



Oregon

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August 26, 2019

via electronic delivery

Mr. Craig Allison – Deputy Executive Director
Port of Columbia County
P.O. Box 190
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Re: DEQ Comments
Feasibility Study Work Plan
Former Pope & Talbot Wood-Treating Site
ECSI #959
St. Helens, Oregon

Dear Mr. Allison,

Thank you for your submittal of the Feasibility Study Work Plan for the Former Pope & Talbot Wood-Treating Site (FS Work Plan) on July 16, 2019. The FS Work Plan was thorough and well-written and DEQ appreciates the efforts associated with developing this comprehensive document. DEQ has multiple comments for your consideration as you revise and finalize the FS Work Plan. General comments that apply globally to the FS Work Plan are provided below, followed by more specific comments.

General Comments.

1. Site Definition. The work plan refers to the “site” as the property currently owned by the Port at 1550 Railroad Avenue. DEQ notes for clarity that the site is different from the Locality of Facility (LOF) which includes the offshore contaminated area.
2. Non-aqueous phase liquid (NAPL) Definition. NAPL should be defined upfront, for purposes of the FS Work Plan, as non-aqueous phase liquid inclusive of heavy to moderate sheen. NAPL delineations should be shown on figures in surface and subsurface sediment.
3. Hot Spots. NAPL (as defined above) is a hot spot in any media where there is unacceptable risk (i.e., subsurface soil, groundwater, surface sediment, and subsurface sediment if exposed at the surface, porewater, and surface water).
4. Groundwater discharges to surface water at concentrations exceeding risk-based concentrations are considered a potential hot spot and an uncontrolled source of sediment, porewater, and surface water contamination with the potential for recontaminating the forthcoming remedy. This medium and pathway will need to be addressed in the FS.

5. Resource Conservation Recovery Act (RCRA) Designation. Please include an analysis of likely RCRA designations for waste that may be generated during remedial actions. The designation is an important consideration in evaluating alternatives with respect to treatment options and disposal cost.

Comments on specific report sections are provided below.

Section 1 Introduction

1. The introduction states that: “The FS Work Plan is intended to describe the process in which remedial action alternatives will [be] developed and evaluated to address residual creosote in soil. . .”. The reference to residual creosote is inappropriately restrictive. Note, for example, polychlorinated biphenyls (PCBs) are present in soils above acceptable risk levels and will be addressed as part of the remedy. Please remove the reference to residual creosote in this sentence.
2. The introduction states, with reference to DEQ’s 2019 draft RI Summary document, that the supplemental RI activities facilitated identification of shoreline and near-shore priority action areas for active remedy consideration in the FS versus the offshore areas where monitored natural attenuation (MNA) may be appropriate. The sentence does not accurately paraphrase the referenced document. Please change the sentence to more accurately reflect the referenced document, for example: “. . .*versus those offshore areas where remedies less invasive than capping or dredging, such as enhanced or monitored natural attenuation, are likely to be appropriate.*”
3. The introduction states the priority action areas are characterized by, in part, creosote as a NAPL in media. Please clarify that NAPL is inclusive of appearance of moderate to heavy sheen.
4. Please identify upland Priority Action Areas in addition to in-water areas.

Section 2 Background

5. Figures. The Work Plan should better define what the inferred NAPL areas include. It’s unclear whether they include the subsurface NAPL extent (solid line) or surficial wood-related NAPL extent (dashed red line) or both. Categories and colors used to classify sheen varies across figures. It would be helpful for all figures to have the same symbology designations for both upland and sediment NAPL and sheen as in Figure 2-11, and also to have a figure that shows NAPL and sheen designations in the subsurface, as is done for surface sediment in Figure 2-11. Please revise/update figures accordingly. Figure 2-10. Please update the figure to be consistent with the text, i.e., that the Lower Milton Creek covers the portion of Milton Creek downstream of the Railroad Avenue vehicle bridge. The figure currently shows a division between Upper and Lower Milton Creek upstream of the Railroad Avenue vehicle bridge.
6. Cove Area. The text indicates that residual NAPL was detected in subsurface sediment, up to 100 feet offshore beneath the Cove Area. NAPL in the form of moderate to heavy sheen was observed in borings in the Cove Area subsurface well beyond 100 feet offshore. Please clarify text and figures and revise accordingly.

7. Remedial Investigation. The summary and scope of historical investigations is useful. However, some of the text includes interim conclusions that could be confused with later determinations that reflect additional and more recent data. It may be helpful to remove interim conclusions and describe only the final determinations in the subsequent sections.
8. Physical Site Conditions. The introductory paragraph provides site elevations. Please clarify the elevations are for the upland portion of the site, and the upland is defined as above Ordinary High Water of 14 feet NAVD88, if this is the case. It would also be helpful to include a description of the in-water area as well, such as water depths, water uses, hydrodynamics, etc.
9. Hydrogeology. Gradients in paired wells with the exception of the MW-4A/4B have been upward from the native soil to overlying fill (See 2000 RI). Please revise FS work plan accordingly.
10. Nature and Extent of Contamination – Monitoring well and exploratory borings have not been completed into the basalt within the primary areas of DNAPL releases. DEQ does not believe there is sufficient information to conclude that basalt in contact with DNAPL has negligible horizontal and vertical conductivity or that the creosote mass within this unit can be ruled out as a potential long-term reservoir of contamination. This uncertainty should be considered as part of the feasibility study.
11. Nature and Extent of Contamination – Please review the results of the EPH/VPH sediment analyses collected in 2017 and DNAPL analysis in 2012 to describe the percentage of PAHs in NAPL and sediment samples.
12. Nature and Extent of Contamination – Upland Soil. Based on soil borings and TarGOST profiles DEQ notes that the thickness of intervals with potentially mobile NAPL is highly variable within the upland, varying from several inches to 5 feet or more (e.g. TGS020). Please revise the FS Work Plan accordingly.
13. Nature and Extent of Contamination - NAPL. A number of technologies are screened out from the technology section based on creosote being a listed waste. Discussion of the waste properties, anticipated RCRA designation(s), and associated constraints should be provided in this section.
14. Nature and Extent of Contamination – NAPL. The depth of creosote penetration into the upper basalt in the vicinity of DNAPL releases is unknown. Please acknowledge this uncertainty in the FS Work Plan.
15. Nature and Extent of Contamination - Sediment. The text indicates that variations in sediment bulk chemistry are not attributed to temporal changes in contaminant mass flux from upland source areas. While analysis provided to date is insufficient for a conclusive determination, there are indications of seasonality in surface sediment impacts when comparing concentrations in samples collected in July versus September. The potential for contaminant concentrations to be affected by temporal changes in contaminant mass flux from upland source areas should not be excluded and/or be further evaluated.
16. Nature and Extent of Contamination – Cove Area. Note that ebullition with transport of subsurface NAPL to the sediment surface has been observed in the near-shore area of the

cove. Please consider this ebullition as a transport mechanism in evaluation of remedial alternatives in the feasibility study.

17. Nature and Extent of Contamination – Area 1 Dock. It appears there is a typo with respect to the description of the depositional environment. Clarify whether this area is “stable to eroding”.

18. Conclusions from Human Health Risk Assessment.

- The first two bullets do not identify the media evaluated. Please clarify.
- Please include a figure showing beach/sediment areas with unacceptable human health risks.
- The last bullet describes subsurface soil as soil 2.5 to 5 feet below ground surface (bgs). In the context of exposure scenarios for construction and excavation workers, DEQ typically considers subsurface soil to extend from 3 to 15 feet bgs; however, a rationale can be provided to propose modifying DEQ’s default assumption to reflect site-specific conditions. Please either define subsurface soil at extending from 3 to 15 feet bgs or provide rationale for the 2.5 to 5 feet bgs definition in the RI/human health risk assessment and revised FS Work Plan.
- The last bullet describes a concentration of arsenic in one sample from boring MW-10 greater than the DEQ RBC developed for construction workers. Arsenic exposure point concentrations should be evaluated in the RI/human health risk assessment as to whether arsenic presents unacceptable risk. If arsenic conditions present unacceptable risk, this information should be provided in the revised FS Work Plan.

19. Conclusions from the Ecological Risk Screening.

- a. The two bullets related to total TPH concentrations and fraction-specific SLVs appear to be duplicative.
- b. The third bullet indicates that alkylated homologues C3- and C4-naphthalene at sampling site PWS0090617-2 in Milton Creek may not be site related. Note that DEQ considers this area part of the Locality of Facility (as shown in Figure 2-15), i.e., the area where contact with facility-related hazardous substances is reasonably likely to occur.
- c. In the last bullet, please clarify that the screening evaluation described was conducted for individual PAHs and the assessment of risk associated with narcosis risk was conducted as a separate evaluation, if this is the case.

20. Hot Spots.

- a. Dissolved-phase creosote constituents in porewater and surface water that cause unacceptable risk to benthos and fish are also potential hot spots. Please revise accordingly.
- b. Presence of subsurface sediment NAPL is a hot spot if it is not reliably containable. The FS should demonstrate that the subsurface sediment NAPL is contained/containable or include it as a hot spot.

- c. The text indicates that contaminated riverbank and surface sediment near the shoreline are not reliably contained. DEQ agrees these areas are not currently contained, however, it is unclear whether this statement is being used to conclude that the contaminated riverbank and surface sediment should be considered hot spots. Note DEQ believes there are likely to be technologies that would reliably contain these areas. Please clarify.

21. Protective Levels.

- a. The PCB protective level is 0.59 mg/kg, not 0.74 mg/kg; please revise accordingly.
- b. Depending on the outcome of the arsenic risk evaluation, and the depths at which arsenic concentrations are unacceptable (if any) protective levels may range from background levels (approximately 8.8 mg/kg to 12 mg/kg in the St. Helens area) to 15 mg/kg (construction worker RBC). Please revisit the protective level for arsenic, if needed, upon completion of the RI/human health risk assessment.
- c. The FS Work Plan establishes a sediment protective level of no moderate to heavy sheens within the top 12 inches of sediment. The protective level should be set at no sheen, while the moderate to heavy sheens may be used to identify areas for priority action areas for more aggressive cleanup options. Please revise.
- d. Fisher receptor is limited to sport fisher. Please revise to include subsistence/tribal fisher.

22. Key Site and Contaminant Characteristics.

- a. Please clarify in the second bullet that beneficial use of surface water includes subsistence and tribal fishing, not just recreation.
- b. NAPL is considered a hot spot in all media where there is unacceptable risk, including subsurface sediment if exposed. Therefore, the FS should demonstrate that the NAPL is contained/containable.

Section 3 Remedial Action Objectives and Preliminary Remediation Goals

23. The FS Work Plan RAO 1a limits preventing release of creosote NAPL to moderate or heavy petroleum sheen. Note that protectiveness will be achieved when creosote sheen (of any degree) is absent. Therefore, active releases to the aquatic environment that are likely to result in presence of NAPL in surface sediment, including subsurface NAPL, should be addressed in the FS. Slight sheen is expected to attenuate over time if NAPL (inclusive of heavy to moderate sheen) is actively remediated and will be monitored to evaluate the long-term protectiveness of the remedy. Please revise accordingly.
24. The FS Work Plan RAO 4, as described in the FS Work Plan, limits preventing recontamination of the in-water remedy to the defined NAPL riverbank seep areas. DEQ notes that areas beyond the “defined NAPL riverbank seep area” have the potential to recontaminate the in-water remedy, for example if the riverbank is reconfigured during remedial construction and additional seeps are revealed. Further, RAO 4 should also address contaminated groundwater with the potential to discharge to the aquatic environment at concentrations above preliminary remediation goals (PRGs) in porewater

- or surface water. Please revise RAO 4 to reflect that recontamination of the in-water remedy will be prevented from any NAPL or contaminated groundwater discharge.
25. The FS Work Plan RAO 6 limits protection of industrial workers to PCB contamination in upland "Site roadways". Please remove reference to Site roadways, given the temporary nature of site use and roadways, and revised to: "Protection of industrial workers in areas of unacceptable risk related to PCB contamination".
 26. The human health risk assessment conclusions indicate that risks from dermal exposure to polycyclic aromatic hydrocarbons (PAHs) and total petroleum hydrocarbons (TPH) in groundwater outside of NAPL areas were not quantified but it is reasonable to consider use of administrative or engineering controls for Area 1 groundwater to protect against potential exposure. Please include an RAO reflecting an objective to eliminate direct exposure to groundwater.
 27. Please include an RAO to protect future workers from vapor intrusion. This RAO can be met in the future through additional sampling and analysis and demonstration of acceptable risk in footprints of any future buildings or through engineered vapor intrusion controls.
 28. PRGs for NAPL/sheen are not limited to moderate to heavy sheen, rather PRGs include all creosote-related sheen. Moderate/heavy sheens are used to identify areas for more aggressive cleanup options. Please revise.
 29. Upland PRGs should be established and included in the Work Plan.

Section 4 Identification of General Response Actions and Priority Action Areas

30. The text indicates that treatment may include monitored natural attenuation. Note that DEQ supports use of monitored natural attenuation in remedial actions as appropriate, but does not consider monitored natural attenuation "treatment" in the context of DEQ's Hot Spot Guidance.
31. Please include excavation and on-site disposal as another possible general response action. This may be a viable option at the site, particularly if the excavated material is treated.
32. In the last paragraph of Section 4.1.1, with respect to interstitial water toxic unit (IWTU) and surface water toxic unit (SWTU) exceedances, were greater than (not less than) symbols intended? Please clarify or revise as appropriate.
33. The shoreward delineation of the priority remedial action areas shown on Figure 4-1 should be considered approximate and are likely to be refined based on riverbank configuration and elevations associated with regulatory definitions, such as the US Army Corps of Engineer Ordinary High Water Section 404/401 definition. Please include this clarification in the Figure.
34. Please provide the areal extent of priority action areas in acres to one significant digit, not square feet, to better reflect the precision of the delineations.
35. As noted above, subsurface NAPL is also considered a hot spot unless it is demonstrated that it is contained/containable and will not be exposed at the surface. This is an important consideration when estimating volumes; for example, if a dredging remedy is evaluated, and the subsurface is exposed through removal of surface sediment, additional

removal may be necessary to fully address the hot spot. It may be less confusing, for purposes of conducting the FS, to refer to surface sediment NAPL, or some other nomenclature, rather than referring to hot spots when estimating areas and volumes. In the Cove Area, for example, while DEQ agrees that NAPL hot spots in surface sediment cover about 0.4 acres, the NAPL volume calculations should include the volume of surface NAPL (as provided in the report) and subsurface NAPL (this calculation was not provided in the report). The subsurface NAPL in the Cove area has a greater lateral extent than surface NAPL, and the volume calculation should include an estimate of vertical extent. The subsurface NAPL areas and volumes are important to consider in the evaluation of remedial alternatives.

36. The Area 1 Dock contamination is characterized, as indicated in the report, by surficial wood-related creosote NAPL that is sometimes discontinuous. Given the pervasive nature of the contamination, and the likelihood that remedial action in this area will in all likelihood require action in the entire area below the historical Dock as opposed to a patch work of remedial actions in discrete areas, a continuous area of about 1 acre is a more appropriate estimate for evaluating remedial alternatives in the feasibility study. Please revise accordingly. Further, note the vertical delineation in the Area 1 Dock is highly uncertain given the limited sampling conducted at depth in this area. Please include this uncertainty in the FS Work Plan.
37. The Area 2 Dock NAPL area should be revised to 0.2 acre.
38. Riverbank NAPL seeps should include a description of the inferred extent of subsurface DNAPL shown on Figure 4-2 in the Area 1 Dock.
39. Upland priority action areas include mobile NAPL that impacts subsurface sediment, and any dissolved phase contamination that contributes to ongoing loading of the aquatic environment, in addition to the defined riverbank NAPL seeps identified in the FS Work Plan. Please revise the FS Work Plan, including Figure 4-2, accordingly.

Section 5 Identification and Screening of Remedial Technologies

40. To more intuitively group applicable technologies, DEQ suggests organizing the technology screening as follows:

Table 1: Upland and Riverbank Surface Soil

Table 2: Upland Subsurface NAPL/Soil/Groundwater

Table 3: In-Water Sediment/Porewater

41. With the above organization in mind, please ensure the following technologies are included in the screening tables, in addition to those already listed:

Table 1 – Upland and Riverbank Surface Soil: cap, reactive cap, excavation, stormwater management.

Table 2 – Upland Subsurface NAPL/Soil/Groundwater: smouldering, solidification/stabilization (please clarify how this technology is incompatible with site uses if it is eliminated as a technology), riverbank cap, and riverbank reactive cap inclusive of amendments and technologies beyond activated carbon, such as biochar, organoclay, ecospears, and oleophilic biobarriers for in-situ treatment/containment and/or ex-situ treatment and disposal, as appropriate.

Table 3 – In-water Sediment/Porewater: Please include amendments and technologies beyond activated carbon listed above for Table 2 – Upland Subsurface NAPL/Soil/Groundwater, as appropriate. Please include an upland (on-site) CDF as a disposal option.

Section 6 Assembly of Remedial Action Alternatives

42. RAO 1 – DEQ clarifies that, as described in DEQ Comments above, protectiveness will be achieved when creosote-related sheen is absent. However, DEQ agrees that this will be achieved in large part, as described in this section of the FS Work Plan, when NAPL in surface sediment and riverbank seeps (i.e., in priority action areas) are actively remediated. Slight sheen is expected to attenuate over time once NAPL sources are actively remediated. DEQ also agrees that institutional controls may be appropriate to limit disturbance of subsurface sediment to prevent migration of NAPL to the surface and that long-term monitoring will be required following remedial action. Note that long-term monitoring will be required not just in priority action areas, as indicated in the FS Work Plan, but in areas where site-related contamination remains in the subsurface and surface sediment, porewater, and surface water. Please revise the FS Work Plan consistent with the above clarifications.
43. RAO 3 – Please also include stormwater management as a component of the remedial alternative to prevent recontamination of in-water remedy through overland stormwater flow.
44. RAO 4 – DEQ clarifies that, as described in DEQ Comments above, RAO 4 should address recontamination of the in-water remedy through NAPL and groundwater discharge. Therefore, appropriate remedial alternatives would remove, cap, or treat mobile NAPL and groundwater to eliminate discharge to the aquatic environment above PRGs.
45. RAO 6 – The FS Work Plan RAO 6 limits protection of industrial workers to PCB contamination in upland “Site roadways”. Please remove reference to Site roadways, given the temporary nature of site use and roadways, and revised to: “Protection of industrial workers in areas of unacceptable risk related to PCB contamination”.
46. The human health risk assessment conclusions indicate that risks from dermal exposure to polycyclic aromatic hydrocarbons (PAHs) and total petroleum hydrocarbons (TPH) in groundwater outside of NAPL areas were not quantified but it is reasonable to consider use of administrative or engineering controls for Area 1 groundwater to protect against potential exposure. Please include an RAO reflecting an objective to eliminate direct exposure to groundwater.
47. Please include an RAO to protect future workers from vapor intrusion. This RAO can be met in the future through additional sampling and analysis and demonstration of acceptable risk in footprints of any future buildings or through engineered vapor intrusion controls.

Note that with respect to the sampling and analysis conducted by Oregon State University:

- The validation of passive sampling data provided by Cascadia via e-mail on July 18, 2019 remains under review by DEQ.

- Any results of additional sampling and analysis conducted by OSU at the site should be reported and incorporated into the RI or an RI Addendum and be used to inform the FS.

After, or in parallel with, FS Work Plan revisions, I suggest we meet to discuss the alternatives to be evaluated in the FS. Please contact me at your convenience to schedule a meeting and also if you have any questions.

Sincerely,



Madi Novak
Project Manager
Northwest Region Cleanup Section

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