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*Via E-mail & U.S. Mail*

August 3, 2012

Ms. Piper Peterson  
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USEPA Region 10  
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***Re: Sediment Management Work Group's Comments on the Proposed Plan for the Lockheed West Seattle Superfund Site***

Dear Ms. Peterson,

The Sediment Management Work Group ("SMWG")<sup>1</sup> is an ad hoc group of industry and government parties actively involved in the evaluation and management of contaminated sediments on a nationwide basis. The SMWG has long advocated a national policy addressing contaminated sediment issues that is founded on sound science and risk-based evaluation of contaminated sediment management options. The SMWG recognizes that the management of sites involving contaminated sediments frequently involves unique and complex scientific and technical issues, including assessment methodologies and evaluation of risk and risk reduction options. As an active participant in the national discussions on sediment management issues, the SMWG welcomes the opportunity to offer observations and comments on the Proposed Plan for the Lockheed West Seattle Superfund Site ("Site").

The SMWG's review of the Proposed Plan has identified a number of critical areas where the Proposed Plan does not comport with the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP") (40 CFR Part 300), the *11 Risk Management Principles for Contaminated Sediment Sites* (U.S. EPA 2002)<sup>2</sup> and the *Contaminated Sediment Remediation*

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<sup>1</sup> See Exhibit "A" for a list of its Members.

<sup>2</sup> United States Environmental Protection Agency. 2002. Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites. OSWER Directive 9285.6-08.

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*Guidance for Hazardous Waste Sites* (U.S. EPA 2005)<sup>3</sup> (“Guidance”). In particular, the Proposed Plan does not follow the Guidance’s risk management framework for selecting a risk-reduction focused remedy nor does it comply with the NCP’s requirement that remedies have a proportionality between the effectiveness of each remedial alternative and their respective cost. Thus, it should be withdrawn and a new remedy selected.

The comments below offer more discussion of the significant issues with the Proposed Plan. The remedy proposed for the Lockheed West Seattle Superfund Site is significantly inconsistent with U.S. EPA’s national policy, as embodied in the Guidance, and the NCP.

### **I. The Proposed Plan Deviates From U.S. EPA’s National Contaminated Sediment Policy.**

In December 2005, U.S. EPA issued the *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites*. This Guidance embodies national policy on contaminated sediment and should be followed at all contaminated sediment sites (Guidance, p. 7-1). Its focus is on selecting remedies that will control sources and achieve long-term protection while minimizing short-term impacts and being cost-effective (Guidance, p. 7-17). The Guidance further emphasizes the importance of focusing on risk reduction, not simply assuming that mass removal equates to risk reduction. The Guidance provides a risk management decision-making framework to assist with selecting remedies that reduce human health and ecological risks effectively (Guidance, p. 7-1).

Contrary to U.S. EPA’s national contaminated sediment policy, which is focused on reducing risks associated with contaminated sediment sites, the Proposed Plan appears to be focused on mass removal over risk reduction. The Proposed Plan is a combination remedy with dredging as a significant component (Alternative 3C Plus) whereas the preferred alternative in the Feasibility Study is a combination remedy with capping as a significant component (Alternative 2A2a). U.S. EPA listed four reasons for selecting Alternative 3C Plus over Alternative 2A2a. Each will be addressed in turn.

#### **A. Reason Number One for Selecting Alternative 3C Plus – Expansion of the Remediation Footprint**

The first reason for selecting Alternative 3C Plus over Alternative 2A2a given is: “The actively remediated site surface area is greater for Alternative 3C Plus because it extends to the Study Area boundary rather than the Urban Background boundary.” Approximately 10 additional acres are included in the remediation footprint by extending it from the Urban Background boundary to the Study Area boundary. This increase of 10 acres of remediation (from 30 acres to 40 acres) will not, however, result in additional risk reduction because it is fully expected that the Site’s post-construction surfaces “may unavoidably re-equilibrate to levels above natural background over the longer term” due to “urban pollutant influences” in Elliott Bay (R10’s Response to NRRB’s Recommendations).

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<sup>3</sup> United States Environmental Protection Agency. 2005. Contaminated Sediment Remediation Guidance for Hazardous Waste Sites. OSWER 9355.0-85.

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The anticipated “re-equilibration” is based on monitoring data from the adjacent Pacific Sound Resources Superfund Site, which showed that only two years after construction completion, the cap’s surface had concentrations of COCs exceeding natural background. In fact, some of the concentrations of COCs approached urban background. For example, in 24 of 25 samples, PCB concentrations exceeded the natural background concentration of 2 µg/kg dw and two of the samples exceeded the urban background concentration of 119 µg/kg dw (PCB concentrations ranged from 2 to 317 µg/kg dw). For cPAHs, all 25 samples exceed the natural background concentration of 9 µg/kg dw. The concentrations of cPAHs ranged from 10.48 to 242 µg/kg dw. In addition to the samples exceeding natural background for PCBs and PAHs that were taken two years after construction completion, samples taken one year after construction completion exceeded natural background for mercury (11 of 12 samples), lead (9 of 12 samples), and arsenic (5 of 7 even exceeded urban background). This recontamination one to two years following construction completion was not due to cap failure, but rather to the urban influences in Elliott Bay (i.e., urban background).

Therefore, due to the anticipated “re-equilibration”, remediating the additional 10 acres between the Urban Background boundary and the Study Area boundary does not provide additional risk reduction. Because there is no risk reduction purpose, using the additional remediation acreage as a rationale for selecting Alternative 3C Plus contravenes the Guidance’s focus on risk reduction.

### **B. Reasons Number Two and Three for Selecting Alternative 3C Plus – No Capping**

The second reason for selecting Alternative 3C Plus over Alternative 2A2a given is: “Alternative 3C Plus does not involve capping, negating the need for more restrictive ICs [institutional controls] and long-term monitoring.” The third reason for selecting Alternative 3C Plus over Alternative 2A2a given is: “Future site use restrictions required by capping that could affect Port development plans, and that are inconsistent with the DNR mandate for “water dependent uses” of state-owned lands would be eliminated by Alternative 3C Plus. Alternative 2A2a encumbers the Site with a cap and additional ICs, but does not preclude reasonably anticipated future land uses envisioned by the Port and DNR.” These two reasons are related to concerns over potential restrictions on future site use.

The administrative record confirms that capping does not preclude reasonably anticipated future site uses. The RI/FS Report notes that “potential future use restrictions related to cap areas can be minimized during design by increasing the thickness of the cap to allow anchoring and grounding of small vessels and by coordinating with the Muckleshoot and Suquamish Tribes, Port of Seattle, and DNR.” Moreover, as U.S. EPA acknowledges, Alternative 2A2a “does not preclude reasonably anticipated future land uses envisioned by the Port and DNR,” so it is difficult to understand why the potential future development plans of the Port are used as a reason to reject a primarily capping alternative based on acknowledged site-specific conditions. Such a concern could be addressed by dredging in the small number of acres, if any, which might encroach a deeper navigational channel. Finally, the Site has limited public access due to its

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Homeland Security designation, which is not likely to change, especially if the Port expands the terminal. Thus, potential future site uses do not appear to preclude capping.

An additional “site use factor” that favors capping over dredging is the duration of construction, which is very disruptive to use of the water body. Capping can achieve the cleanup goals faster and, more importantly, with fewer short-term impacts than dredging. With the shorter construction duration of capping, use of the water body will be impacted less than it would be in a primarily dredging remedy.

Neither Alternative 3C Plus nor Alternative 2A2a eliminate the need for institutional controls. Both require a restrictive covenant “that runs with land and requires coordination with U.S. EPA and management of any residual contamination that is disturbed or encountered in the event of future excavation or dredging within the boundaries of the Site.” Additionally, both require fish consumption advisories because the risk-based cleanup levels are below natural background. Institutional controls are, therefore, necessary under either alternative.

Similarly, neither Alternative 3C Plus nor Alternative 2A2a eliminate the need for monitoring (Proposed Plan). Long-term monitoring is part of most sediment remedies (Guidance, p. 8-1), including Alternatives 3C Plus and 2A2a. Moreover, long-term monitoring of caps is not, in of itself, an acceptable basis to exclude capping from consideration. Thus, the long-term monitoring requirements of the proposed cap should not preclude selection of a primarily capping remedy at this Site.

Based on anticipated future site uses, the ability to account for these in designing a cap, the shorter duration of a capping construction project, and the need for some institutional controls regardless of the remedy, future site uses should not preclude capping.

### **C. Reason Number Four for Selecting Alternative 3C Plus – Seismic Concerns**

The fourth reason for selecting Alternative 3C Plus over Alternative 2A2a given is: “Potential for re-exposure of subsurface contaminated sediments and seismic damage is less for Alternative 3C Plus because the areas of highest-contaminant concentrations are being removed via dredging and the remaining contaminant concentrations on the Site are low (generally less than SQS [Sediment Quality Standards]).” This rationale is not well-supported by the evidence nor is it a reasonable risk-based reason.

The Guidance cautions that there should not be “a presumption that removal of contaminated sediments from a water body will be necessarily more effective or permanent than capping or MNR” (Guidance, p. 3-16). Rather, an evaluation of a proposed cap’s long-term effectiveness and permanence should be conducted based on site-specific conditions. To address the potential impact of seismic events on the long-term permanence and effectiveness of the remedial alternatives, a seismic evaluation of the potential for liquefaction, slope stability and flow was conducted. As discussed below, this evaluation showed that capping would be an effective, permanent remedy at the Site.

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The results of a seismic evaluation show that “for nominal 100-year and 500-year events,” the analyses “do not suggest a large-scale failure” related to liquefaction, slope stability or flow slides (R10’s Response to NRRB Recommendations). More specifically, while the sediment may be susceptible to liquefaction during a seismic event, “the risk of potential upwelling, exposure and spreading of contaminated sediment beneath the capped areas” is “expected to be localized” (R10’s Response to NRRB Recommendations) and may only occur during the 2,500-year event, but is not expected during a 100-year or 500-year event (RI/FS Appendix H – Liquefaction Potential and Seismic Stability Evaluation of Remedial Alternatives). Moreover, “[s]uch an event may cause short-term disruption of the benthic community in the affected zone but could be repaired by placement of additional cap material” (R10’s Response to NRRB Recommendations). Similarly, for either a capping or dredging remedy, the slope stability analysis demonstrates that if “slope stability failure of those capped berms or former dredge cuts occur”, the “failure would be localized and easily repaired by placing additional cap material” (R10’s Response to NRRB Recommendations). Additionally, “the current analysis does not suggest occurrence of a large-scale flow slide that may affect the stability of contaminated sediments” (R10’s Response to NRRB Recommendations). Finally, the results of monitoring within the vicinity of the Site during a 2001 earthquake (Nisqually earthquake), which had characteristics similar to the 100-year and 500-year events analyzed, “do not indicate any recognizable effect of liquefaction, slope failure, or flow slides” (R10’s Response to NRRB Comments). Thus, as acknowledged by U.S. EPA in its Response to NRRB Comments, the seismic analyses and real world monitoring data from a seismic event suggest that seismic-related issues can be addressed as part of the operations and maintenance plan for a cap at the Site.

The seismic analysis of a 100-year event is in line with the Guidance, which recommends evaluating extreme events, such as floods, hurricanes and earthquakes, based on a probability of occurrence of 0.01 in a year (Guidance, p. 2-29). Similarly, the Guidance recommends designing caps “to withstand forces with a probability of 0.01 per year” (i.e., 100-year event) (Guidance, p. 5-9). The seismic analyses show no anticipated exposure of contaminated sediment as a result of a 100-year or a 500-year event. For a 2,500-year event, which is far outside the recommended evaluation and design event of a 100-year event, any impact is anticipated to be localized and can be addressed with the operations and maintenance plan for a cap (R10’s Response to NRRB Recommendations; RI/FS Appendix H). There is, therefore, no reasonable risk-based reason for selecting dredging over capping due to seismic concerns.

## **II. U.S. EPA Should Waive The Natural Background ARAR Because Sediment Will Likely “Re-Equilibrate” To Levels Above Natural Background.**

The Proposed Plan identifies the State of Washington’s Model Toxics Control Act (“MTCA”) as an ARAR. Where risk-based cleanup levels are below natural background, “the cleanup level shall be established at a concentration equal to the practical quantitation limit or natural background concentration, whichever is higher.” WAC 173-340-700(6)(d). As described in Section I above, U.S. EPA anticipates that within a few years of construction completion, the sediment will “re-equilibrate” to concentrations above natural background due to the Site’s location in an urban/industrial waterway. It is disingenuous to state that the Proposed

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Plan will meet the MTCA natural background ARAR while acknowledging that the Site will likely “re-equilibrate” to concentrations above natural background before the Five-Year Review based on monitoring data from one and two years following construction completion at the adjacent Pacific Sound Resources Superfund Site. Maintaining (long-term effectiveness) natural background at this Site is technically impracticable, and thus, this ARAR should be waived pursuant to 40 CFR §300.430(f)(1)(ii)(C)(3).

There is precedent at this Site for proposing a technical impracticability ARAR waiver due to the on-going urban/industrial influences in Elliott Bay. With respect to the Ambient Water Quality Criteria (“AWQC”) ARAR, U.S. EPA has already proposed a technical impracticability waiver because the Site’s surface water “will continue to be impacted by the flow of surface water in Elliott Bay and the Lower Duwamish Waterway,” which are urban/industrial waterways (R10’s Response to NRRB Recommendations). Due to the continued urban/industrial influence, the Proposed Plan will not result in meeting the AWQC. Thus, the limitations of what can be achieved at the Site due to its location in an urban/industrial waterway have been recognized and, appropriately, a technical impracticability waiver has been proposed for the AWQC ARAR. U.S. EPA should extend its acknowledgement of the practical limitations of what can be achieved and maintained at the Site with respect to the sediment cleanup numbers and seek a technical impracticability waiver for the MTCA natural background ARAR.

### III. The Proposed Plan Is Not Consistent With The NCP.

The NCP requires that the selected remedial action be cost-effective by having a proportionality between the effectiveness of each remedial alternative in relation to their respective costs: “Each remedial action selected shall be cost-effective” (40 CFR §300.430(f)(1)(ii)(D)). Cost-effectiveness is defined as “costs are proportional to its overall effectiveness.” (40 CFR §300.430(f)(1)(ii)(D)). The Proposed Plan violates the NCP’s cost-effectiveness because its costs (\$48.1 million) are not proportionate to its anticipated effectiveness.

First, the Proposed Plan is not expected to result in any measurable reduction in PCB concentrations in fish tissue, and therefore, is not expected to reduce human health risks associated with fish consumption. U.S. EPA acknowledges this expectation in Region 10’s response to the NRRB’s Recommendations:

“[I]t is not certain that fish tissue concentrations will dramatically improve after this action given that the fish move throughout Elliott Bay. By the same token, it is hard to quantify the reduction, if any, in human health risks.”

This lack of measurable risk reduction in the human health fish consumption pathway is the case for both Alternative 3C Plus (cost - \$48.1 million and Alternative 2A2a (cost - \$18.6 million), but Alternative 3C Plus costs 2.5 times as much to not reduce risks to human health associated with fish consumption.

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Second, proposing to remediate additional acreage (approximately an extra 10 acres) beyond the “Urban Background footprint” to natural background cannot, by definition, be cost-effective. It is not cost-effective to remediate sediment with COCs below urban background concentrations knowing that it is likely to recontaminate to urban background concentrations within a few years of construction completion. Remediating sediment to achieve concentrations below urban background, while fully anticipating recontamination of the remediated sediment to urban background concentrations within a few years of remediation, is the antithesis of long-term remedial effectiveness, ignores the reality of the Site and is a waste of resources.

Third, the Feasibility Study presented a preferred option that met the NCP Criteria, but cost only \$18.6 million (Alternative 2A2a). Per the U.S. EPA’s 1999 guidance, *A Guide to Preparing Proposed Plans, Records of Decision, and Other Remedy Selection Documents*,<sup>4</sup> “cost-effectiveness is concerned with the reasonableness of the relationship between the effectiveness afforded by each alternative and its costs compared to other available options.” Moreover, “if the difference in effectiveness is small but the difference in cost is very large, a proportional relationship between the alternatives does not exist” (Preamble to NCP).<sup>5</sup> These proportionality requirements were reiterated by U.S. EPA in the Guidance. Spending 2.5 times more money (almost an additional \$30 million) to achieve likely no measurable reduction in human health risks associated with fish consumption, remediate sediment that is below urban background that will likely “re-equilibrate” to urban background within a couple of years, that has more short-term impacts due to the risks associated with dredging, and that requires a longer construction duration is not reasonable nor is it cost-effective. Thus, the Proposed Plan is inconsistent with the NCP and with U.S. EPA guidance.

#### IV. Conclusion.

The Guidance provides a scientifically sound, risk-based approach to addressing contaminated sediment sites. Sediment sites present challenging problems, but following the policy and procedures in the Guidance is necessary to assure that the selected remedy will reduce risk and be cost-effective. The Proposed Plan for the Lockheed West Seattle Superfund Site deviates from the NCP and the Guidance in several critical ways, including not following the Guidance’s risk management framework for selecting a risk-reduction focused remedy and failing to comply with the NCP’s requirement that remedies be cost-effective. As a consequence, the Proposed Plan selects an alternative that is not focused on risk reduction, is not cost-effective, and costs 2.5 times more than an alternative that would provide similar long-term protection and effectiveness as the selected alternative. Moreover, significant recontamination of the surface sediment with concentrations of COCs greater than the remediation goals is a virtual certainty, as admitted in the Proposed Plan and in Region 10’s response to the National Remedy

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<sup>4</sup> United States Environmental Protection Agency. 1999. *A Guide to Preparing Proposed Plans, Records of Decision, and Other Remedy Selection Documents*. OSWER 9200.1-23P. EPA 540-R-98-031.

<sup>5</sup> United States Environmental Protection Agency. 55 Federal Register 8728. March 8, 1990.

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Review Board's "Recommendations for the Lockheed West Seattle Superfund Site"<sup>6</sup>. Accordingly, the Proposed Plan should be withdrawn and a new remedy should be selected.

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The SMWG would be pleased to answer any questions about its comments on the Proposed Plan for the Lockheed West Seattle Superfund Site. For further information, please feel free to contact the SMWG's Coordinating Director, Steven C. Nadeau, c/o Honigman Miller Schwartz and Cohn LLP, 2290 First National Building, 660 Woodward Avenue, Detroit, MI 48226, (313) 465-7492, [snadeau@honigman.com](mailto:snadeau@honigman.com).

Respectfully submitted,

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<sup>6</sup> Legare, Amy, Chair of National Remedy Review Board. June 29, 2012. National Remedy Review Board Recommendations for the Lockheed West Seattle Superfund Site.



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