill Riprap (CY)	265	15	280
Fill Topsoil (CY)	2,030	0	2,030
Grading Area (SF)	60,000	6,600	66,600



OUTFALL CHANNEL CROSS-SECTION
(FROM CIVIL PLANS)
0
100
200
Scale in Feet
Vertical Exaggeration = 10x
OUTFALL CHANNEL -
12" STREAM BED COBBLE WILL BE USED
PER SPECIFICATION TO MATCH 100-YEAR
FLOW EVENTS
2:1 SIDE
SLOPES
APPROX. 6'
APPROX. 15"
APPROX. 24"
PROPOSED
CHANNEL
OUTFALL CHANNEL CROSS-SECTION
0
12
24
Scale in Feet
CB 1 TYPE II-54"
BUBBLE UP OUTFALL WITH
BIRDCAGE RACK RIM 12.16'
30" IE 9.10'
PER ENGINEERING PLANS
3' MIN.
ADJACENT GRADE -
TOP OF BANK
OUTFALL CHANNEL -
12" STREAM BED COBBLE WILL BE USED
PER SPECIFICATION TO MATCH 100-YEAR
FLOW EVENTS
MHHW = 5.4'
DUCKBILL
ANCHOR
PROPOSED
CHANNEL
LARGE WOODY
DEBRIS
OUTFALL CHANNEL PROFILE
0
12
24
Scale in Feet
LEGEND
PROPOSED OUTFALL CHANNEL
ADJACENT GRADE
LWD
CORPS REF NO:
CLIENT: PORT OF EVERETT
PROPOSED PROJECT:
BAY WOOD SHORELINE INTERIM
CLEANUP ACTION & RESTORATION
LOCATION: EVERETT, WA
TITLE: STORMWATER FEATURE
DETAIL
DATE: NOVEMBER 22, 2019
SHEET 8 OF 12

Comment from: Brad Corradi

I am very interested to understand the long term plan for industrial use in this area. Will Jeld-Wen use the property? Will the property be sold? Additionally, my daughter and I are very interested to learn about the biology these tidal flats will support when cleaned. We would join a public meeting if held and encourage these topics to be discussed. Additionally, we are learning about our area and would be glad to volunteer in any way that would help us collect information about our home.

Response:

Thank you for your comment. The site is currently zoned for industrial use. JELD-WEN no longer owns the property, after selling it to W&W EVERETT INVESTMENTS LLC in 2013. For information on the site cleanup, you can join Ecology's mailing list to stay informed about upcoming public comment periods for this cleanup site. Future comment periods may include a public meeting. Contact Megan MacClellan at 360-688-3730, megan.macclellan@ecy.wa.gov to join the list.

While we appreciate your interest in volunteering, the nature of cleanup sites with active construction and potentially hazardous materials typically requires professional training and certification for maintaining safety standards while on site. There are rare opportunities for volunteer work at cleanup sites, and if one arises at the Jeld-Wen site or in its vicinity, we will use the mailing list mentioned above to advertise them.

No changes to the Final RI/FS document were made due to this comment.

Comment from: Carl King

My comment is general in nature. I am wondering if there is a specific person who will represent the interests of the public at large (as opposed to the City of Everett administration or private companies) and who will have the technical expertise to evaluate proposed studies and plans as well as cleanup operations and the results of the cleanup operations.

Response:

Thank you for your comment.

There is no specific person or group representing the public at large for this site, however, Ecology works for the interest of the residents of the state. You can contact the Ecology project manager Mahbub Alam, (360) 407-6913, mahbub.alam@ecy.wa.gov to discuss any technical questions or concerns you may have on this cleanup.

Ecology also offers special grants that can support the type of expertise you describe. Public Participation Grants (PPGs) provide funding to individuals and not-for-profit public interest organizations to increase public understanding and involvement in cleaning up contaminated *sites and improving recycling and waste management. PPG can fund up to $120,000 for a two-year project. Matching funds are not required. Applications for these grants are open every two years, once per biennium. You can learn about the next application opening and learn more about Public Participation Grants on Ecology's website: https://ecology.wa.gov/About-us/Payments-contracts-grants/Grants-loans/Find-a-grant-or-loan/Public-participation-grants.*

You can also contact Faith Wimberly, Ecology's Public Participation Grant Coordinator, directly to discuss potential opportunities before the next application period. She can be reached at 360-275-7285 or by email at faith.wimberly@ecy.wa.gov.

No changes to the Final RI/FS document were made due to this comment.

Comment from: The Tulalip Tribes (Todd Gray)

1. Thank you for providing The Tulalip Tribes the opportunity to review and comment on the above referenced report. We have several questions, which I have listed below. If a meeting with Ecology is an option, we would be interested in scheduling one with you, so we can further discuss these concerns.

Response:

Thank you for your comment. We will be in communication with you regarding a meeting.

No changes to the Final RI/FS document were made due to this comment.

2. Firstly, I'm not finding a plan drawing for Creosote/Fuel Oil Area alternative #7. Could this document be availed to us?

Response:

Thank you for your comment. The figure for Alternative 7 (Section 8.4.1.1) was missing from the draft final report. The missing figure is included below (Figure 8) and is included in the Final RI/FS report as Figure 8.4.1.1-G.

Changes were made in the Final RI/FS document due to this comment.

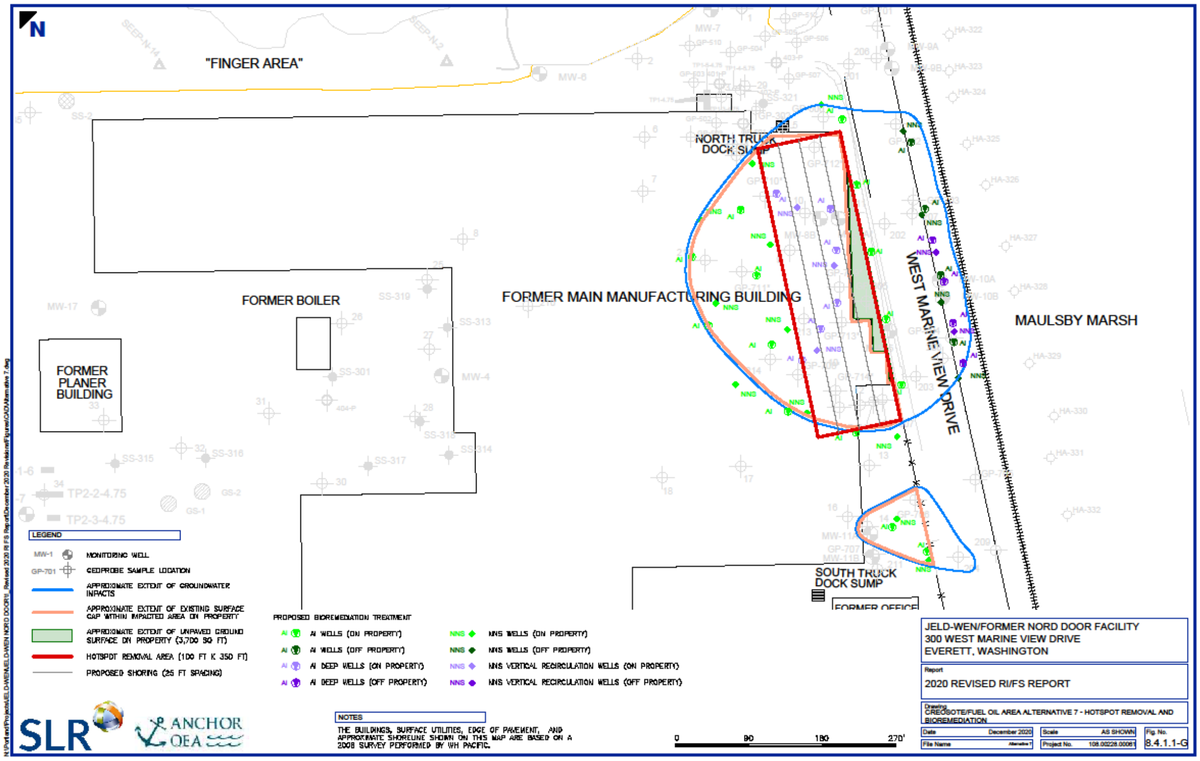


Figure 8: Creosote/fuel oil area alternative 7 - hotspot removal and bioremediation.

3. How will long term impacts to estuarine wetlands and marine substrates be mitigated? Is the Blue Heron Slough Wetland Mitigation Bank an option being considered?

Response:

Ecology takes into account net adverse environmental impacts when it sets cleanup levels and when it develops, evaluates, and implements cleanup alternatives. Potentially Liable Parties (PLPs) are required to avoid, reduce, and compensate for impacts to priority habitat, species, and other protected resources as required by applicable laws, while meeting the requirements for protection of human and ecological health from hazardous substances under the Model Toxics Control Act (MTCA) and Washington's Sediment Management Standards (SMS). To the extent possible, Ecology will design the cleanup actions to be compatible with on-site re-establishment of estuarine wetlands and marine mudflat habitat.

At this stage in the cleanup process, some potential mitigation measures have been identified but mitigation actions are not formally defined. The preferred cleanup alternative will be formally selected and more fully described in the forthcoming Cleanup Action Plan (CAP) and Engineering Design Report (EDR), which provides detailed engineering-level information about implementing the CAP once the CAP has been finalized. These documents will describe potential impacts to priority habitats and species. Prior to construction, the PLPs must complete *permitting and consultation processes with Tribal, federal, state, and local governmental entities that oversee protection of natural resources (e.g., U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Washington Department of Fish and Wildlife, Department of Ecology, etc.). During the permitting/consultation processes, those entities will assess potential impacts to estuarine wetlands and marine habitat and identify appropriate mitigation.*

We do not know if the PLP will consider the Blue Heron Slough Wetland Mitigation Bank in the event that off-site mitigation is necessary.

No changes to the Final RI/FS document were made due to this comment.

4. What specific material would the engineered cap be comprised of, and what exactly would the backfill material be? Are these materials designed to support full habitat re-establishment post-completion?

Response:

The materials for the engineered cap will be selected during the remedial design phase. Engineered sediment caps are designed to isolate contamination left in place and prevent future breakthrough or exposure. Site-specific factors dictate the materials and design. As described in RI/FS Section 8.2.6 "Engineered Containment", the following factors will be considered during design of engineered caps: bioturbation, habitat compatibility, erosion, chemical isolation, consolidation, and operational considerations such as placement accuracy. Ecology anticipates a habitat layer will be incorporated into the cap design. This means a clean layer of sediment suitable for marine organisms will be included above the contaminant isolation layer. To the extent feasible, substrate that supports clams, crab, and other valued species will be incorporated into the cap design to facilitate population re-establishment.

Ecology anticipates the habitat layer of the engineered caps will be a minimum thickness of one foot. During the CAP/EDR phase, the appropriate thickness will be further evaluated to ensure an adequate burrowing depth for target species.

See also response to Tulalip Tribes comment #5 below.

No changes to the Final RI/FS document were made due to this comment.

5. Is it known if juvenile crabs, as well as clams, are using the area? If not, can this be determined, and what steps might be taken to support expedient repopulation?

Response:

The Site mudflats and surrounding marine areas are Dungeness crab habitat, according to Washington Department of Fish and Wildlife habitat maps (Figure D.1-4). The only clam species *currently known to be present at the Site is the non-native soft shell clam (*Mya arenaria*). A recent Critical Areas Report for the Site noted that, "the dominant silt content of the mudflat habitat does not provide the sand and gravel substrate typically associated with Puget Sound native clam species" (Appendix D, March 2021 Critical Areas Report). Additional information about species and habitats known to be present, or possibly present, at the site are included in RI/FS Section 3.5 "Upland Ecology" and Section 3.6 "Marine Ecology", as well as in Appendix D.*

To the extent feasible, the cleanup design will support re-establishment of shellfish populations, as well as other aquatic resources. Typically, Ecology selects sediment suitable for native species when choosing substrate for thin-layer sand covers and for the habitat layer of engineered caps. Any input from the Tulalip Tribes have regarding shellfish species historically harvested in this area or currently harvested from nearby areas will be taken into account. Ecology understands the Tulalip Tribes may have specific requirements and expectations regarding harvest resources that will need to be addressed.

After the CAP development during the Remedial Design phase, Ecology will evaluate and select appropriate substrate for engineered caps and thin layer caps. The Tribe will have an opportunity to review this as part of the Nationwide 38 permit process (described below in response to comment #9). The evaluation will take into account the fate and transport of any contamination left in place, as well as site-specific wave and erosional patterns and habitat compatibility. To the extent feasible, substrate that supports clams, crab, and other valued species will be incorporated into remedial design to facilitate repopulation.

No changes to the Final RI/FS document were made due to this comment.

6. If contaminants will remain in the Knoll Fill Area, what will be done to prevent these contaminants from potentially entering the marine environment over time?

Response:

Chemicals of concern in the Knoll Fill Area include low level PCBs in groundwater. No sources of PCBs were found in the fill material itself. It is possible the Knoll Fill Area prior to filling had low level PCB contamination similar to some areas in the mudflat. Passive sampling with solid-phase microextraction (SPME) indicated that the concentration of PCBs in groundwater is less than that of in the sediment pore water in the mudflat. As such, PCB contamination can move from the sediment to groundwater due to tidal action and diffusion. Remediation of PCBs from sediment will likely reduce that movement and eventually reduce groundwater PCBs. Long term monitoring will establish the trend. If long term monitoring shows potential recontamination of the sediment or the marine environment, this will trigger additional investigation and further action.

No changes to the Final RI/FS document were made due to this comment.

7. Marine alternative M7 involves removing up to 9ft of material, whereas the preferred alternative, M5, only involves up to 4ft of removal. What is the potential for contaminants left below 4ft entering the environment? Also, has the potential for tidal/subtidal excavations to release otherwise contained toxins been considered and mitigated for?

Response:

A cost-benefit analysis was conducted to evaluate and identify the preferred alternative M5. See Figure 9 for the marine alternatives disproportionate cost analysis. Using this analysis, alternative M7 was disproportionately costly in comparison to the benefits it provides when evaluated against Alternative M5, which scored high for protectiveness, permanence, and other MTCA criteria, and costs $13 M to implement. In fact, Alternative M5 was given the highest overall benefits score of any alternative. Alternative M7 removes all sediment above cleanup levels from the Site, including sediment nine feet below the surface. It is the most permanent but also the most costly at $39 million, is more technically challenging, has greater short-term risks, and the extensive construction would result in greater disruption to the surrounding community.

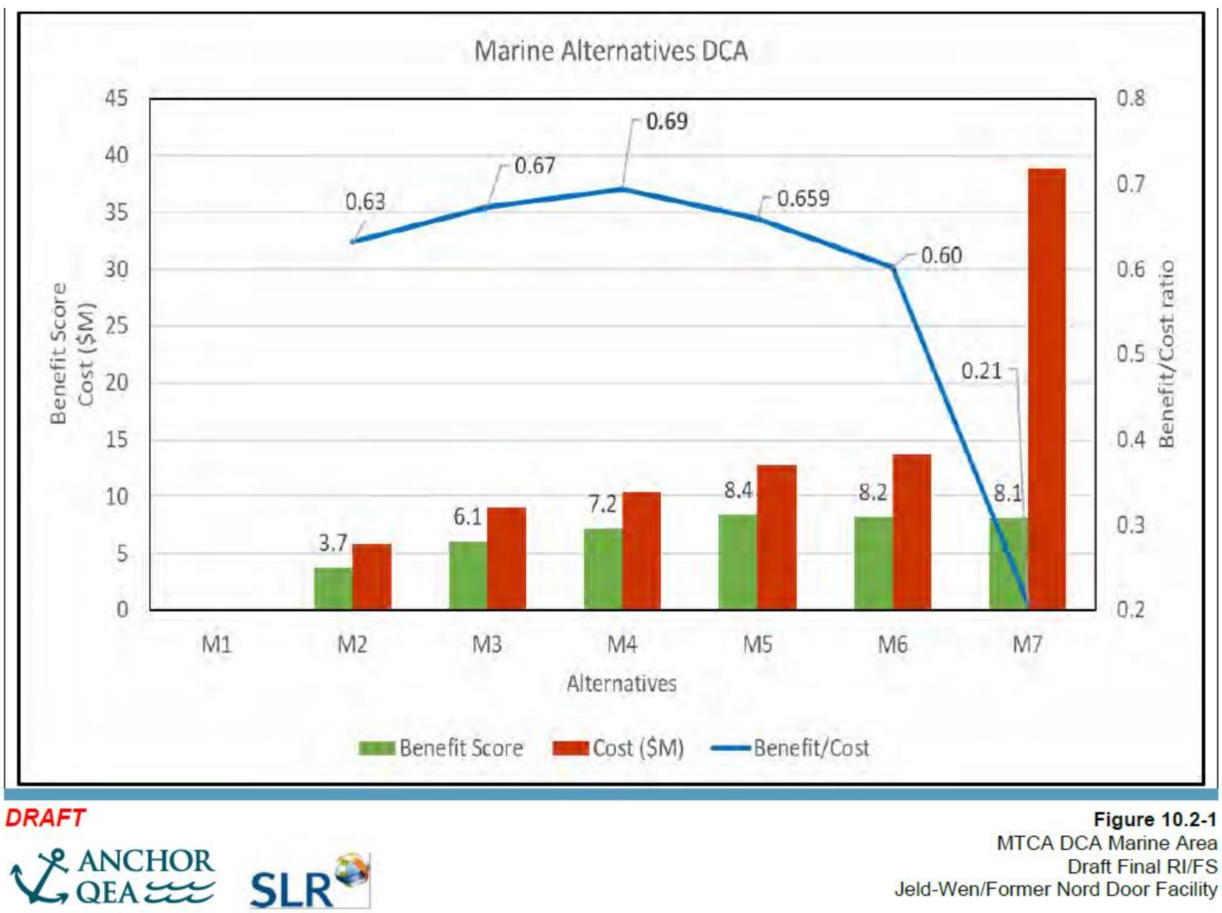


Figure 9: The figure illustrates the Disproportionate Cost Analysis for the Marine Area. Although Alternative M7 removes the greatest volume of contaminated sediment, it is disproportionately costly ($39 M) when its benefits are compared to those of Alternative M5 ($13 M). In fact, Alternative M5 was assessed to provide a greater level of benefits than Alternative M7.

The removal depths for preferred Alternative M5 vary across the Site, based on contaminant characteristics and area-specific features such as bank stability and erosion potential. For the southern mudflats the excavation depth is between 2 and 4 feet below the sediment surface. This is based on the deepest known depths of cleanup level exceedances. Based on the available sediment sampling data and site-specific characteristics, we anticipate a four-foot removal and backfill depth, paired with enhanced natural recovery (thin-layer sand cover) in other areas, will adequately address contamination in the southern mudflats. The four-foot excavation depth is expected to remove all contaminants exceeding cleanup levels at the hotspot areas and will not require any caps. Areas surrounding hotspot removal areas that contain more diffuse concentrations will be treated with a thin layer sand cover and will be monitored.

During remedial design, additional samples will be collected to confirm the depth of cleanup level exceedances. If exceedances are observed at depths greater than four feet, the excavation depth may be adjusted. During actual cleanup activities, samples will be collected from the bottom of excavated areas before they are backfilled to confirm cleanup goals have been met. If sediment at the bottom of an excavated area exceeds the cleanup criteria, additional excavation may occur or other contingencies measures may be used to protect human and ecological health. For example, the area may be monitored in the future to confirm that the shallower sediments where humans and animals dig and forage remain protective.

In the inlet, exceedances have been identified at depths up to nine feet below the surface. The contaminants of concern are relatively non-mobile, preferentially binding to sediment. Removal of the top two to three feet in contaminated areas combined with an engineered cap is anticipated to provide a high level of protectiveness and certainty that contaminants remaining in place will not pose significant future risks. As described in Section 8.2.6 "Engineered Containment", caps will be designed according to guidance from the US Environmental Protection Agency and US Army Corps of Engineers.

Ecology anticipates that contaminated areas will be excavated and backfilled/capped during low tide, significantly reducing the potential for release compared to dredging/excavation that occurs through the water column. During the remedial design, permitting, and construction processes, best management practices will be identified and implemented to reduce the potential for releases. Only minor/negligible releases of contaminants from intertidal excavations are anticipated.

No changes to the Final RI/FS document were made due to this comment.

8. Is there potential for hydrology to carry toxins into Maulsby Marsh after upland site disturbances? Has this potential been considered and evaluated?

Response:

From the quarterly groundwater monitoring data collected over the last five years, the groundwater flow direction does not suggest any flow towards Maulsby Marsh. During upland soil excavation, it is expected that there will be a high hydraulic gradient towards the excavated area as more and more groundwater is pumped to dry and excavate the area. Once a sheet pile wall is established, there will be limited movement of material in any direction. As such, Ecology does not anticipate any movement of contaminants towards Maulsby Marsh during upland cleanup construction.

No changes to the Final RI/FS document were made due to this comment.

9. What permits/approvals will be required for this work, and has anything already been issued?

Response:

The PLP typically seeks permits and other approvals after or during the development of the Cleanup Action Plan (CAP) and Engineering Design Report (EDR). The CAP and EDR will be developed after the RI/FS is finalized. The CAP will outline all the necessary permitting processes and a State Environmental Policy Act (SEPA) determination will be made by Ecology as the lead Agency.

The Draft CAP and SEPA determination will be shared for public comments at the same time. The CAP and EDR will contain more detailed information about the remedial actions, including potential impacts to existing habitat and priority species. Ecology anticipates the permitting and approval process will also include, but is not limited to: Washington State 401 Water Quality Certification, Coastal Zone Management Act (CZMA) Consistency, Construction Stormwater General Permit, Endangered Species Act consultation and a Nationwide 38 permit from the US Army Corps of Engineers. The Nationwide 38 permit requires review and approval by Tribes with Usual and Accustomed Fishing Grounds treaty rights, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Washington Department of Natural Resources and Washington Department of Fish and Wildlife. The substantive requirements for local and State permits must also be met (e.g. Hydraulic Project Approval, local Shoreline Substantial Development permit). Water discharged from cleanup construction may require additional permitting.

No permits for the cleanup action have been issued to date.

No changes to the Final RI/FS document were made due to this comment.

10. Thank you for considering our concerns. Please let me know if we can set up a meeting to discuss these issues further.

Todd Gray Environmental Protection Ecologist

The Tulalip Tribes | Natural Resources Dept.

360-716-4620 | toddgray@tulaliptribes-nsn.gov

Response:

Thank you for providing comments. Ecology will work with the Tulalip Tribes closely on the future phases of the cleanup. Feel free to contact us for any questions or concerns.

No changes to the Final RI/FS document were made due to this comment.

Comment from: Susan Decker

Please add me to list of concerned citizens to receive all updates on remediation recommendations and decisions. I live nearby and we wish the site cleaned up and made available to the public for waterfront access and recreation after remediation. Thank you. Susan Decker

Response:

Thank you for your comment and interest in the cleanup. Megan MacClellan, Ecology public involvement coordinator, 360-688-3730, mmac461@ecy.wa.gov will add you to the mailing list for public notice and comment opportunities for the Jeld-Wen site. Please note that land use decisions following cleanup are not made by Ecology, but by the landowner in concurrence with local zoning and other land use restrictions.

No changes to the Final RI/FS document were made due to this comment.

Comment from: Lisa Parker

How successful is bio-remediation?

Where will the contaminated soil from the Woodlife Area and the Marine sediment clean-up end up?

Response:

Thank you for your comment. Bioremediation is a cost effective cleanup technology that has been used in numerous cleanup sites throughout Washington State as well as globally. Bioremediation uses microorganisms to degrade organic contaminants in different media to *harmless products. Many factors including contaminant level, site characteristics, and contaminant bioavailability affect the performance of bioremediation. A pilot test will be conducted to verify the effectiveness of bioremediation at this site. If the pilot test is not successful, Ecology will implement a different or additional remedy, which will be referred as contingent remedial action (CRA) in the forthcoming cleanup action plan (CAP). The CRA will be based on the next most permanent alternative evaluated in the feasibility study, which is alternative 5 (Thermal Treatment).*

In accordance with the feasibility study alternatives, contaminated soil from the Upland Area and contaminated sediment from the marine area will be disposed of in a landfill. Depending on the waste characterization, the waste would be disposed in a solid waste landfill or a specialized landfill that is permitted to manage hazardous waste.

No changes to the Final RI/FS document were made due to this comment.

Comment from: Jennie Lindberg

Please do the clean up for the Jeld-Wen site. Please do the cleanup action preferred alternatives.

Response:

Thank you for your comment and support for the cleanup per the preferred alternative.

No changes to the Final RI/FS document were made due to this comment.

Appendices

Appendix A. Public comments in original format

Alex Facholas

Rev 11:18b
https://www.jw.org/en/library/bible/study-bible/books/revelation/11/#v66011018

I trust your group will act & govern yourselves accordingly.
If you need volunteers to help clean up the area please let me know what I can do to help.

Thank you,
-Alex
@1914.preacher.2024
https://www.youtube.com/watch?v=dUmQ-EIr4j8

Isaiah 44:27 - 45:2

"The One saying to the deep waters, '**Be evaporated**, and I will dry up all your rivers'; the One saying of Cyrus, 'He is my shepherd, and he will completely carry out all my will'; the One saying of Jerusalem, 'She will be rebuilt,' and of the temple, 'your foundation will be laid.'" This is what Jehovah says to his anointed one, to Cyrus, whose right hand I have taken hold of to subdue nations before him, to disarm kings, **to open before him the double doors, so that the gates will not be shut**: "Before you I will go, and the hills I will level. The copper doors I will break in pieces, and the iron bars I will cut down.

Jeremiah 25:11-12

And all this land will be reduced to ruins and will become an object of horror, and these nations will have to serve the king of Babylon for 70 years.
"'But when 70 years have been fulfilled, I will call to account the king of Babylon and that nation for their error,' declares Jehovah, 'and I will make the land of the Chaldeans a desolate wasteland for all time.'

Go to JW.org for more information.

Jerusalem Destroyed

Daniel 4:14,16

"...He called out loudly: "Chop down the tree, cut off its branches, shake off its leaves, and scatter its fruit! ... let it be given the heart of a beast and let seven times pass over it."

SIMILAR SCRIPTURES

Revelation 12:14

"But the two wings of the great eagle were given to the woman, so that she might fly into the wilderness to her place, where she is to be fed for a time and times and half a time away from the face of the serpent."

Revelation 12:6

"And the woman fled into the wilderness, where she has a place prepared by God and where they would feed her for 1,260 days."

A Time = 1
Times = + 2
Half a Time = + 0.5
Added up = 3.5 Times

Read Daniel 4:16 again...

Clue: Seven Times

3.5 Times = 1,260 Days

From Daniel 4:16 we get 7 Times

In order to obtain 7 Times we need to multiply both sides by (2) because we have 3.5 Times.
We do this in order to figure out how long 7 Times is from Daniel 4:16.

(2) * 3.5 Times = 7 Times
(2) * 1,260 = 2,520 "days"

7 Times = 2,520 "days"

Numbers 14:34

"According to the number of the days that you spied out the land, 40 days, a day for a year, a day for a year, you will answer for your errors 40 years, for you will know what it means to oppose me."

2,520 "days" becomes 2,520 Years

Matthew 24:7

"For nation will rise against nation and kingdom against kingdom..." - Jesus Christ

539 BC = The FALL OF BABYLON (Prophesied by Isaiah)
Source: ancient.eu/Babylon (The Persian conquest and Babylon's Decline)

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MEMORANDUM

To: Mahbub Alam, PhD, PE, Washington Department of Ecology

From: Windward Environmental and Aspect Consulting on behalf of the Port of Everett

Subject: Comments on the Jeld-Wen Public Review Draft RI/FS

Date: August 3, 2021

The Port of Everett (Port) appreciates the opportunity to provide comments on the public review draft of the Jeld-Wen/Former Nord Door Facility Site (Site) remedial investigation/feasibility study (RI/FS) dated April 2021. The comments herein, prepared by Windward Environmental LLC and Aspect Consulting LLC on behalf of the Port, have been grouped to focus on the sediment characterization, the upland characterization, and the preferred remedy for each. A summary of the requested action items can be found at the end of this memo.

The comments presented below focus on the presentation of information in the report and the anticipated effectiveness of the preferred remedy; they do not address the remedy's selection or development. The draft RI/FS was prepared pursuant to Agreed Order DE 5095 (AO) between Jeld-Wen and the Washington State Department of Ecology (Ecology) and, although the Port is a potentially liable person (PLP) for the Site, it is not a party to the AO. The Port was named as a potentially liable person (PLP) very recently—on June 7, 2021—and has not been involved in the Site characterization or other facets of the 13-year Model Toxics Control Act (MTCA) process that has occurred since Jeld-Wen signed the AO in 2008. Per Ecology's PLP determination letter to the Port, the Port was named as a PLP because it is the current owner of parcel number 29050700100500, which comprises the intertidal inlet that lies between the Jeld-Wen and Bay Wood peninsulas, and which is part of the Site. As stated in Ecology's PLP determination letter to the Port, "Based on Ecology's understanding of the historical operations at and releases of hazardous substances from the former Nord Door/Jeld Wen manufacturing facility, contamination from those releases has come to be located on the Port's parcel in this inlet."

The Port has a responsibility as a public agency to ensure that its property is properly remediated, not re-contaminated by hazardous substances at the Site after the remedy is complete, and that its current and future uses of the inlet are not restricted. Additionally, for the future economic and environmental health of the waterfront, the remedies selected in the RI/FS must be effective. Ineffective remedies can have lasting effects on a community and inhibit the successful revitalization of the surrounding properties.

The Port looks forward to engaging with Ecology on the comments presented in this memorandum in order to better understand the agency's plans to ensure that the Site undergoes an MTCA-compliant cleanup in a timely manner.

SEDIMENT CHARACTERIZATION AND REMEDY

As stated in Section 11.2 of the RI/FS, of the seven alternatives identified, Alternative M5 was selected as the preferred alternative, because it was "determined to be the most permanent and protective" in the disproportionate cost analysis. Although their treatment of south side sediments differs, Alternatives M4 and M5 appear to be the same in the inlet: removal of the "bulkhead," removal of 2 ft of sediment followed by placement an engineered cap, enhanced natural recovery (ENR), and monitored natural recovery (MNR). Alternative M5 was preferred to M4 because, when the south side sediments are included, overall it will remove a greater volume of contaminated sediment and "less contaminated material will be left in place along the shoreline."

Comments related to sediment characterization and the selected remedy are listed below.

1. **It is not clear how the sediment removal depth in the inlet was determined in any of the alternatives because no subsurface data were collected.** The executive summary states "Elevated sediment concentrations adjacent to outfalls are present within mudflats both north (inlet area) and south of the upland property. Elevated dioxin/furan concentrations were detected at greater depths (up to 7 feet below mudline) than the total PCBs." Based on Figure 4.3-7, it does not appear that the subsurface in the inlet has been sampled next to the outfall and seeps adjacent to the contaminated creosote and Woodlife upland areas. Therefore, dioxin/furan data should be collected at depth near the surface sampling location with the highest dioxin/furan toxic equivalent (TEQ) at the Site (i.e., 144.4 ng/kg at 3SED8-b), and the basis for selecting 2 ft as the removal depth in Alternatives M4 and M5 should be discussed since it does not appear to account for the increase in dioxin/furan contamination with depth (at JW-EA02-SC05) (Figure 4.3-8). Note also that Figure 8.5-5 indicates some 4-ft removal in in the inlet area, which is inconsistent with the text and Exhibit 8.5. Please clarify Alternative M5 and the depth of removal.

   Please confirm that comprehensive contaminant data (surface and vertical extent data for dioxins/furans, carcinogenic polycyclic aromatic hydrocarbons [cPAHs], and polychlorinated biphenyls [PCBs] [Aroclors and congeners]) will be collected to ensure that contaminated sediment will be removed from the inlet and the remedy will be protective of current and future uses. These data could be collected during design.

2. **The remedy at the head of the inlet appears overly complex for such a small area.** Please consider sediment removal throughout the head of the inlet, rather than a mix of removal/capping and ENR. The final remedy must be designed based on the surface and subsurface design data collected in this area (see comment 1).

3. **The former Port property to the north of the Site, now owned by a private company, has a newly permitted outfall that will discharge at the head of the inlet. The remedy in this area must be designed to accommodate this discharge and not erode at low tide during high-discharge conditions.** Details of the new outfall are included in Attachment 1.

4. **It is important to conduct sufficient source control prior to the remedy to ensure that sediment in the inlet (and throughout the Site) is not re-contaminated.** The stormwater lines at the Site should be cleaned and stormwater solids should be analyzed prior to conducting the remedy. If the solids show contaminant concentrations greater than remedial action levels (RALs), an analysis must be conducted to ensure that the upland cleanup will address the sources of the contamination.

5. **The sources of dioxins/furans in sediment near Site outfalls are clearly related to upland activities at the Site.** The following statement in the executive summary of the RI/FS should be edited as follows: "Elevated concentrations of dioxins/furans were detected in surface and subsurface sediments in tidal mudflats immediately adjacent to historical and/or current stormwater outfalls draining upland areas of the Site. The primary source of dioxins/furans to Site sediments is likely from former ~~area-wide~~ hog fuel burner emissions and/or upland manufacturing activities."

   On-site hog fuel burner ash and Woodlife wood treatment solution are clearly the sources of the dioxin/furan contamination (see Sections 5.1[1] and 5.3[2]). Furthermore, in Section 8.2.3, the following statement should be edited as follows: "Sediment dioxin/furan concentrations that exceed cleanup levels are due to historical upland manufacturing activities at the Site and ~~historical~~ legacy releases (e.g., hog fuel

[1] Section 5.1 states "Past activities at the Site including door manufacturing, casket manufacturing, pole treating, and mill operations have resulted in likely releases of hydraulic fluids, creosote, fuel oil, toluene, other petroleum hydrocarbon constituents, and dioxins/furans (from former hog fuel burner emissions and associated ash from the historical mill)."

[2] Section 5.3 states "Characterization data and history indicate that the primary source of COPCs in soil and groundwater in the Woodlife Area is attributed to an approximately 10,000-gallon AST containing Woodlife wood treatment solution (which contained PCP) that was formerly located northeast of the main manufacturing building (see Figure 5.3-1)."

burner emissions from historical wood products manufacturing operations ~~in~~ at the Site ~~vicinity~~)"

6. **The Woodlife area appears to have been a dioxin/furan source to sediment in the past, based on dioxin/furan distribution in the sediment, and more source identification is needed to ensure that sources are being addressed through the upland remedy.** Section 5.3 notes that the Woodlife area had a 10,000-gal. aboveground storage tank of Woodlife wood treatment solution that contained pentachlorophenol (PCP) with dioxin contamination. The RI/FS states "identified dioxin impacts identified in the Woodlife Area at the Site are associated with historical sap stain PCP formulations used in the manufacturing process" and also "it is likely that residual dioxins/furans are more persistent than the PCP that was used in the solution and is an apt constituent to trace the horizontal and vertical extent of Woodlife-associated impacts."

   Relative to dioxin/furan contamination, Section 5.3.5 states "Investigations at the Woodlife Area to further characterize dioxin/furan impacts found that soil and groundwater impacts were generally shallow (less than 5 feet bgs) and appeared to be localized." The RI/FS should more clearly state (and map) that dioxin/furan TEQs as great as 26,817 ng/kg dry weight have been reported for soil (Table 4-1.11).

   While the RI/FS discusses at length the distinction between wood preservation and wood surface protection, it does not provide a conceptual site model for how the highest dioxin/furan TEQ came to be located near the stormwater outfall discharging from this area of the Site. Instead, it states "groundwater migration/seepage to surface water does not appear to be a significant release mechanism for dioxin/furan impacts in the Woodlife Area" and "overland transport/surface runoff is not considered a significant release mechanism for the dioxin/furan impacts in the Woodlife Area" despite the fact that high concentrations of the chemical were previously reported in Site stormwater. Specifically, Appendix B to the RI/FS documents the presence of high concentrations of PCP in Woodlife Area stormwater in 1991 (140,000 µg/L); given such high PCP concentrations, it is likely that the stormwater also contained appreciable concentrations of dioxins/furans. Additional source identification is needed.

   The likelihood that the Woodlife area is a primary source to the inlet sediments is supported by a preliminary examination of the dioxin/furan congener patterns using toxic equivalency factor-scaled data from locations with elevated dioxin/furan TEQs. Figures 1 and 2 were prepared as an exploratory first step in fingerprinting.

   The congener patterns of dioxins/furans in soils and sediments within the inlet suggests that the patterns in sediment are consistent with the pattern in soil in the Woodlife area. The patterns in both the soil and sediment samples from the Woodlife area are dominated by the contribution of 1,2,3,4,6,7,8-heptachlorodibenzo-*p*-dioxin (HpCDD) (Figure 1). It is also important to note that the patterns in both surface and subsurface sediment in the inlet are similar (i.e., HpCDD dominated), suggesting a continuing source. The eroding bank should be characterized during design.

Samples with elevated dioxin/furan TEQs from sediment near outfalls south of the Site had a different pattern (Figure 2). Both the surface and subsurface sediment patterns had greater contributions from 1,2,3,6,7,8-hexachlorodibenzo-*p*-dioxin. It would be helpful to compare this pattern with that of upland sample SS-301, which is a boiler ash sample. However, the congener data for this sample are not provided in Table 5.3-1. These results should be added.

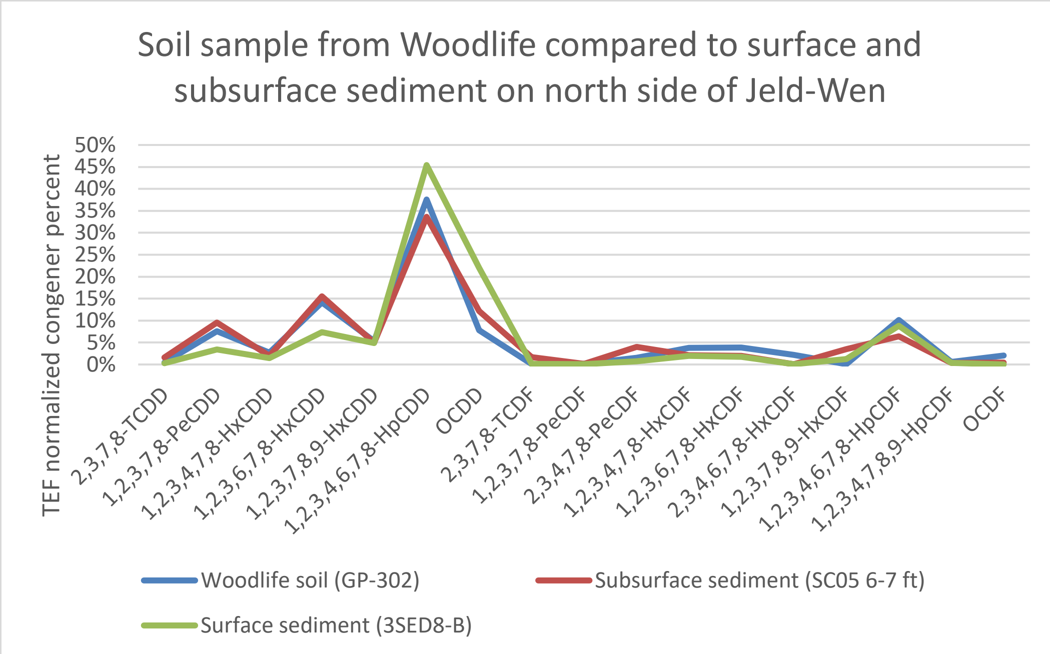


Figure 1. Comparison of dioxin/furan patterns in inlet sediment and Woodlife soil

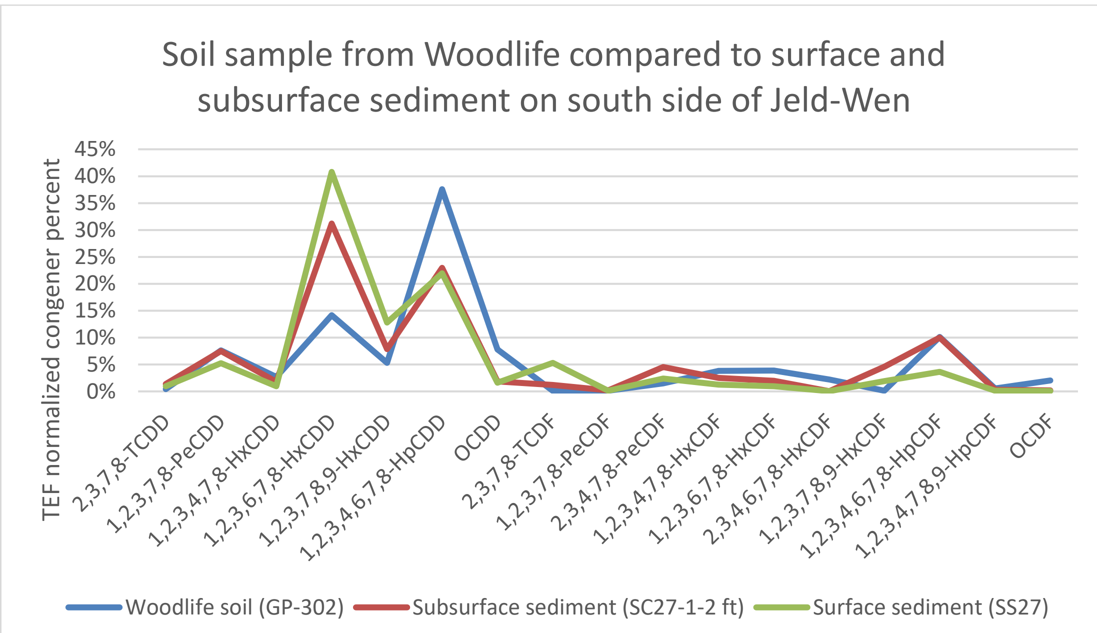


Figure 2. Comparison of dioxin/furan patterns in south sediment and Woodlife soil

7. **Sediment data are inadequate for several locations.** The following data should be collected as part of design:

   - Core data near each outfall, including dioxin/furan analysis in a core off the western shoreline, and dioxin/furan, PCBs, and cPAH data in a core off the inlet outfall

- Deeper cores along the southern shoreline at two locations in order to "tag clean" (i.e., JW-EA07-SC27 is only 2.5 ft deep with a bottom TEQ of 25 ng/kg, and JW-EA06-SC21 is only 4 ft deep with a bottom TEQ of 14 ng/kg)
- PCB congeners in the surface sediment in the inlet where both PCBs and dioxins/furans are elevated

8. **Additional detail should be added regarding future monitoring (analytes and media) and contingencies should the remedy not be effective. The overall remedy cost estimate should include these items.** The footprint of the sediment remedy is based on dioxin/furan TEQs relative to the practical quantitation limit, although PCBs and cPAHs will also be monitored. It is unclear if the full Washington State Sediment Management Standards (SMS) analyte list (including PCP) has been analyzed as part of the RI/FS in locations outside the remediation footprint. It is standard practice to do so.
9. **It should be clarified that the Port owns only some of the free-standing piles at the Site and does not own the bulkhead properties on the upland portion.** Text in Section 6.2.1.3 should be revised as follows: "Two bulkhead structures containing an unknown number of piles and lagging, a remnant wooden barge, and approximately 45 free standing piling or dolphins have been identified within the Site boundary. As depicted on Figure 3.6, some of the structures and pilings are on properties that are owned by the Wick Family Trust and some of the free standing piles are owned by the Port of Everett." The fact that the bulkheads along the Jeld-Wen northern shoreline were not built and are not owned by the Port was documented in detail in the Port's January 2020 letter to Ecology.
10. **Alternative M5 appears to be less protective than M4 near the knoll.** Section 11.2 also states that "Alternative M5 removes a greater volume of sediments contaminated with PCBs adjacent to the knoll." Based on a comparison of Figures 8.5-4 (M4) and 8.5-5 (M5), both alternatives appear to have the same 2-ft removal footprint, but while Alternative M4 follows the removal with the installation of an engineered cap, Alternative M5 follows the removal with backfill only (less protective).

Upland Characterization and Remedy

As summarized in Section 11.1, upland evaluations were conducted for three upland assessment areas: the Creosote/Fuel Oil Area, Woodlife Area, and Knoll Fill Area. Alternative 7 was selected as the preferred alternative for the Creosote/Fuel Oil Area. This alternative would remove hotspot shallow soils and employs bioremediation.

Alternative 2, consisting of soil removal, was selected for the Woodlife Area, and no upland cleanup was selected for the Knoll Fill Area, which relies on the Alternative M5 remedy for the sediment to reduce concentrations in the upland, a somewhat unsupported concept. Specifically, Section 11.1.3 states "Implementation of the M5 remedy in the marine area could result in decreased PCB concentration in the groundwater. Knoll area PCBs will be re-evaluated during long-term monitoring and periodic review."

Specific comments are listed below.

11. **The RI does not present information clearly enough to readily understand environmental conditions for the entire upland area.** Although the upland area of the Site is composed of more than 35 acres, the RI narrative discusses conditions for the Creosote/Fuel Oil Area, Woodlife Area, and Knoll Fill Area only, which collectively comprise a relatively small percentage of the entire upland area. The RI/FS should present the data to show that the remaining majority of the upland area meets cleanup standards.

12. **Upland data should be more clearly presented on maps (as was done for sediment).** The RI/FS currently lacks a map with concentrations of soil contaminants of potential concern (especially dioxin/furan TEQs, as presented in Table 4.1-11). Such a map is important in discussing the nature and extent of upland contamination. Without a map or discussion of the data, ascertaining the distribution of contamination in upland area soil is not as transparent as it should be, and it is difficult to relate the patterns to sediment contamination.

13. **Restoration timeframes are not clearly provided for the remedial alternatives, and the ability of Alternative 7 for the Creosote/Fuel Oil Area (preferred remedy) to meet cleanup levels in a reasonable restoration timeframe is highly uncertain.** Within the Creosote/Fuel Oil Area, dense non-aqueous-phase liquid (DNAPL) has produced high concentrations of dissolved-phase hydrocarbons to a depth of approximately 50 ft (e.g., 24,000 μg/L diesel-range organics and 8,650 μg/L naphthalene in groundwater at well MW-8B). The DNAPL at that 50-ft depth is mobile enough to accumulate in the bottom of that well. Based on the existing dataset, the lateral and vertical extents of DNAPL and associated dissolved-phase contamination below depths of approximately 15 ft are poorly defined, particularly to the west between well MW-8B and Port Gardiner Bay.

    There are various forms of *in situ* thermal treatment (as included in FS Alternative 5) proven to be generally effective in treating DNAPL at depth. While *in situ* bioremediation (ISB) can be effective in treating dissolved-phase hydrocarbons generated by DNAPL, it likely will not be particularly effective in treating the DNAPL source material. As such, the Site restoration timeframe will likely exceed 10 years, perhaps greatly, if ISB is the sole means of addressing the source material at depth.

    The FS should include a more definitive assessment of the preferred remedy's anticipated restoration timeframe in accordance with Washington Administrative Code (WAC) 173-340-360(4). In addition, the FS should define a decision-making process for assessing treatment performance over time, and for implementing a contingency action should monitoring indicate that the treatment will not achieve cleanup standards in a reasonable timeframe.

14. **The Woodlife Area cleanup must explicitly address PCP in addition to dioxins/furans.** The Woodlife preservative released in this area contained PCP as its active ingredient, and the dioxins/furans targeted for cleanup in this area were impurities in the PCP created during its manufacture. PCP was detected sporadically in Woodlife Area soil samples at concentrations of up to 7.4 mg/kg, which is orders of magnitude greater than Ecology's soil concentration predicted to be protective of groundwater discharging to marine surface water (1.8×10^{-6} mg/kg per Ecology's CLARC database). In addition, that 7.4 mg/kg PCP detection occurred in a soil sample (GP29-8) collected from a depth of 8 ft, a fact that is never presented or discussed in the draft report. PCP data are not included in any tables or graphics, because the frequency of detection of PCP for the site as a whole (i.e., not just the Woodlife Area, where PCP was handled) was less than 5%. In fact, the reader must search the raw laboratory reports in Appendix P to find PCP data for the Site. Given the soil PCP exceedance at a depth of 8 ft, the planned 5-ft excavation depth for the Woodlife Area warrants reassessment to ensure that the proposed cleanup fully addresses the Woodlife-related contamination.

    Additionally, although PCP was not detected in groundwater samples collected from wells MW-6 and MW-7 in the Woodlife Area, the laboratory reporting limits for the groundwater samples were as high as 10 µg/L, orders of magnitude greater than the 0.002 µg/L marine water quality standard for this bioaccumulative compound. Given the Woodlife Area's proximity to the shoreline, performance monitoring for PCP in the soil excavation, and confirmation groundwater monitoring for PCP, applying current industry-standard analytical reporting limits (typically 0.05 µg/L) is warranted as a component of the cleanup action to ensure that PCP does not pose a risk to the marine environment.

15. **The preferred alternative needs to specify environmental capping as a required component of the upland cleanup action.** In accordance with MTCA, the draft RI/FS applies a Site-wide exclusion from performing a terrestrial ecological evaluation, because potential exposure to all contaminated soil is and will be prevented by man-made physical barriers (buildings, pavements, etc.). MTCA requires that a site applying that exclusion execute a restrictive environmental covenant under WAC 173-340-440 to ensure that the man-made barriers achieving soil containment are maintained in the future (WAC 173-340-7490(1)(b)). An environmental cap will also likely be required for the Creosote/Fuel Oil Area to contain residual contaminated soils between the planned 9-ft excavation depth and the 15-ft point of compliance for soil direct contact.

SUMMARY OF REQUESTED ACTION ITEMS

Below is a summary of the items requested in this comment letter. Thank you for your consideration of these requests.

- Revisions to text and tables:
  - Make requested edits in Sections 8.2.3 and 6.2.1.3.
  - Clarify Alternative M5 with respect to removal depths in the inlet and justify the depth the data.
  - Add dioxin/furan congener-specific data to Table 5.3-1 for upland sample SS-301.
  - Add detail regarding future monitoring (analytes and media) and contingencies should the remedy not be effective.
  - Clearly present upland data for the full site to show that the upland area will meet cleanup standards after the remedy.
  - Include a more definitive assessment of the upland preferred remedy's anticipated restoration timeframe for the Creosote/Fuel Oil Area, and define a decision-making process for assessing treatment performance over time and for implementing a contingency action if needed.
  - Include an assessment to demonstrate that the planned 5-ft excavation depth in the Woodlife Area will address all of the Woodlife Area-related contamination.
- Remedy requests:
  - Consider sediment removal throughout the head of the inlet, rather than a mix of removal/capping and ENR.
  - Ensure that Alternative M5 would accommodate the discharge (i.e., would not result in erosion) from the new permitted Bay Wood outfall in the inlet.
  - Execute a restrictive environmental covenant to ensure that the man-made barriers achieving soil containment for human and terrestrial ecological exposure are maintained in the future.
- Additional source identification and control:
  - Clean out the stormwater lines and analyze stormwater solids prior to conducting the remedy in the inlet. If the solids show contaminant concentrations greater than sediment RALs, an analysis must be conducted to ensure that the upland cleanup will address the sources of the contamination.

- Additional data to collect, during design if not sooner:
    - Collect and analyze a sediment core near each outfall, including dioxin/furan analysis off the western shoreline outfall and dioxin/furan, PCBs, and cPAH analysis off the inlet outfall.
    - Characterize the quality of the eroding bank on the south shoreline in the inlet.
    - Collect and analyze deeper sediment cores along the southern shoreline at two locations in order to "tag clean."
    - Analyze PCB congeners in the surface sediment in the inlet where both PCBs and dioxins/furan concentrations are elevated.
    - Analyze the full SMS analyte list (including PCP) in locations just outside the remediation footprint.
    - Apply current industry-standard analytical reporting limits for PCP in monitoring.

Attachment 1


New Stormwater outfall
under construction

PUMP DESIGN

An Oldcastle Onelift station with duplex pump system is proposed to pump the outflow from the Modular Wetland Systems to the bubble up outfall structure for the site. Pump flow rates were determined using WWHM to calculate the maximum 100-year flowrate (12.33 cfs → 5,535 gpm) and using WWHM to calculate the more common 2-year runoff rates (4.82 cfs → 2,165 gpm).

The duplex pump station made up of two (Flygt-NP3171 LT 3~615 Pumps) will pump runoff from an elevation of 3.25' to a discharge elevation of 13.18' through a 14" forcemain overcoming a total head of 10.38'. Please see the head loss calculation below. The pump system will operate based on float switches and on an automatic timer for long flow durations. A single pump is designed to operate with the second pump designed as an alternate pump that will switch on when the other turns off in order to reduce the continuous run time of each pump. Both Pumps will run simultaneously during very large runoff events such as 100-year events. Please see the pump details and Onelift detail located in the Appendix.

Total Head Calculation:

Total Head = Static Head + Dynamic Head

Static Head = 13.18 ft. – 3.25 ft. = 9.93 ft.

Dynamic Head, use the following equation to determine friction loss:

$$f = 0.2083\left(\frac{100}{C}\right)^{1.85}\left(\frac{Q^{1.852}}{D_i^{\,4.8655}}\right)$$

where: f = friction loss per 100 feet of pipe

C = flow coefficient → 150 for PVC

Q_{100}= 12.33 cfs flow rate, gpm → 5,535 gpm

D_i = inside diameter of pipe, in → 14

$$f = 0.2083\left(\frac{100}{150}\right)^{1.85}\left(\frac{5{,}53^{\;\;1.852}}{14^{4.8655}}\right)$$ = 2.23 ft. per 100 feet of pipe

20 ft. of 14" pipe = 20

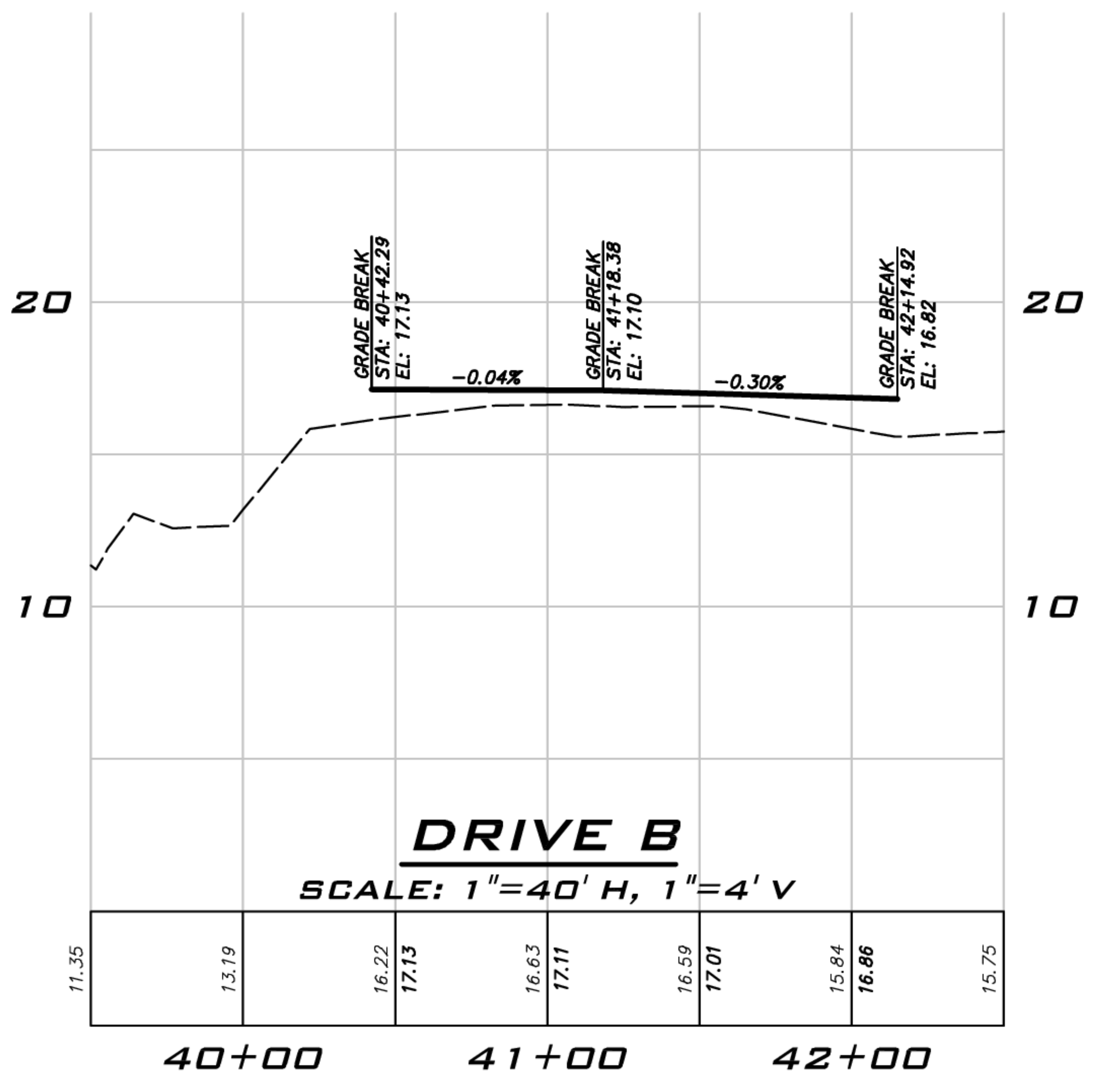
f= 2.23 * 20/100 = 0.446 ft.

Total Head = 9.93 ft. (static) + 0.446 ft. (dynamic) = 10.38 ft.

Pump Requirements:

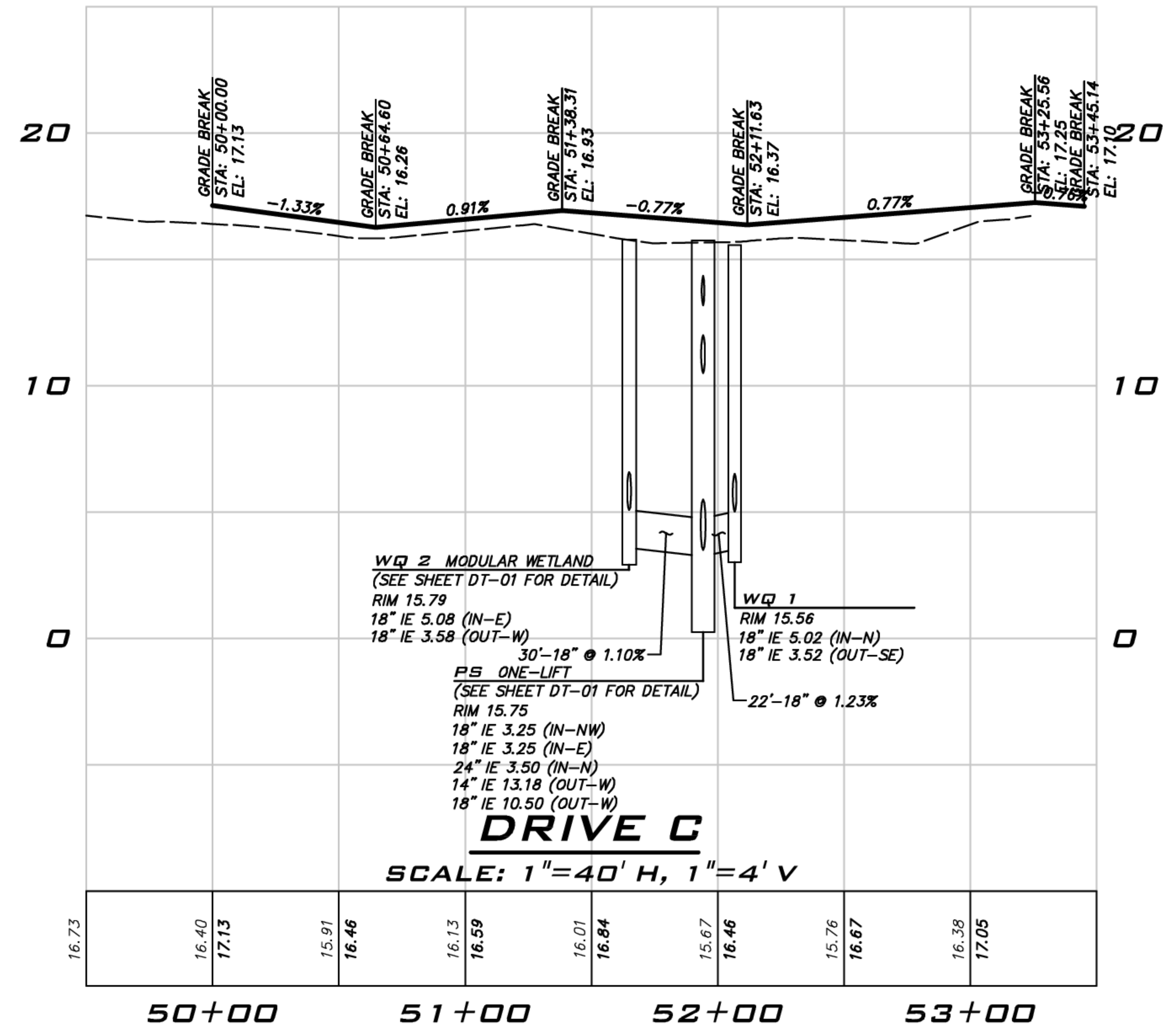
Pump Rate = 5,535 gpm

Total Head = 10.38 ft.



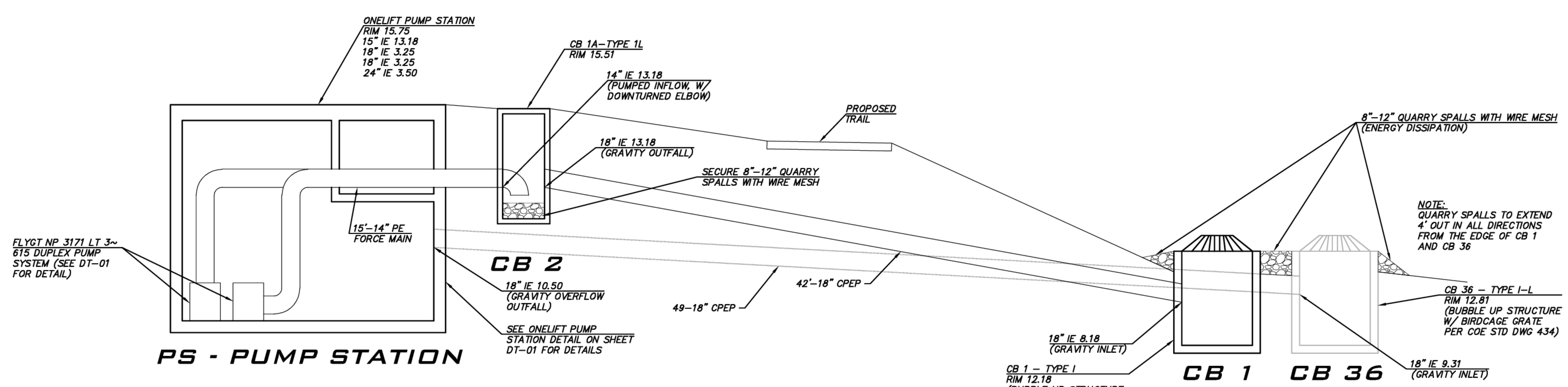
DRIVE B

SCALE: 1"=40' H, 1"=4' V



DRIVE C

SCALE: 1"=40' H, 1"=4' V



OUTFALL DETAIL

NOT TO SCALE

UNDERGROUND UTILITY NOTE

UNDERGROUND UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION. THERE IS NO GUARANTEE THAT ALL UTILITY LINES ARE SHOWN, OR THAT THE LOCATION, SIZE AND MATERIAL IS ACCURATE. THE CONTRACTOR SHALL UNCOVER ALL INDICATED PIPING WHERE CROSSING, INTERFERENCES, OR CONNECTIONS OCCUR PRIOR TO TRENCHING OR EXCAVATION FOR ANY PIPE OR STRUCTURES, TO DETERMINE ACTUAL LOCATIONS, SIZE AND MATERIAL. THE CONTRACTOR SHALL MAKE THE APPROPRIATE PROVISION FOR PROTECTION OF SAID FACILITIES. THE CONTRACTOR SHALL NOTIFY ONE CALL AT 8-1-1 (WASHINGTON811.COM) AND ARRANGE FOR FIELD LOCATION OF EXISTING FACILITIES BEFORE CONSTRUCTION.

BLUELINE
25 CENTRAL WAY, SUITE 400,
KIRKLAND, WA 98033
P: 425.216.4051 F: 425.216.4052
WWW.THEBLUELINEGROUP.COM

SCALE: AS NOTED
PROJECT MANAGER: CHRIS MILLER, PE
PROJECT ENGINEER: JON KOEPFGEN, PE
DESIGNER: SHAWN COOPER
ISSUE DATE: 3/31/2021

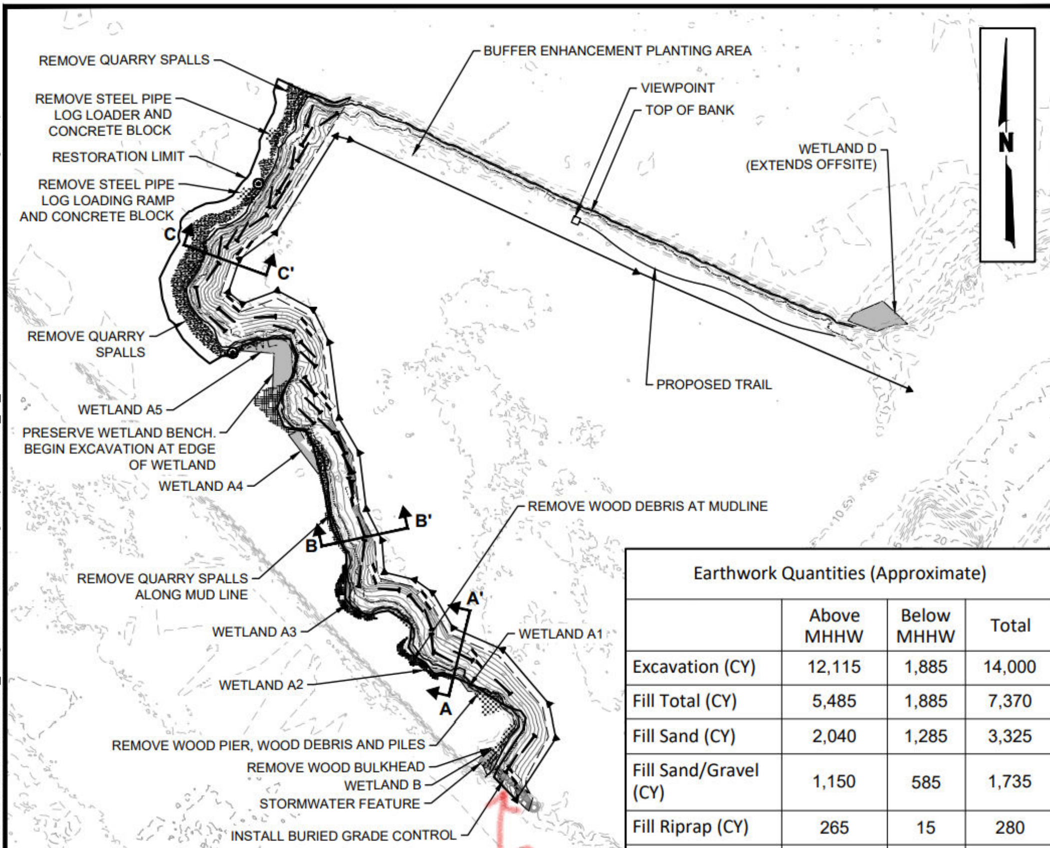
NO	DATE	BY	REVISIONS
1	4/1/21	JLK	CITY COMMENTS

ROAD & UTILITY PROFILES
BAYWOOD INDUSTRIAL
CIVIL PLAN SET
PARCEL # 29050700100300
CITY OF EVERETT WASHINGTON

CHRISTOPHER H. MILLER, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER, 49500

3/11/21

JOB NUMBER: 18-137
SHEET NAME: RP-02
SHT 19 OF 20



Earthwork Quantities (Approximate)			
	Above MHHW	Below MHHW	Total
Excavation (CY)	12,115	1,885	14,000
Fill Total (CY)	5,485	1,885	7,370
Fill Sand (CY)	2,040	1,285	3,325
Fill Sand/Gravel (CY)	1,150	585	1,735
Fill Riprap (CY)	265	15	280
Fill Topsoil (CY)	2,030	0	2,030
Grading Area (SF)	60,000	6,600	66,600

LEGEND

- EXISTING MINOR CONTOUR (1')
- EXISTING MAJOR CONTOUR (5')
- PROPOSED MAJOR CONTOUR (5')
- PROPOSED MINOR CONTOUR (1')
- UPPER RESTORATION LIMIT
- EXISTING EXTREME TIDE (8.6')
- EXISTING MHHW (5.4')
- LOWER RESTORATION LIMIT
- WETLANDS
- PROPOSED LWD (ANCHORED)

0 200 400
Scale in Feet

NOTES
1. VERTICAL PROJECT DATUM: NGVD29.
2. HORIZONTAL PROJECT DATUM: NAD83 WASHINGTON STATE PLANES, NORTH ZONE, US FOOT.
3. PUGET SOUND LiDAR CONSORTIUM (PSLC) CEDAR RIVER WATERSHED & FLOODPLAIN LiDAR, 2014.
4. LiDAR CONVERTED FROM NAVD88 TO NGVD29.

CORPS REF NO:

APPLICANT: PORT OF EVERETT

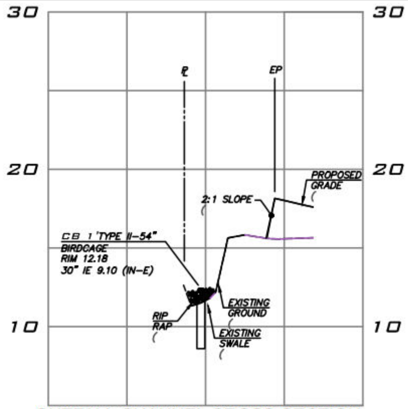
PROPOSED PROJECT:
BAY WOOD SHORELINE INTERIM CLEANUP ACTION & RESTORATION

LOCATION: EVERETT, WA

TITLE: PROPOSED GRADING PLAN

DATE: NOVEMBER 22, 2019
SHEET 4 OF 12

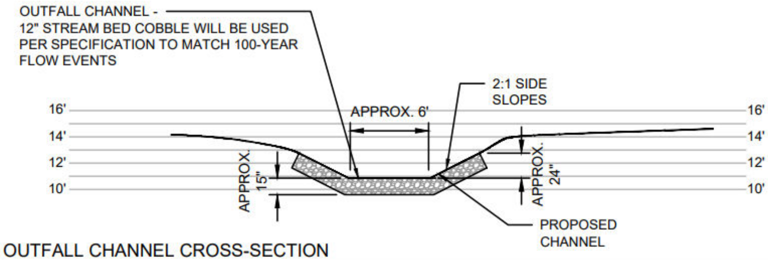
Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\CAD\CONCEPTUAL GRADING PLAN\30% DESIGN\JARPA\102336_Design Grade - JARPA.dwg Layout: 102336_04_GRADING PLAN Date: 11-22-2019 Login: awp



OUTFALL CHANNEL CROSS-SECTION
(FROM CIVIL PLANS)

0 100 200

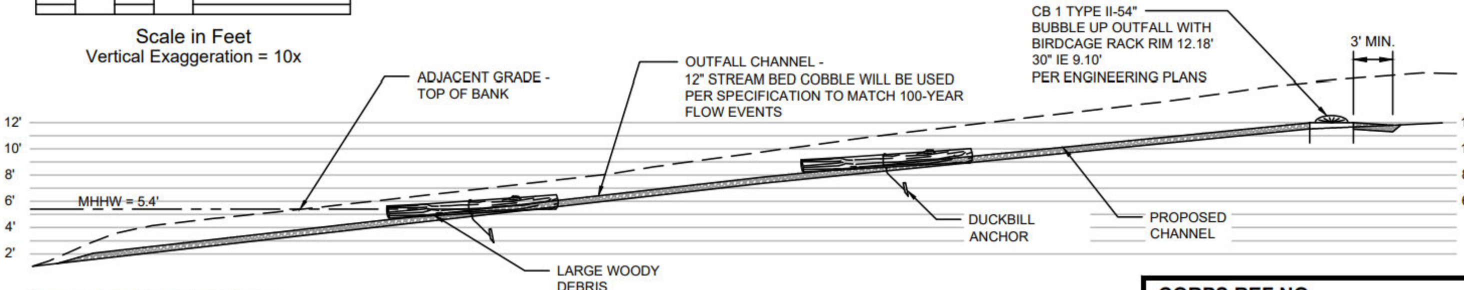
Scale in Feet
Vertical Exaggeration = 10x



OUTFALL CHANNEL CROSS-SECTION

0 12 24

Scale in Feet



OUTFALL CHANNEL PROFILE

0 12 24

Scale in Feet

LEGEND

PROPOSED OUTFALL CHANNEL

ADJACENT GRADE

LWD

CORPS REF NO:

CLIENT: PORT OF EVERETT

PROPOSED PROJECT:
BAY WOOD SHORELINE INTERIM
CLEANUP ACTION & RESTORATION

LOCATION: EVERETT, WA

TITLE: STORMWATER FEATURE
DETAIL

DATE: NOVEMBER 22, 2019

SHEET 8 OF 12

Brad Corradi

I am very interested to understand the long term plan for industrial use in this area. Will Jeld-Wen use the property? Will the property be sold? Additionally, my daughter and I are very interested to learn about the biology these tidal flats will support when cleaned. We would join a public meeting if held and encourage these topics to be discussed. Additionally, we are learning about our area and would be glad to volunteer in any way that would help us collect information about our home.

Carl King

My comment is general in nature. I am wondering if there is a specific person who will represent the interests of the public at large (as opposed to the City of Everett administration or private companies) and who will have the technical expertise to evaluate proposed studies and plans as well as cleanup operations and the results of the cleanup operations.

The Tulalip Tribes

Thank you for providing The Tulalip Tribes the opportunity to review and comment on the above referenced report. We have several questions, which I have listed below. If a meeting with Ecology is an option, we would be interested in scheduling one with you, so we can further discuss these concerns.

Firstly, I'm not finding a plan drawing for Creosote/Fuel Oil Area alternative #7. Could this document be availed to us?

How will long term impacts to estuarine wetlands and marine substrates be mitigated? Is the Blue Heron Slough Wetland Mitigation Bank an option being considered?

What specific material would the engineered cap be comprised of, and what exactly would the backfill material be? Are these materials designed to support full habitat re-establishment post-completion?

Is it known if juvenile crabs, as well as clams, are using the area? If not, can this be determined, and what steps might be taken to support expedient repopulation?

If contaminants will remain in the Knoll Fill Area, what will be done to prevent these contaminants from potentially entering the marine environment over time?

Marine alternative M7 involves removing up to 9ft of material, whereas the preferred alternative, M5, only involves up to 4ft of removal. What is the potential for contaminants left below 4ft entering the environment? Also, has the potential for tidal/subtidal excavations to release otherwise contained toxins been considered and mitigated for?

Is there potential for hydrology to carry toxins into Maulsby Marsh after upland site disturbances? Has this potential been considered and evaluated?

What permits/approvals will be required for this work, and has anything already been issued?

Thank you for considering our concerns. Please let me know if we can set up a meeting to discuss these issues further.

Todd Gray
Environmental Protection Ecologist
The Tulalip Tribes | Natural Resources Dept.
360-716-4620 | toddgray@tulaliptribes-nsn.gov

Susan Decker

Please add me to list of concerned citizens to receive all updates on remediation recommendations and decisions. I live nearby and we wish the site cleaned up and made available to the public for waterfront access and recreation after remediation. Thank you. Susan Decker

Lisa Parker

How successful is bio-remediation?

Where will the contaminated soil from the Woodlife Area and the Marine sediment clean-up end up?

Jennie Lindberg

Please do the clean up for the Jeld-Wen site. Please do the cleanup action preferred alternatives.