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U. S. Environmental Protection Agency Region 10
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Regarding: State of Oregon Comments on EPA's Proposed Plan for the Portland Harbor Superfund Site

Dear Ms. Koch:

The Oregon Department of Environmental Quality (DEQ) appreciates the opportunity to provide comments on the United States Environmental Protection Agency (EPA) Proposed Plan for the Portland Harbor Superfund Site (the Harbor) located in Portland Oregon. The DEQ is coordinating the State's review of the Proposed Plan with other State agencies including the Department of Fish and Wildlife, Health Authority, Marine Board, Department of State Lands, Department of Transportation, Business Oregon and the State Historic Preservation Office.

The key issues for the State are summarized in the attachment to this letter followed by section-specific comments on the Proposed Plan and Feasibility Study. The key issues summary updates and expands on the preliminary comments provided to EPA on August 8, 2016.

It has now been sixteen years since EPA designated the lower Willamette River as a Superfund Site. The State believes strongly that it is time for action – we must begin the cleanup as soon as possible to protect those who are at risk of adverse health effects, and to allow the river to re-emerge as the economic and social heart of the City of Portland and the greater Portland region.

The State is fully committed to working with EPA to achieve a cleanup that, in conjunction with DEQ's source control program, is implementable, cost-effective, and protective of human health and the environment.

Sincerely,

Peter Shepherd
Interim Director
Oregon Department of Environmental Quality

Richard Whitman
Natural Resources Advisor
Office of Governor Kate Brown

Enclosure: State of Oregon Comments on U.S. EPA Proposed Plan

cc: Dennis McLerran, Administrator EPA Region 10

State of Oregon Comments on US EPA Proposed Plan Portland Harbor Superfund Site

The State of Oregon has compiled the following comments representing state agencies' interests and concerns regarding US Environmental Protection Agency's (EPA's) Proposed Plan, and the supporting documentation provided in EPA's Feasibility Study. Included are 14 main comments followed by specific corrections or clarifications needed to improve the understanding or technical accuracy of these documents. The following state agencies contributed to these comments: Oregon Department of Environmental Quality (DEQ), Oregon Department of Fish and Wildlife (ODFW), Oregon Health Authority (OHA), Oregon Marine Board (OMB), Business Oregon, Oregon Department of State Lands (DSL), and Oregon Department of Transportation (ODOT).

1. Protect public health and the environment by issuing a final decision now and initiating cleanup as quickly as possible

Contamination levels in some specific areas of the Harbor pose a very real threat to the health of people and families consuming resident fish and shellfish – such as carp, smallmouth bass, catfish, and crayfish – caught in those areas. High levels of contamination in these key areas also pose very significant risks to the ecosystem, including the wildlife, fish, and benthic organisms that rely on this water body. After 16 years of study, we strongly urge EPA to issue the Record of Decision (ROD), subject to State concurrence, and begin cleaning up these areas quickly so that the river can be fully returned to its historic role as the cultural, social and economic hub of the City of Portland.

EPA must stick to the current schedule of issuing a ROD in 2016 to avoid a potential cascading series of delays. Delays could result from anticipated changes in EPA administration, growing concerns with the age of the remedial investigation data and – if new data are collected – the need to update the remedial investigation, human health and ecological risk assessments, and feasibility study. The possibility of a major delay at the expense of the health of the river, the community, and the regional economy is simply unacceptable to the State. We acknowledge that some significant project uncertainties remain; however, this is not unusual with large, complex sites. These uncertainties can and *should* be addressed during remedial design and factored into EPA's long-term strategy for monitoring, reporting, and incorporating adaptive management, as needed, to achieve a protective remedy.

The State encourages EPA to increase efforts in planning for timely implementation of the ROD, with a goal to complete construction within ten years following issuance of the ROD – a timeframe which is in line with the construction duration specified in the Proposed Plan. Cleanup of the key areas of the Harbor which pose the greatest risks will not happen by itself. Only with a well thought out plan for how to begin work now and encourage responsible parties to participate can we succeed in making the Harbor safe for all of our communities within a reasonable time period.

A successful implementation framework will require the following key elements:

- A mechanism for the site to be broken into smaller and more manageable work areas (i.e., sediment management areas, SMAs) so that areas posing the highest risks can be addressed sooner.
- Additional data to determine current baseline conditions, more accurately estimate future remedial design and remedial action costs, and support the allocation process. These data can be collected concurrent with remedial design, and should not delay remedy implementation.
- Incentives for responsible parties to enter into remedial design and/or remedial action agreements with EPA to expedite cleanup of SMAs.
- Partnerships with federal, tribal, state and local entities, under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Partnerships help ensure that

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government entities have adequate resources to oversee simultaneous cleanup of multiple work areas, resulting in a cleanup that is faster and more effective than would otherwise occur. When establishing partnerships, carefully delineate EPA and DEQ's roles for overseeing the various aspects of ROD implementation.

- Options for managing the site-wide area outside of the SMAs. This may include encouraging the responsible parties to establish and contribute to a remediation trust.
- Clarity regarding EPA's intended enforcement approach. Creating a framework for increased certainty will increase the likelihood that there will be a critical mass of performing parties.

2. Early actions are needed for public health, environmental health and environmental justice

Despite existing fish advisories, people – particularly low income, people with limited English proficiency, houseless, and other communities with environmental justice concerns – continue to rely on fish from Portland Harbor as a primary food source. These communities are most at risk for adverse health effects. Avoiding further delay in cleaning up the most contaminated areas of the Harbor and moving forward with implementation now is a matter of environmental justice.

The highest concentrations of the key risk drivers – polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxins/furans and organochlorine pesticides (DDx) – are present in up to 13 "hot spots" (i.e. SMAs) within Portland Harbor. These contaminants pose the greatest risk to people who eat resident fish and shellfish – such as carp, smallmouth bass, catfish, and crayfish – caught from these areas. At construction completion, EPA's proposed Alternative I is estimated to reduce the human health risks from eating fish by as much as 100-times when compared to current levels[1]. Further risk reduction of the lesser contaminated areas will occur over the coming decade(s) as monitored natural recovery takes place, primarily through burial from upriver sediment loads and chemical breakdown.

Acknowledging that cleanup of the "hot spots" will not eliminate all health risks and that many decades are likely needed for monitored natural recovery to be fully effective over the remainder of the site, a plan is needed to protect affected communities now.

A comprehensive update of the existing fish advisories must be implemented as soon as possible following issuance of the ROD, enhanced as new information becomes available, and must remain in place until remedial action objectives are achieved. In addition, the remedy must include active and effective community outreach and education, along with continued monitoring and reporting to the public and affected communities.

An effective early action and community outreach plan should include:

- Prioritizing the timing of remedial actions, so that high use fishing areas, publicly accessible shoreline, and high value natural resource areas are cleaned up as early as possible.
- Providing increased funding and resources for outreach programs, particularly for community-based organizations with connections and expertise needed to conduct culturally-responsive education.
- Providing increased funding and resources for monitoring and regular reporting to both the general public and to specifically targeted communities, including tribes, known to rely on the Harbor as a food source.

[1] Remedial Action Objective 2 post-construction risks for fish consumption are presented in feasibility study tables 4.2-2 to 4.2-4.

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- Clarifying the roles of EPA and Oregon Health Authority (OHA) in developing and implementing fish advisories.
- Establishing clear timeframes for implementing and monitoring fish advisories, and correcting inconsistencies within the Feasibility Study and Proposed Plan.

3. Additional evaluation of monitored natural recovery effectiveness is needed following the ROD

The Proposed Plan identifies monitored natural recovery as the primary remedy for areas of the site that are outside of the active sediment management areas (approximately 85% of the site). Monitored natural recovery is relied upon to reduce site risks and achieve project remedial action objectives over time, including a period of time after construction completion. The effectiveness of monitored natural recovery is highly dependent on clean sediments suspended in the water column that enter the site from upriver. Water column data collected during the remedial investigation by the Lower Willamette Group (LWG) and others indicate that monitored natural recovery is unlikely to achieve risk-based protective levels for polychlorinated biphenyls (PCBs) without additional measures being taken upriver of Portland Harbor.

DEQ oversaw sediment cleanup actions in the "Downtown Reach" of the Willamette river – the four-mile reach immediately upriver of Portland Harbor – beginning with the Portland General Electric (PGE) Station L site in the late 1980s. Additional cleanup actions included Ross Island Lagoon, Zidell, and PGE River Mile 11.5 East. DEQ expects that remedial actions at two other sediment sites will be completed in summer 2017 or 2018: the Former Portland Gas Manufacturing Plant at the north end of Tom McCall Waterfront Park conducted by Northwest Natural, and a PCB contaminated site on the east end of the Hawthorne Bridge conducted by PGE. Comprehensive sediment investigations by the City of Portland, DEQ, and others between 2009 and 2010 and fish tissue samples collected by the LWG in 2012 have revealed potential data gaps and indicate that more investigations are necessary to confirm that the Downtown Reach will not limit the effectiveness of monitored natural recovery in Portland Harbor. DEQ will increase its efforts working with potentially responsible parties and stakeholders to expeditiously complete this important work.

DEQ is also assessing the health of the Willamette River watershed and the attainment of State ambient water quality standards, which are some of the most stringent in the country. This includes comprehensive sampling of co-located sediment, water, and fish tissue for PCBs and other contaminants throughout the Willamette River watershed and parts of the Columbia River.

The elements of a comprehensive monitoring plan should include:

- A description of how EPA will assess the effectiveness of monitored natural recovery following issuance of the ROD in consideration of improvements in Downtown Reach sediment quality, better information on watershed health, post-ROD baseline data, and long-term performance monitoring.
- Collaboration with DEQ's cleanup and water quality programs, EPA's CERCLA and water quality programs, tribal and local governments and other stakeholders to develop an approach for assessing performance of the in-water remedy, loading from upriver sources, and the effectiveness of source control measures.
- A process for evaluating and implementing corrective actions, as needed, for managing downstream transport of site contaminants through engineering and turbidity controls, construction monitoring, and site-wide monitoring.

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4. Areas identified as posing risk to the benthic community and lamprey should be more aggressively cleaned up consistent with the baseline ecological risk assessment

As referenced in the Proposed Plan, the EPA-approved baseline ecological risk assessment (BERA) found that unacceptable risks to benthic invertebrates are located in approximately 4-8 percent of the Harbor; however, the Feasibility Study (Figure 4.1-1) incorrectly identifies approximately 60% (1289 acres) of the Harbor as having unacceptable benthic risk. The area presented in the Feasibility Study was defined using the lowest of contaminant-specific toxicity reference values (TRVs) from the risk assessment as preliminary remediation goals (PRGs) in sediment. This area is much larger than the benthic risk area predicted by site-specific models used in the BERA (the Floating Percentile Model and Logistic Regression Model) and does not include some areas which were predicted in the BERA to have moderate to high toxicity to benthic organisms. The State recommends a revised approach which would remediate all sediment areas of unacceptable benthic risk at construction completion, thereby protecting lamprey ammocoetes that occupy the same benthic feeding guild, exposure route, and chemical sensitivity as sediment invertebrates.

The approach for addressing benthic risk should be updated by:

- Using the preliminary remediation goals (PRGs) derived from the Logistic Regression Model with a P_{max} of > 0.5 (indicating moderate and high toxicity) to define the benthic risk area. The State recommends using this model because it is nationally peer reviewed, incorporates models and toxicity correlations for individual contaminants, and represents comprehensive model predictions to both test species (*Hyalella* and *Chironomus*) and endpoints (survival and biomass).
- Incorporating the benthic risk area from the Logistic Regression Model into the Alternative I active remediation area. This is estimated to add approximately 43 acres to the current Alternative I active remediation footprint and enhanced natural recovery area.
- Using a bioassay "test out" option during remedial design to confirm benthic risk and the need for active remediation in these additional areas.
- Allowing for an engineering evaluation of the effectiveness of enhanced natural recovery to address benthic risk areas outside of the current Alternative I footprint.

5. The remedy must accommodate current and future uses of the Harbor

Portland Harbor is an important reach of the Willamette River. This waterway simultaneously serves as a center for the region's economy, a cultural resource for tribes, a social and recreational resource for the City of Portland, and an important aquatic and riparian habitat for fish and wildlife – all of this in the midst of Oregon's most densely populated area.

The current and future uses of the Harbor must be preserved by:

- Ensuring that the remedy is compatible with, and does not irrevocably limit the current and future uses of, adjacent upland sites. This congruity is particularly important at adjacent upland site with a designated marine-dependent use under the City of Portland's recently-updated Comprehensive Land Use Plan.
- Retaining the two existing boat ramps within the Harbor at Swan Island Lagoon and Cathedral Park, and ensuring that at least one of these ramps is made available for public use at all times during

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construction. The remedy must not limit the current or future use of these popular fishing access areas, nor include restrictions that impact ramp maintenance or replacement.

- Minimizing the use of regulated navigation areas or water use restrictions in cap areas that limit restrictions on boat traffic, anchoring, or spudding where possible.

6. Consider potential impacts of transportation modes

Alternative I includes removal of nearly 2 million cubic yards of soil and sediment from the river. This material will need to be transported and disposed of in a manner such that it no longer poses a risk to human health and the environment. The Proposed Plan retains truck, rail and barge shipment of dredge materials as potential modes of transportation. The State is concerned that transporting materials and equipment to or from the site (or transloading facility) by truck would increase road congestion and air emissions, which have real economic, community livability, and environmental consequences. A remedy that relies on trucks would also have a greater impact on roadway infrastructure, requiring greater maintenance and repair.

The impacts from transporting dredge material must be considered by:

- Identifying a preference in the ROD for transporting dredge spoils by rail and barge.
- Acknowledging that the transportation needs and impacts associated with each transportation mode will be evaluated and considered during remedial design to ensure that transportation modes are thoughtfully selected, balanced, and minimize impacts to surrounding communities, transportation safety, and infrastructure.

7. Design flexibility is needed to account for project uncertainties

Portland Harbor is considered a “Mega Site” due to its extraordinary size and level of complexity. Although extensive site-wide data have been collected over the years, there are still a number of uncertainties in the physical, chemical, and regulatory elements of the site. For a sediment site of this magnitude, this is not unusual; however, EPA must support a design process that incorporates flexibility as a means for addressing these complexities and uncertainties while assuring compliance with the ROD.

No one-size-fits all approach can accurately predict and account for the unique characteristics of individual areas in the river. Professional judgment and experience must play a strong role to ensure that the remedy constructed is protective of the human health and the environment at individual sediment management areas (SMAs) in the river.

Flexibility in remedial design can be achieved by:

- Acknowledging that a standardized decision-making approach was applied for ease in developing site-wide remedial alternatives, but modifications to this approach will be needed to refine the selection and extent of remedial technologies on an SMA-specific scale. This may include consolidating or smoothing the pixilated areas of dredging and capping to improve constructability.
- Acknowledging that the conceptual site model will likely need to be updated during remedial design for specific SMAs. For example, surface water and tissue data at the Willamette Cove site suggests that

there may be an active in-water source(s) not yet identified which may require an alternative remedial technology[2].

- Describing how subsurface contamination will be considered during remedial design, if at all, in defining the boundaries of active remediation areas. It is the State's understanding that SMAs identified in the Proposed Plan are mapped by comparing remedial action levels (RALs) to surface sediment chemistry and not subsurface chemistry.
- Giving equal preference to dredging and capping in the intermediate river region where there is no non-aqueous phase liquid (NAPL). The ROD should not require capping of these areas if Performing Parties determine during remedial design that dredging is more cost effective or otherwise preferable in order to avoid requirements for long-term cap monitoring and maintenance and reduce compensation to the Department of State Lands. Similarly, the ROD should not require dredging if a more detailed assessment during remedial design discovers substantial amounts of buried debris, geotechnical hazards or other conditions that would increase the risk of contaminant resuspension and downstream transport, risk to construction workers or otherwise render dredging to be infeasible.
- Describing criteria for selecting thin-layer sand capping, called enhanced natural recovery (ENR), at Swan Island Lagoon. Allow for refinement of the ENR footprint, if appropriate, after a more in-depth assessment of sediment deposition rates. For example, it's unclear why monitored natural recovery would not be effective in the downriver portion or the lagoon.
- Allowing flexibility to accommodate future in-water infrastructure projects. For example, a cap in the vicinity of a bridge will impact ODOT's ability to perform maintenance and construction work around bridge support structures in the river if a cap is not carefully located. For seismic upgrades on the St. John's Bridge and the Fremont Bridge, the bridge piers will increase in size by as much as 50% and the in-water work would require a setback of approximately 20 feet around the piers. If a cap is placed in the vicinity of a bridge pier before seismic upgrades occur, the cap could be damaged from construction equipment anchoring or disturbing the river floor.

8. Cleanup costs are uncertain and likely underestimated

The State is concerned that EPA's cost estimate for Alternative I may underestimate the actual total project cost, and that the Proposed Plan does not adequately describe key uncertainties with the estimate. The State recognizes the difficulties in developing an accurate cost estimate for a site as complex as Portland Harbor, but requests that the ROD provide additional clarification about cost assumptions, uncertainties and sensitivities.

Project uncertainties in the estimated cleanup costs should be accounted for by:

- Acknowledging that the actual cost of Alternative I will likely fall outside the desired range of -30% to +50% the estimated cost that is specified in EPA guidance documents.
- Identifying cost assumptions with the greatest amount of uncertainty, which have potential to most significantly influence the total project cost. The State anticipates that handling, transporting, treating, and disposing Subtitle C and Subtitle D dredge material will have the greatest potential to significantly increase the cost of the remedy due to uncertainties in the disposal volumes and treatment requirements for this material. Further complicating this effort is the uncertainty of a local disposal option for Subtitle

[2] High contaminants levels (e.g., PCBs) were detected in the beach samples from the inner cove (i.e. below mean high water) which do not appear to be included in the Alternative I. These data can be found in a May 6, 2011 Ash Creek Associates letter report provided to EPA in a May 18, 2011 email from DEQ.

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D dredge material, particularly in light of the widespread opposition to the proposed confined disposal facility (CDF) at Terminal 4. If an acceptable facility were developed that could handle most or all of the Subtitle D wastes without the need for transloading to rail or truck, significant cost savings would be realized, not to mention increased implementability, reduced implementation risk and reduced carbon footprint/greenhouse gas emissions. An example of a potential facility not contemplated in the Feasibility Study is the former Boise White Paper wastewater lagoon recently proposed by the City of St Helens as a regional, State permitted, disposal site for dredge spoils and other non-hazardous wastes. Other key costs with significant uncertainty are open water dredging, project management, remedial design, mobilization/demobilization and contingency (scope and bid).

- Including a table comparing the non-discounted costs against a range of discount rates as done for the Lower Duwamish Waterway Superfund Site. Discount rates are used as a tool to predict the money needed today to fund the project into the future, largely based on predicted interest rates for the project duration. The State suggests comparing non-discounted costs to a 7% discount rate, per EPA's guidance[3], and the 2016 30-year real discount rate of 1.5%[4], to better reflect current economic conditions.

9. Cleanup levels should be focused on the sediment remedy

It is critically important that EPA provide clarity regarding when the CERCLA cleanup is complete. Portland Harbor was listed under CERCLA as a sediment site, and the remedial alternatives evaluated in the Feasibility Study are based on cleanup of contaminated sediment. In the Proposed Plan, EPA proposed preliminary remediation goals (PRGs) for surface water, groundwater (porewater) and fish tissue. These non-sediment PRGs have potential to cause significant confusion and uncertainty. The State considers the primary goal of the remedy to reduce sediment contamination to risk-based or background levels. This will, in turn, result in reducing contaminants in fish/shellfish tissue, groundwater (porewater), and surface water. Further reductions in all media will be achieved through source control and watershed actions. Therefore, cleanup of contaminated sediments will contribute to meeting the remedial action objectives for other site media, but will not independently meet them.

The State is concerned about using PRGs for fish tissue, surface water, or groundwater as formal cleanup levels in ROD, particularly where there is not a thorough understanding of the technical practicability of achieving and measuring these criteria. For example, many of the surface water, groundwater (porewater), and tissue PRGs (e.g. PCBs, DDx) are set below background levels. Also, the PRG for surface water and porewater PCBs, for example, is well below analytical detection limits. In addition, the contribution to porewater from contaminated sediments versus contaminated groundwater plumes is indistinguishable for some contaminants; this is not accounted for in the decision trees for the technology assignments.

The cleanup goals should be clarified by:

- Establishing formal cleanup levels based on sediment PRGs only.
- Retaining the surface water, groundwater, and fish/shellfish tissue criteria as measures of progress to evaluate the effectiveness of the sediment remedy in reducing risks associated with these media, but not as formal cleanup levels, similar to what was done on the Lower Duwamish Waterway.

[3] EPA. 2000. A Guide to Developing and Documenting Cost Estimates During the Feasibility Study. EPA 540-R-00-002. OWSER 9355.0-75. July 2000.
[4] Office of Management and Budget Circular A-94. Appendix C. 30-year Real Interest Rate for 2016.

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10. Identification and cleanup of riverbanks should be consistent with the Joint Source Control Strategy

In 2005, DEQ and EPA developed a Joint Source Control Strategy (JSCS), which identifies a framework for conducting source control work consistent with anticipated in-water remedy objectives. This framework includes a process for screening and evaluating river banks to determine whether remedial action may be required. The State understands that the intent of remedial action objective (RAO) 9 is to reduce migration of contaminants from river bank soil to sediment and surface water, such that levels are acceptable for human health and the environment. This objective can be adequately addressed under an updated JSCS framework.

The approach to riverbank cleanup should be revised by:

- Referring to the joint source control strategy for using site-specific lines and weights of evidence to determine whether a riverbank source control measure is warranted. The joint source control strategy should be updated to use in-water sediment preliminary remediation goals as screening criteria for riverbank source control evaluation. However, the PRGs for remedial action objective 9 should not become formal cleanup levels. This change also addresses the DEQ's concern that the RAO 9 PRGs for arsenic, cadmium and mercury are lower than upland background values determined by DEQ[5]. Neither EPA nor DEQ have conducted a background evaluation to determine upland background concentrations for the organic compounds. It is likely that the PRGs for some of the organic compounds are also below background.
- Making a distinction between riverbanks referred to EPA that have been identified by DEQ as contaminated and requiring a bank source control measure, versus those that are contaminated with a need for bank action to be evaluated during remedial design.

11. Cleanup actions for groundwater plume discharge areas should not be prescriptive

The Proposed Plan calls for in-situ treatment for residual groundwater plumes potentially discharging contaminants to the river. The State is concerned that the prescriptive technologies identified for groundwater plumes do not adequately consider the various types of plumes present within Portland Harbor.

The cleanup actions for groundwater plumes should be refined by:

- Updating the decision trees for the shallow and intermediate regions to identify two categories of groundwater plumes.
  - Groundwater plumes that are expected to naturally attenuate. If a plume will attenuate in a reasonable amount of time, no additional treatment or engineering controls would be required such as the addition of activated carbon to the residuals layer or construction of a reactive engineered cap.
  - Groundwater plumes that are not expected to naturally attenuate. For plumes that are not expected to attenuate in a reasonable amount of time (e.g., portions of the Gasco, Rhone-Poulenc and Arkema plumes) reactive engineered caps should be the assigned remedial technology within the groundwater plume discharge area.
- Considering the compatibility of the selected remedy with upland source control efforts in areas with groundwater plume discharge, and with the aim of integrating in-water and upland remedies.

[5] DEQ, 2013, *Development of Oregon Background Metals Concentrations in Soil*, March.

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12. Clarify the Oregon Marine Board's authority and role in remedy implementation

The Proposed Plan states: "Where caps will be utilized to contain contamination in navigable areas of the river, waterway use restrictions or RNAs [regulated navigation areas] will be necessary to ensure the integrity of the cap is maintained in perpetuity. These restrictions would preclude boat anchoring and keel dragging, the use of spuds to stabilize vessels, structure and utility maintenance and repair, and future maintenance dredging in areas containing caps. Notifications such as signs and buoys placed by the Oregon Marine Board may be used to warn vessels away from the area." This language is incorrect - the Marine Board does not have the authorities described in the Proposed Plan.

The role of the Oregon Marine Board should be clarified by:

- Explaining that the Marine Board will not purchase or place signs and buoys, as this is the responsibility of the applicant for a waterway marker permit. The Marine Board Waterway Marker Permit is required in addition to the Private Aid To Navigation (PATON) permit required by the US Coast Guard. The Marine Board will approve the placement of waterway markers through the waterway marker permit application process, provided that the regulation listed on the waterway marker is adopted in code, statute or rule to be enforceable.
- Specifying which enforcement agency (US Coast Guard or State of Oregon) will be responsible for enforcing any new regulated navigation areas. Any lead agency will need to propose and adopt regulations accordingly, either in federal code, state law or both.
- Allocating adequate funding to pay for enforcement of regulated navigation areas "in perpetuity."
- Acknowledging that slow-no-wake safety zones required for in-water work or near-water work must be adopted in State rule or statute to be enforced by the State. The Marine Board requires prior notice and planning as to how the zones will be marked for enforcement to occur. Any contractor doing in-water or shoreline work will need to pay for waterway markers and dedicated work-zone enforcement from marine patrol as the buoys and hours will not be paid for by Multnomah County or the Oregon Marine Board.

13. Recognize the Department of State Lands' land management authority and role in remedy implementation

DSL manages state-owned submerged and submersible land, which the State holds in trust for the public[6]. The use of state-owned land in conjunction with remedial activity is governed primarily by Oregon Administrative Rules (OAR) Chapter 141 Division 145 (effective February 2014). These rules describe the process by which DSL will determine the compensation due the State for the required use authorizations. This determination requires calculation of the "Site Diminishment Impact" (or SDI) of the proposed remedial action based on its anticipated impacts on public trust uses, the duration of those impacts, and the extent to which the remedial action will impair DSL's ability to manage the affected land in the future. Greater impacts or restrictions on public trust uses of state-owned submerged and submersible land will compel greater compensation.

Performing parties will need to coordinate with DSL. This process should begin *prior to* remedial design so that DSL input can be considered and incorporated into that design. Early DSL review of remedial design will

[6] The current riparian boundaries in Portland Harbor are depicted in DSL's Willamette River-Portland Harbor Riparian Line Mapping (March 23, 2016), which is being provided by DSL under separate cover.

facilitate a more accurate estimate of the required compensation and may help identify potential options for reducing that compensation. For example, cap design (e.g. location, thickness, material, etc.) that minimizes the impact to public trust uses (e.g. does not prevent or impair anchoring, fishing, or motor usage) will require less compensation to the State than a cap that restricts public trust uses or impedes DSL's ability to lease the property in the future (e.g. restrictions on driving pile, placing docks, etc.). Similarly, a number of small caps in close proximity may impose greater impacts on public trust uses than each cap would have when viewed in isolation. Cumulative impact will be considered in calculating the SDI of each cap, and may impact the compensation due. (A large number of small caps will also increase the tracking, monitoring and enforcement workload for DSL and other agencies and, for that reason, is not favored.)

The Proposed Plan does not include the cost of DSL use authorizations, which could range as high as $15 million harbor-wide (reflecting a site-wide average of roughly $230,000/acre) for sediment cap easements alone, and have the potential to affect the evaluation of relative costs in selecting between capping and dredging technologies.

The role of DSL should be clarified by:

- Expressly recognizing the State's land management role in remedy implementation, specifically DSL's role in authorizing the use of state-owned submerged and submersible land for remedial activities.
- Identifying the potential costs associated with use authorizations, recognizing that these costs can be most effectively managed by their consideration in the early stages of remedial design, and in consultation with DSL.
- Providing flexibility during remedial design such that performing parties can, consistent with remedial action objectives, reduce or eliminate impacts to and restrictions on public trust uses of state-owned submerged and submersible land, including by switching from capping to dredging.

14. Clarify the role of Oregon Health Authority in developing and implementing fish advisories

All existing fish advisories in Oregon were developed and issued by the Oregon Health Authority (OHA). OHA follows EPA guidance to develop these advisories. OHA typically communicates these advisories via news releases and its website. In some cases, local health authorities or local water body managers post signs on behalf of OHA. Generally speaking, county health departments are the most appropriate entity to conduct outreach and community engagement for local public health issues; however, they often lack the staff capacity and funding to do so for environmental health issues. Portland Harbor is located within the Multnomah County's jurisdiction. With the appropriate level of resources, Multnomah County Health Department would be the entity to implement a fish advisory outreach program for Portland Harbor.

The role of OHA should be clarified by:

- Specifying the role of state and local health authorities in developing and implementing fish advisories.
- Identifying the resources and funding that EPA will provide to state and local health authorities for conducting effective community outreach and education.

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The State compiled the following comments on the Proposed Plan to identify specific corrections or clarifications needed to improve understanding or technical accuracy.

Main Text

River Bank Region, Page 12. The ROD should clearly define the term river bank and clarify whether the term applies to either a geomorphic feature or specified elevation.

Assumptions Regarding Fish Consumption Rates and Patterns, Page 17. The ROD should make a distinction between anadromous species and resident species. Spring Chinook, steelhead, coho, shad, and lamprey are anadromous species likely have lower contaminant levels and are targeted by a wider and more diverse group of anglers. Resident fish like crappie, smallmouth bass, carp, bullhead, catfish have higher levels of contamination because their range is within Portland Harbor and these type of fish are more targeted by and more likely to be eaten by local residents.

Baseline Ecological Risk Assessment, Page 20. The ROD should specify that TPH is both TPH-Diesel as measured by the TPH-Diesel method and as the aliphatic EC10-EC12 fraction.

Reactive Caps, Page 27. The ROD should describe the purpose and function of organoclay versus activated carbon, particularly with respect to effectiveness with NAPL.

Productivity, Page 29. The Plan assumes a dredging season based on one in-water work period (July 1 through October 31). The ROD should acknowledge that there is a second in-water work period in the winter (December 1 to January 31st) and identify what, if any work, may be done during this period.

Potential Contaminant Release during Construction, Page 29. The ROD should include a statement that acknowledges the limitations of silt curtains and sheet pile walls.

Dredge Residuals, Page 29. The plan states that "A 12-inch sand layer is assumed to be placed daily in all dredge areas to control residuals and releases." Daily placement of a residuals management layer is not practical and would have significant impact on the project schedule and costs with limited benefits. DEQ recommends placement of a single 12-inch dredge residuals management layer following dredging.

Buried Debris and Piling, Page 29. The ROD should clarify whether debris removal will be required in capping areas and how debris may influence the technology assignment for dredging versus capping. In particular, there tends to be heavy debris in the intermediate and shallow water areas and along the riverbanks, which will hamper the efficacy of pre-dredging in these areas.

Fish Advisories and Educational Outreach, Page 32. EPA should avoid issuing consumption advice with a time denominator greater than 1 month. For example, if the calculated meal recommendation is 6 meals in 10 years, the advisory should say no resident fish consumption. The main reason for this is clarity and usefulness of the information for the general public. Typical fishers are unlikely to keep track of their consumption of fish from a specific water body over a 10 year, or even 6 month, period. As a matter of practical risk communication, any recommendation that is more restrictive than 1 meal per month should be communicated as no fish consumption. The current fish advisory for Portland Harbor is zero meals per month for sensitive groups, especially pregnant and nursing women, and one meal per month for everyone else. OHA recognizes that the current recommendation is inconsistent with fish tissue data that have been collected and current fish advisory

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calculation methodologies. The current fish consumption advisory for Portland Harbor will be updated to recommend no consumption of resident fish. This adjustment will bring OHA's advisory into alignment with EPA's recommendation.

River Banks, Page 36. The Plan states that "The technology assignments for SMAs adjacent to identified contaminated river banks are extended to include those river banks." This is in conflict with the next sentence which states that "Where SMAs are projected onto the river bank, removal followed by capping is the assigned remedial technology." The ROD should clarify the technology assignment for river banks and should explain how river banks action will be integrated with ongoing source control efforts.

Long Term Effectiveness and Performance, Page 52-55. The definitions of residual risk and post-construction risk are unclear. The ROD should clarify these terms and how the risks associated with each are calculated.

RAO 2, Page 51. The interim target hazard index (HI) for infants is stated as 1,250 on a site-wide scale and 920 on a river mile scale. These targets are inconsistent with the FS. The infant interim target HI in the FS is 1320 sitewide and 450 on a river mile scale (see Feasibility Study Page 4-7).

RAO 5, Page 51. The interim target for RAO 5 is unclear. Although the text indicates that the interim target for RAO 5 is to address 50 percent of the benthic risk area, this is untrue. The Alternative I footprint addresses only 17% of the benthic risk area (225 acres, Table J2.4-1). Although not explained in the text, the State understands that EPA's interim target is actually based on the area exceeding 10x the benthic risk PRGs. The basis for all interim targets should be clearly described in the text.

Implementability, Page 56. The ROD should acknowledge potential impacts of construction on adjacent business and marine-based commerce and consider these impacts in the comparative alternatives evaluation. Alternatives which can be implemented in a shorter period of time will have a shorter duration of impacts.

Preferred Alternative, Page 64. The Plan calls for placement of an impermeable cap layer (e.g., AquaBlok) beneath structures. This type of cap may be subject to failure and heaving due to tidal influences and surface water-groundwater exchange, resulting in some loss of its isolation capabilities. Other cap materials should be considered and evaluated during design for placement under structures.

Preferred Alternative, Page 65. Aquablok and Aquagate are proprietary products. The use of these products should not be a specific requirement and the ROD should clarify that alternative, comparable products may be used.

Figures

General: The ROD should provide adequate depictions of the risk areas to be addressed by the remedy.

Figure 6. The riverbanks identified as contaminated in this figure should be revised to be consistent with the areas identified in the Portland Harbor Upland Source Control Summary Report March 25, 2016.

Figure 10a. This figure assumes that no PTW or RAL exceedances occur greater than 18 feet bml in FMD areas or 15 ft bml in the navigation channel. It is unclear whether these depths define the maximum dredge depths in

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these areas, or if dredging will extend to the full depth of PTW/RALs should new data indicate deeper exceedances.

Figure 10b. The multi-criteria design matrix (Feasibility Study Figure 2.4-16) is necessary to interpret the intermediate area technology assignments. This matrix should be included and discussed in the ROD. This discussion should include a summary of the weighting and scaling approach used for various elements and should also acknowledge the dependence of the evaluation on assumptions such as the choice of cutoff criteria and the scale, and use equal weighting of factors on the resulting matrix designation. Alternatively, and preferred by the State, is that a preference not be specified between dredging versus capping in intermediate areas.

Figure 19c. Alternative I identifies dredging as the remedial technology for the portion of Terminal 4, Slip 3 which was capped as part of the T-4 Phase I Removal Action. The ROD should either amend the figure if the assigned technology is in error or explain why the cap should be removed.

Figure 19c. Beach sample locations adjacent to the Mar-Com North and South Parcels[7] indicate that PCBs in excess of the Alternative I RAL extend into the cove area outside of the Alternative I footprint shown in the figure.

Tables

Table 11, PRGs.

- The table title and headers should distinguish between PRGs (sediment) and target values which will be used as a measure of progress (surface water, groundwater, fish/shellfish tissue).
- The groundwater PRG value of 2.6 µg/L for TPH-Diesel should be clarified as applying to the aliphatic EC10-EC12 fraction of TPH.
- The fish tissue values apply to both fish and shellfish.

[7] *Summary Report for Shoreline Sediment Assessment, Former Mar Com Site South ECSI No. 2350* dated January 24, 2013 provided to EPA on February 8, 2013