

Lower Duwamish Waterway Group

Draft Feasibility Study Comments

Comment Summary

Project Status and Background

In late April, 2009, the Lower Duwamish Waterway Group issued a draft Feasibility Study (FS) for public review. This document outlined analyses to date and suggested a range of potential cleanup alternatives. The purpose of the document is to critically evaluate methods for reducing risks from contaminated sediments in the Lower Duwamish Waterway. Public comment was invited on this first draft through June 29, 2009. In addition to issuing the draft FS, LDWG representatives conducted outreach in coordination with EPA, Ecology, ECOSS, and the Duwamish River Cleanup Coalition (DRCC). This outreach took the form of briefings to several local organizations, including neighborhood associations and business groups, focusing upon the process, and criteria and issues that will need to be balanced in order to move forward with cleanup actions on the Duwamish. The following document outlines themes voiced in formal written comments, and at those briefings.

By the Numbers

During this period, comments were received as follows:

- 5 sets of comments heard at briefings to neighborhood/organization groups that LDWG participated in during the comment period
- A total of 17 letters
- 7 from business community contacts, many of which are along the waterway
- 1 from DRCC
- 7 from agencies or agency-associated committees
- 2 from Tribes: Muckleshoot Indian Tribe and The Suquamish Tribe
- A resulting total of some 380 “comments” contained in letters, each of which is categorized in the database (summary report attached)

General Themes

In walking through these comments, the following themes begin to emerge:

Adaptive Management or “Worst First” Approach

Adaptive management is described in the draft FS as cleaning the most contaminated sites along the waterway first to reduce the greatest risks fastest, then assessing the progress of natural recovery, learning from each incremental cleanup experience, and adjusting further actions based on new data and lessons learned. Many commenters support this “Worst First” adaptive management approach as an iterative approach to the cleanup, recognizing the potential for getting “bang for the buck.” They pose questions, however, as to how the “next-worst” sites will be assessed and determined, and some recommend formulating a specific, uniform and perhaps facilitated approach to help assess resulting natural recovery, and then allow for additional actions to be taken. Other comments had a variation on this same theme, posing questions as to what sites will be monitored, at what intervals, and at what point additional action is taken after initial cleanups are implemented.

Some commenters said that more expensive options may do “more harm than good over time,” and correlated the adaptive management approach to the overall cost of cleanup. These commenters encourage an approach that allows for determining next steps based on diligent scientific monitoring and reasonable timeframes. It should be recognized, however, that other comments show an interest in fully removing contaminated sediment identifying enhanced natural recovery and monitored natural recovery as passive technologies – these comments were in the minority.

Other comments, particularly those from the DRCC, recommend taking a second critical look at potential for phasing cleanup from upstream to downstream to take best advantage of the sediment transport model and reduce risk for recontamination of previously “cleaned” sites.

Carrying Five Alternatives through Feasibility Study

The draft FS suggests screening out Alternative 5 from further analysis due to disproportionate cost considerations. However, comments express qualified support for carrying Alternative 5 through the full alternatives evaluation process. Some commenters believe that this would allow for better understanding of the incremental benefits of some of the other alternatives, and others believe it is the only alternative that achieves the best cleanup levels in comparison with background concentrations.

Generally, the category “Alternative Selection” is one of the higher-referenced categories currently in the database (~40 references). Many commenters recognize the complexity of this particular Superfund site, and the value in having a mix of technologies and approaches for each area along the waterway; a “cookie-cutter” approach is not appropriate.

Source Control and Recontamination

Not unexpected, many questions arise in comments and conversations related to the need for source control and the potential for recontamination of the river. Specific references to this topic came up over 35 times, though this topic is intermingled with alternative analysis and cost considerations for the cleanup overall. Some commenters believe that the remedial action levels (RALs), or goals for cleanup, should take into account the fact that there are existing upland issues that impact source control.

Consideration of Cleanup Cost and Associated Liability Allocation

Commenters from industry, business, and public agencies are not unexpectedly concerned about the cost for cleanup. Some of the commenting businesses recommend that the future Record of Decision (ROD) include incentives for businesses to proceed with active remediation on their own. In addition, they suggest thinking through the balance between cleanup process and objectives, since in-water construction work and associated liability/costs will likely be a combined hardship for the water-dependent industries. Businesses identify a need for discussions between the agencies and parties identified as additional potentially liable parties (PLPs) to gain their input and understand concerns raised by parties that may be responsible for funding a portion of the cleanup.

Cleanup Areas, Levels and Goals

Commenters in general were concerned about the level of cleanup that will be achieved with the alternative selected. The Muckleshoot Indian Tribe is particularly concerned about the RALs and would like them to be revised to allow all remedial action objectives (RAOs) to be met within zero to ten years following cleanup. Several comments state that all current cleanup activities currently in progress should be incorporated in the draft FS, including the Early Action sites.

Monitored Natural Recovery and Enhanced Natural Recovery

The draft FS includes monitored natural recovery (MNR) in Alternatives 2 through 4 and enhanced natural recovery (ENR) in Alternative 3. Commenting businesses support the use of MNR and ENR if the timeframe is comparable to other cleanup options. However, the DRCC is concerned about the longevity and credibility of MNR and/or ENR as a cleanup solution.

Dredging

Many commenters support dredging as an effective method for cleanup and some comments explore different dredging technologies, such as hydraulic dredging. Additionally, commenters note that the draft FS neglects to address the issue of increased PCB concentration after dredging.

Background

The category “background” is also one of the higher-referenced currently in the database (~28 references). Commenters from industry, business, and public agencies present concern about the background levels used in the draft FS and how they were established. Commenters specify that upstream sediment should be used to estimate natural background and others suggest EPA background levels should be used.

Who Commented?

- Alaska Marine Lines
- Ash Grove Cement Company
- Crowley Marine Services
- Douglas Management
- Duwamish River Cleanup Coalition (DRCC)
- Duwamish Shipyard, Inc.
- Muckleshoot Indian Tribe
- Earl M. Jorgensen Company
- Jorgenson Forge
- Klickitat County
- Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC)
- Northshore Utility District
- Washington Ports
- Washington State Dept. of Natural Resources
- Water Resource Inventory Area 9 (WRIA 9)
- Environmental Coalition of South Seattle (ECOSS - briefing)
- South Park Neighborhood Association (briefing)
- Georgetown Community Council (briefing)
- West Seattle Chamber of Commerce Board of Directors (briefing)
- Delridge Neighborhood District Council (briefing)

Attached Document

The attached table contains all comments received as of July 8, 2009 on the draft FS. Comments in the table include both comments heard at community briefings and written, submitted comments. Please note that within each “letter” received or questions heard within a briefing, many “comments” may be contained. The table reads as follows:

- **Categories** are organized as established by the Lower Duwamish Waterway Group in conjunction with EPA and Ecology.

- **Commenter/Source** column of the table indicates the name of the individual who submitted the comment or if the comment was heard at a briefing.
- **Organization/Event** column indicates either the organization of the commenter or at which briefing the comment was heard.

Category	Comment	Commenter/Source	Organization/Event
Adaptive Management/ Worst First	(Section 4) Although it is stated that the relationships will be assessed through long-term monitoring of the remedial actions, there should be a discussion of how PRGs can be modified as new information on sediment/tissue relations becomes available, or as background values improve.	Denice Taylor	The Suquamish Tribe
	(Section 8.3.3.6 and 8.3.4.4) Verification Monitoring: Verification monitoring is not a "remedial alternative" element. If it's done in remedial design, it's part of the baseline monitoring; if it's done after action, it's performance or long-term monitoring.	Denice Taylor	The Suquamish Tribe
	(Section 8.3.4.5) Long-term Performance Monitoring: Sediment and tissue chemistry need to be evaluated relative to RAOs, rather than in relation to anthropogenic background values.	Denice Taylor	The Suquamish Tribe
	"These samples would be analyzed for the risk-driver chemicals (RAOs 1 and 4), with the analysis focusing on PCBs, arsenic, and cPAHs in particular." The analysis should include polychlorinated dioxins (PCDDs), dibenzofurans (PCDFs) and coplanar PCBs, which are important risk drivers. The limited characterization in the sediment and the absence of information on PCDD/Fs in tissue needs to be addressed in baseline and long-term monitoring to evaluate the remedial effectiveness in addressing risk from dioxin-like compounds to human health and ecological receptors via the foodweb pathway.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	"Water quality testing includes daily turbidity monitoring, with periodic collection of downstream surface water samples for laboratory testing (e.g., turbidity and select chemicals)." Water quality testing should include regular monitoring of PCBs in the water column, since turbidity has not been found to be a good surrogate for PCB releases during removal actions at other sites.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	A discussion should be included that provides an explanation of how the 100 sample locations were selected for estimating the UCL95 following remedial action. Are the same locations sampled each time? How are they distributed, eg., how many are in the navigation channel, or in the beaches/clamming areas? Are different locations sampled each time, selected randomly, or by a stratified random design? Also, please explain why ProUCL95, a peer-reviewed public domain software package, could not be used for the calculating the UCL95 based on these 100 samples.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Adaptive Management/ Worst First	Appendix K lists four primary objectives for the monitoring program, yet there is little or no detail regarding how data is to be linked to these objectives. The plan should specify the particular parameters that are of interest and the scale at which they will be evaluated—river segments, whole river, point locations etc. Without this information it is impossible to evaluate whether the proposed sampling plan will be adequate to support the stated objectives.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Appendix K: LDW Conceptual Monitoring Program- Although Appendix K is only meant to provide a “conceptual” monitoring program, the plan lacks detail in several critical areas.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Decision points and criteria used to evaluate data: Decision points and precision requirements need agreement by the agencies and LDWG so that minimum sample sizes necessary to meet minimum power and precision requirements can be met. As the plan currently stands, it is difficult to discern what analysis is planned and whether the proposed 100 samples will be adequate to meet the objectives. It is clear from the SWAC simulations conducted for review of Appendix H that 100 sample locations including a mix of biased and unbiased sampling are likely to lead to poor statistical performance and ambiguous conclusions. A rigorous sampling design with known statistical properties and associated estimation procedures should be developed.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Description of anticipated statistical analyses: Correct statistical analyses are determined by the sampling design. Failure to adequately specify the sampling design will result in poor statistical performance and ambiguous results.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

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Adaptive Management/ Worst First	<p>Description of the spatial layout of the sampling plan: It is not clear what is intended when a “stratified” plan is described. We recommend that the project team identify specific polygons of interest, such as the early removal areas, the areas between specific removal areas, and any areas expected to see intense human or ecological uses. Those areas should then be sampled with an adequate number of samples to conduct statistical analyses within each stratum and that can be later combined into reach and river wide statistical summaries, including confidence intervals. This would include unbiased sampling designs within identified stratum polygons, and may include higher sampling intensity within some strata perceived to be of greater “value” or known to pose more variable contaminant concentrations. This would undoubtedly lead to stratum sample sizes of 30 or more locations, given our understanding of the degree of skewness of typical data from these areas.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>DSI believes that the iterative, worst-first approach suggested by the Draft FS will reduce the recontamination potential, will allow the agencies and involved stakeholders to learn from previously completed cleanup action results (thus increasing future remedy effectiveness), and will facilitate an appropriate adaptive management framework that achieves waterway-wide cleanup objectives in the most effective, timely fashion.</p>	<p>Kim Maree Johannessen</p>	<p>Duwamish Shipyard, Inc.</p>
	<p>DSI supports the "adaptive management framework" that identifies active remediation in areas with the highest chemical concentrations first, in order to achieve the greatest initial risk reduction, followed by an assessment of the progress of natural recovery to determine what, if any, additional active remediation is necessary in less contaminated areas to achieve the remedial action objectives.</p>	<p>Kim Maree Johannessen</p>	<p>Duwamish Shipyard, Inc.</p>

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Adaptive Management/ Worst First	<p>F.5.1 Uncertainty in Resampled Surface Sediment Locations: “The FS manages this uncertainty by setting a minimum number of years between sampling events (at least 5 years) to detect temporal changes in the areas and to minimize the influence of spatial variability.” The importance of spatial heterogeneity is acknowledged, but no analysis is presented to evaluate the potential influence of the uncertainty. It is not clear how setting a minimum number of years between sampling events minimizes spatial variability. Samples with less than 5 years between sampling events could be used to evaluate the uncertainty associated with re-sampling a location (nominally within 10 feet).</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>F-36: “Finally, the LDW surface sediments have a degree of spatial heterogeneity. The RI has shown that chemical gradients can be steep and that hot spots may be isolated and well contained, such that moving several feet off station can yield different results, even during the same sampling event. These random errors can mask actual recovery (or concentration increases) occurring in the LDW.” Such “random errors” are commonly observed small-scale spatial heterogeneity at contaminated sediment sites. An analysis conducted for the Portland Harbor Superfund site indicated that “variation between replicate samples typically averages 40% relative percent difference for most chemicals.” (Integral and Anchor 2007) A study designed to address the uncertainty associated with co-located samples concluded that “concentration differences measured in same-day pairs approximately equals or exceeds the range measured in samples collected up to 3000 days apart” and that spatial heterogeneity was greater than temporal differences (Integral et al 2007). A similar study should be conducted for the LDW to quantify this uncertainty before data from nominally co-located samples can be used to support natural recovery estimates.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>

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Adaptive Management/ Worst First	<p>Figures 6-2-a,-b,-c,-d,-e (pgs 6-33 to 6-37) show significant areas of surface contamination in the navigation channel only in the downstream reach (AOPC 1, RM 0.0 to 2.0), suggesting that upstream sources contribute contaminants downstream. This downstream reach has most of the CSOs and SDs (Figures 5-10-a,-b,-c, pgs 5-57,-58,-59), so leaving remediation of the downstream reach until last provides more time to address the complex, but relatively minor, CSO/SD sources of contaminated sediment. Delaying remediation of the downstream reach until the middle reach is addressed also provides the greatest opportunity for natural recovery in the downstream reach. (The STM demonstrates that the CSO's and other drains are minor contributors to contamination of LDW sediment, thus it is reasonable to begin remediation of sediment even without complete control of all the CSO/SD's.)</p>	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	<p>It is unclear what consideration, if any, has been given to future chemical concentrations entering the river and contributing to background levels of contaminants? How will the "adaptive management" approach be applied to future background concentrations of chemicals of concern if those levels decline during implementation of the river cleanup?</p>	Thea Levkovitz	Duwamish River Cleanup Coalition
	<p>Justification for the number of sampling locations: The report indicates that 100 sediment locations will be sampled prior to remediation and again at 5 year intervals post remediation. Without precisely stated objectives it is difficult to determine an adequate number and spatial configuration of sampling locations. Importantly, the problems identified in SWAC calculations (see Appendix H comments) should be explicitly avoided for the proposed sediment monitoring. This should be accomplished by ensuring that sample inclusion probabilities are completely specified for each sampling location, so that subsequent efforts to estimate surface averages can be specified precisely without a lot of experimentation.</p>	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	<p>K-3: "Baseline data: Establish a point of reference for assessing long-term remedy effectiveness and achievement of RAOs." While it may be reasonable to establish a point of reference for sediment sampling, baseline data for biota (especially fish) requires multiple years of sampling to account for interannual variability. Because the remediation (including both active and passive components) will be taking place over a protracted time period, baseline conditions for biota will need to be updated on a regular basis to make it possible to assess recovery.</p>	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

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Adaptive Management/ Worst First	K-3: "Protection of ecological receptors – RAO 4, site-wide." Monitoring to address protection of ecological receptors should include sampling from specific sub-areas.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	K-4: "The pronounced rates at which sediment from the Green/Duwamish River system deposit in the LDW (as estimated by the Sediment Transport Model (STM) and discussed in Section 5.1) suggest that conditions may be improved through natural recovery by the time the Record of Decision (ROD) is issued. This argues for a new temporally and spatially consistent LDW-wide dataset." It also argues for a sediment sampling design to specifically to address temporal changes that can be used to evaluate the assumptions in the BCM and the predictions of the rate of natural recovery in the three reaches of LDW.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	K-5: "Tissue samples are assumed to be collected to assess LDW-wide reductions in fish and shellfish tissues." The tissue sampling program for shellfish and fish should be assumed to focus on specific subareas within the LDW. The tissue sampling program should be designed to distinguish between the remedial effectiveness of MNR areas and areas of active remediation.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Pg. 8-28, Short-term monitoring during implementation: "Water quality and residuals monitoring generally consists of collecting water samples and turbidity measurements." How does a turbidity measurement demonstrate compliance with AWQCs for toxic contaminants? Has there been a correlation of water column turbidity in situ with the water column COC concentration, showing that turbidity is a good surrogate for toxic contaminant concentrations? This is particularly critical in areas contaminated with PCBs, which are known to both bioconcentrate and biomagnify in the foodchain.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Table K-1: tissue "PCBs as congeners – 20% of samples." Based on the significant problems with Aroclor quantification in recent LDWG tissue monitoring (overestimation of total PCBs in 2004 and underestimation in 2007), we recommend complete congener analysis for at least one-third of the samples. We also recommend that the congener analysis include high resolution analysis for coplanar PCBs, PCDDs, and PCDFs.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

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Adaptive Management/ Worst First	<p>The five unremediated early action areas (EAAs) are all in the middle reach (AOPC 2), RM 2.0 to 4.0. Clean-up of the three sponsored EAAs should begin immediately, without waiting for the ROD, in accordance with EPA's principle of source control first. Because remedial actions may disturb and redistribute some of the contaminated sediment, and because the highest contaminant concentrations are within the EAAs, it is preferable to complete the EAAs before resampling to determine where additional remediation is appropriate. Once the EAAs are complete, sampling and remedy design for any remaining areas in RM 2.0 to 4.0 that exceed RALs can begin, in accordance with the ROD for the remainder of the LDW.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>The FS does not consider that dredging upriver sites after dredging downriver sites could result in recontamination as a result of the downriver movement of sediment carrying contaminants to the cleaned areas. It is not clear that the present plan to address the most contaminated sites first, regardless of their location in the river, is the most logical or protective approach.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>
	<p>The iterative, worst-first approach suggested by the Draft FS will reduce the recontamination potential, will allow the Agencies and involved stakeholders to learn from previously completed cleanup action results which will increase future remedy effectiveness, and will facilitate an appropriate adaptive management framework that achieves waterway-wide cleanup objectives in the most effective, timely fashion.</p>	<p>Curtis Lesslie</p>	<p>Ash Grove Cement Company</p>

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Adaptive Management/ Worst First	The most significant potential current source of PCBs to the LDW, with respect to both PCB concentration and contaminated area, is Boeing Plant 2 (See for example, Figure 2-7, pg. 2-70). During high river flows, the Sediment Transport Model (STM) estimates extensive mobilization of LDW sediment within the river reach dominated by Plant 2 (Figure 2-4, pg. 2-67). Thus, Plant 2 likely continues to export PCBs adsorbed to sediment to other parts of the LDW, with some of this contaminant load migrating downstream (See Figure 4-8, pg. 4-82). The STM further indicates Plant 2 sediment is unlikely to be buried by cleaner sediment from upriver (Figure 5-9, pg. 5-56). During the past 15 years, Plant 2 has completed numerous RCRA actions to control contaminant migration from the adjacent upland, greatly reducing the risk of recontamination from upland sources. It is time that the sediment in front of Plant 2 is remediated to remove this massive potential source of PCBs in the LDW (source control first, in accordance with Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites, EPA 2002).	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	The sediments at Boeing Plant 2 should be remediated before other downstream areas to reduce the risks of recontamination.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

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<p>Adaptive Management/ Worst First</p>	<p>The STM results indicate LDW sediment dynamics generally divide into three similar reaches. We recommend the “site” be divided into the three reaches identified by the STM for compliance and remediation, referred to as Areas of Potential Concern (AOPC). In addition, remediation and compliance should be completed from upstream to downstream. The most upstream reach, AOPC 3 (RM 4.0 – 5.0) had only very small areas of contamination even during the R.I. sampling: the immediate area of the Norfolk CSO and the Rhone Poulenc RCRA site. Fish from this reach had consistently lower concentrations than the other two reaches. The Norfolk CSO remediation was completed prior to the CERCLA listing. Rhone Poulenc is in the process of being addressed. This river reach was included in the STM as the upstream boundary for stability of the hydrodynamic model and to include the turning basin as a sediment source. All stakeholders agree that the cleanest sediment entering the system comes from the river upstream, and that much of this sediment is deposited in RM 4.0 to 5.0. The STM indicates all of this reach, including Slip 6, has an average net annual sediment accumulation of >2 cm (Figure 5-15, pg 5-64). Thus, according to the STM, all areas of RM 4.0 -5.0 will have accumulated more than 20 cm [8 inches] of “background” sediment between years 2000 and 2010. This upstream reach is likely to easily meet compliance with any and all RAOs.</p>	<p>Marla</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>

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Adaptive Management/ Worst First	<p>Therefore, we suggest that the cleanup target areas outside the navigation channel, as fish are much more likely to feed along the shoreline and benches. Areas along the shoreline tend to have much higher contaminant concentrations compared to the navigation channel. In addition, the LDW Superfund site should be divided into three AOPCs, generally corresponding to the three “reaches” identified by the sediment transport model. Compliance with PRGs should be attained within each of the three areas of potential concern (AOPC). Remediation of the three large EAAs in AOPC2 should begin immediately as source control actions in accordance with EPA’s Principles for Managing Contaminated Sediment at Hazardous Waste Sites (EPA, 2002). Each of these areas should meet the RALs/PRGs independent of the others. Remediation of the AOPCs generally should proceed from upstream to downstream in order to take advantage of the site sediment transport regime (as documented in the STM), allowing cleaner sediment from upstream areas to contribute to natural remediation of downstream areas. Please let me know if you have any questions.</p>	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	<p>We believe that the iterative, worst-first approach suggested by the Draft FS will reduce the recontamination potential, will allow the Agencies and involved stakeholders to learn from previously completed cleanup action results which will increase future remedy effectiveness, and will facilitate an appropriate adaptive management framework that achieves waterway-wide cleanup objectives in the most effective, timely fashion.</p>	Ron Altier	Jorgensen Forge Corporation
	<p>We believe that the iterative, worst-first approach suggested by the Draft FS will reduce the recontamination potential, will allow the Agencies and involved stakeholders to learn from previously completed cleanup action results which will increase future remedy effectiveness, and will facilitate an appropriate adaptive management framework that achieves waterway-wide cleanup objectives in a timely fashion.</p>	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	<p>We believe that the iterative, worst-first approach suggested by the Draft FS will reduce the recontamination potential, will allow the Agencies and involved stakeholders to learn from previously completed cleanup action results which will increase future remedy effectiveness, and will facilitate an appropriate adaptive management framework that achieves waterway-wide cleanup objectives in the most effective, timely fashion.</p>	Kevin Anderson	Alaska Marine Lines

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Adaptive Management/ Worst First	We believe that the iterative, worst-first approach suggested by the Draft FS will reduce the recontamination potential, will allow the Agencies and involved stakeholders to learn from previously completed cleanup action results which will increase future remedy effectiveness, and will facilitate an appropriate adaptive management framework that achieves waterway-wide cleanup objectives in the most effective, timely fashion.	R. Stephen Wilson	Crowley Marine Services, Inc.
	We believe that the iterative, worst-first approach suggested by the Draft FS will reduce the recontamination potential, will allow the Agencies and involved stakeholders to learn from previously completed cleanup action results which will increase future remedy effectiveness, and will facilitate an appropriate adaptive management framework that achieves waterway-wide cleanup objectives in the most effective, timely fashion.	Rod DeWalt	Douglas Management
	We support the "adaptive management framework" that identifies active remediation in areas with the highest chemical concentrations first to achieve the greatest initial risk reduction followed by an assessment of the progress of natural recovery to determine what, if any, additional active remediation is necessary in less contaminated areas to achieve the remedial action objectives.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	We support the "adaptive management framework" that identifies active remediation in areas with the highest chemical concentrations first to achieve the greatest initial risk reduction followed by an assessment of the progress of natural recovery to determine what, if any, additional active remediation is necessary in less contaminated areas to achieve the remedial action objectives.	Kevin Anderson	Alaska Marine Lines
	We support the "adaptive management framework" that identifies active remediation in areas with the highest chemical concentrations first to achieve the greatest initial risk reduction followed by an assessment of the progress of natural recovery to determine what, if any, additional active remediation is necessary in less contaminated areas to achieve the remedial action objectives.	Rod DeWalt	Douglas Management
	We support the "adaptive management framework" that identifies active remediation in areas with the highest chemical concentrations first to achieve the greatest initial risk reduction followed by an assessment of the progress of natural recovery to determine what, if any, additional active remediation is necessary in less contaminated areas to achieve the remedial action objectives.	R. Stephen Wilson	Crowley Marine Services, Inc.

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Adaptive Management/ Worst First	We support the “adaptive management framework” that identifies active remediation in areas with the highest chemical concentrations first to achieve the greatest initial risk reduction followed by an assessment of the progress of natural recovery to determine what, if any, additional active remediation is necessary in less contaminated areas to achieve the remedial action objectives.	Curtis Lesslie	Ash Grove Cement Company
	We support the “adaptive management framework” that identifies active remediation in areas with the highest chemical concentrations first to achieve the greatest initial risk reduction followed by an assessment of the progress of natural recovery to determine what, if any, additional active remediation is necessary in less contaminated areas to achieve the remedial action objectives.	Ron Altier	Jorgensen Forge Corporation
	We support the adaptive management approach described in the Draft FS of starting with the most contaminated areas first. Following remediation of the most contaminated sites, we agree with the Draft FS approach of progressively remediating the next most contaminated areas as necessary to achieve remedial action objectives. The decision to remediate any of the next most contaminated sites should be made based on the results of the methods used to remediate the most contaminated sites and the benefits of ongoing natural sediment recovery processes.	Margaret Wiggins	Northshore Utility District
Alternative selection, alternatives analysis	(ES – 16) RAO’s and SMS numbers need to be added to Table ES-2.	Denice Taylor	The Suquamish Tribe
	(Section 6.1.2.2) EPA's request that a larger, more conservative remedial footprint be evaluated that would achieve the low end of the anthropogenic background range with active remediation has not been fully evaluated or carried through the FS. The LDWG argues that low end background cannot be achieved due to dredging residuals and because background for the LDW is higher than background based on the Green/Duwamish River. Neither of these arguments is considered relevant.	Denice Taylor	The Suquamish Tribe
	Alternative #5, designed to achieve “background” concentrations, is not carried through the full evaluation, based on a finding of “disproportionate” cost. Applying the assumptions of the models used, LDWG states that all alternatives will meet the RAOs (remedial action objectives), though also acknowledges that none will achieve human health objectives for tribal and subsistence fishermen without adding “institutional controls,” i.e., fishing restrictions.	Thea Levkovitz	Duwamish River Cleanup Coalition

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Alternative selection, alternatives analysis	<p>Alternative 5 is eliminated from consideration based on an analysis that the cost of the alternative is “disproportionately” high. This conclusion is inappropriate and misleading, based on two major omissions: (1)the “disproportionate” assessment fails to include a consideration of risks and uncertainties associated with the other alternatives presented – only #5 eliminates the long term uncertainties and risks associated with possible catastrophic disturbances of capped and buried contaminants; and (2) a full range of alternatives between #4 and #5 are missing – the FS jumps from consideration of nine alternatives removing and/or capping 193 acres of sediment (#2 – 4d) to one alternative removing 315 acres (#5). The apparent “disproportionality” is a function of the omission of additional incremental alternatives between these two acreage targets, unreasonably biasing the analysis.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>
	<p>Alternative 5 is inappropriately screened out from further consideration. Currently, it is the only Remedial Alternative that is designed to achieve background concentrations for all of the risk-driver chemicals at year zero.</p>	<p>Glen St. Amant</p>	<p>Muckleshoot Indian Tribe</p>
	<p>An effective FS presents a range of alternatives, scaling from “no action” to utilizing every effort and cleaning up to the highest standards in every area. Within that range, an alternative will be selected that meets required criteria including: adherence to the highest ecological, human health, and local community considerations; state, local, and federal regulations (including ARARs); cost-effectiveness; and overall implementability. This FS presents a restricted range of alternatives that falls far short of considering all available options, leaving the reader with a limited and likely biased perspective. Readers of the FS should be able to review the alternatives presented with the confidence that all available options are adequately presented. The FS must be revised to include the entire range of cleanup alternatives available for the Lower Duwamish Superfund site.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>

Category	Comment	Commenter/Source	Organization/Event
Alternative selection, alternatives analysis	<p>c.) Remedial actions in many of the remaining areas are complicated by the presence of over-water structures along about 24% of the shoreline (pg. 2-36), berthing facilities for ships, and/or pilings, dolphins or other structures. Locations where the STM predicted annual net sedimentation, and corresponding sediment core samples did not demonstrate sediment accumulation, were often associated with pilings, piers, dolphins, or bridge abutments (Figure 5-15, pg 5-64; SC-5, SC-24, SC-29, SC-48). This incongruity demonstrates that the presence of in-water obstructions impedes sediment deposition, and may be associated with scour. ENR would not be appropriate due to the uncertainty whether sediment would remain uniformly distributed over these areas. Dredging to remove contaminated sediments, or dredging followed by hard surface capping, if contaminants remain in situ, are the remedial actions with the best long-term reliability in these areas. Dredging around obstructions is difficult with a conventional dredge, but can be accomplished using a diver-directed hydraulic dredge.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Development of Remedial Alternatives- We believe that the proposed Remedial Alternatives should be reformulated. Several important issues underlie this recommendation. As mentioned in our comments regarding the Remedial Action Levels, it is important that the Remedial Alternatives are designed to achieve all Remedial Action Objectives (RAOs) no later than ten years following cleanup. Therefore, all of the Action Alternatives (excluding Alternative 1, which is the "No Further Action Alternative"), must, at a minimum, achieve this objective. We further believe that more alternatives should be developed that achieve all of the RAOs immediately following cleanup. Therefore, considering paired alternatives for each set of remedial technologies or approaches seems logical-one alternative that achieves all of the RAOs at year zero and one alternative that achieves all of the RAOs by year ten.</p>	<p>Glen St. Amant</p>	<p>Muckleshoot Indian Tribe</p>
	<p>DSI believes that Alternative 5 (complete removal) needs to be carried through the detailed alternatives evaluation to more fully evaluate the overall incremental benefit, restoration timeframes, and costs associated with this alternative.</p>	<p>Kim Maree Johannessen</p>	<p>Duwamish Shipyard, Inc.</p>

Category	Comment	Commenter/Source	Organization/Event
Alternative selection, alternatives analysis	Due to the complexity of the site, a more appropriate approach for evaluating cleanup alternatives for the Duwamish River would be to divide the site into Operable Units, representing a variety of distinct conditions. For each Operable Unit, the FS should provide a range of alternatives tailored to the conditions of the unit.	Thea Levkovitz	Duwamish River Cleanup Coalition
	ES-23: "However, this treatment also generates residuals and does not destroy chemicals."	Thea Levkovitz	Duwamish River Cleanup Coalition
	Figures 8-1 onward are difficult to interpret because adequate information has not been provided.	Thea Levkovitz	Duwamish River Cleanup Coalition
	How the ROD framework will determine the selected waterway-wide remedy and in what timeline and under what type of legal mechanisms.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	If Alternative 2 is to be carried through, it should be revised to include upland disposal rather than a CAD/CDF, and should achieve background/SQS levels rather than CSLs.	Denice Taylor	The Suquamish Tribe
	It is also important that all alternatives utilize the same set of assumptions regarding long-term background concentrations of chemicals in the River. To accomplish this, it may be necessary to further subdivide each alternative, so that it either achieves the high-end or the low-end of the estimated long-term background concentration of contaminants in the River. Currently, Alternative 5 uses a different set of background assumptions as compared to the other Action Alternatives. The values used for all alternatives should be those provided previously to the Lower Duwamish Waterway Group from EPA and Ecology.	Glen St. Amant	Muckleshoot Indian Tribe
	It is important to note that based on the tables provided in section 9, none of the alternatives appear to achieve the most protective human health goals (10 ⁻⁶ or 1/1,000,000) for either fish consumption or direct contact. An alternative that cleans up to (corrected) background levels must be carried through the entire analysis and residual risks clearly listed.	Thea Levkovitz	Duwamish River Cleanup Coalition
	It is possible that beginning upstream and continuing downstream may be a more effective strategy for the river cleanup, and should be evaluated as part of the alternatives analysis.	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Alternative selection, alternatives analysis	LDWG's Draft FS does not carry its "maximum" cleanup alternative through the full FS evaluation, based on a premature determination that its costs are "disproportionate" – an argument that is biased by, among other things, the exclusion of intermediary and progressively "cleaner" alternatives between Alternatives #4 and #5. Several other remedial technologies and alternatives are excluded as well, such as silt curtains and hydraulic dredging, with little or no evidence or documentation. Combinations of sediment removal methods, besides capping, mechanical dredging, and "natural recovery" are also given little consideration.	Thea Levkovitz	Duwamish River Cleanup Coalition
	MWPAAC supports the adaptive management approach described in the Draft FS...the adaptive management approach should focus on: cleaning up the most contaminated areas first to reduce risks the fastest, assessing the progress of natural recovery, learning from each incremental cleanup experience, and adjusting further actions based on the newest data and lessons learned... also consistent with experiences at other complex sediment sites that point to the necessity of using adaptive management strategies.	Dave Christensen	Metropolitan Water Pollution Abatement Advisory Committee
	Page 8-13 (and Figure 8-13): Were generalized river-wide numbers used for the river, or were outfall specific locations used for this result: "This exercise first calculated the minimum percentage of lateral sediments needed to result in SQS exceedances at Year 10 for each chemical, and then identified those grid cells exceeding such percentages"?	Thea Levkovitz	Duwamish River Cleanup Coalition
	Pg 8-45, Alternative 5a and 5b. Why isn't there an alternative with comparable RALs, but that is parallel to series 3? That is, low RAL concentrations, but only implement to the edge of the RAL, not the entire SMA; and rely on capping and ENR where feasible?	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Pg. 8-2, Sec. 8.1.1: In the case of the LDW, five Early Action Areas have been identified...for the purposes of this FS... the no further action alternative acknowledges that the EAAs will be cleaned up,... While this indicates "cleanup of the EAAs", in fact, only the cleanup of the five sponsored EAAs is included in alternative 1 (34 acres). It is confusing to have two additional areas shown as EAAs on the figures (at RMW 2.2 and RME 3.8, eg., Figures 2-13b, 2-13d, 6-2b and 6-2d) and general statements like the quote, above, when actually only three of the unremediated EAAs are included in Alternative 1.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Alternative selection, alternatives analysis	Pg. 9-11, Tables 9-3a and 9-3b, bullet 3: "The BCM grid cells in Beach 7 receive a large proportion of sediment from Hamm Creek that discharges to this beach. As a result, the BCM predicts concentration increases over time." What is confusing about this is that only Alternative 5 shows a need for active remediation at this location, and then only in a very small section of the beach. All of the Alternative 3 series and Alternative 4 series (as shown on Figures in Sec. 8) propose only verification monitoring, indicating an expectation that the area is already meeting the lowest RALs. Please correct this apparent discrepancy.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Section 6.3.2.4, Dioxins/Furans, This section makes little sense and is wrong on the point that the areas will "recover." There is no recovery from dioxin/furan contamination - there is only washing away or covering up. There is no affirmative evidence that sediments in a site such as the Duwamish will both cover and isolate the contaminants.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The alternatives evaluation should continue to include MNR, ENR, capping and dredging given each of these proven remedial approaches/technologies may be most applicable under differing conditions. A uniform remedy (i.e., wide scale removal identified in Alternative 5) is clearly inappropriate for this complex Site, as shown by the detailed analysis of alternatives.	Curtis Lesslie	Ash Grove Cement Company
	The alternatives evaluation should continue to include MNR, ENR, capping and dredging given each of these proven remedial approaches/technologies may be most applicable under differing conditions. A uniform remedy (i.e., wide scale removal identified in Alternative 5) is clearly inappropriate for this complex Site, as shown by the detailed analysis of alternatives.	R. Stephen Wilson	Crowley Marine Services, Inc.
	The alternatives evaluation should continue to include MNR, ENR, capping and dredging given each of these proven remedial approaches/technologies may be most applicable under differing conditions. A uniform remedy (i.e., wide scale removal identified in Alternative 5) is clearly inappropriate for this complex Site, as shown by the detailed analysis of alternatives.	Ron Altier	Jorgensen Forge Corporation
	The draft FS should include a range of sedimentation rates and factors that could affect sedimentation rates and bed chemistry, e.g., using the 50% and 200% sedimentation values and clearly presenting that range in the FS. A cleanup alternative based on the most conservative, i.e. lowest, sedimentation assumptions should be included in the draft FS.	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Alternative selection, alternatives analysis	The FS does not adequately explain uncertainty, nor is it carried through as an analysis separate from a sensitivity analysis. Discussions of uncertainties in the document are generally addressed in the appendices, rather than incorporated into the relevant chapters. Both quantifiable and non-quantifiable uncertainties must be clearly referenced and discussed in the relevant chapter.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The FS does not present adequate combinations of methods and technologies, but rather includes general and unsupported statements that some available methods will not work and then drops these options from further consideration. Continuing to explore the use of all available methods that are applicable will provide a more robust and complete picture of the range of cleanup results and alternatives. Any approaches that are eliminated from consideration must be justified with empirical information and references.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The FS should include a more thorough discussion of the feasibility of the environmental clamshell dredges (explained below) as an alternative for remediation of the sediments.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The purpose of an FS is to present a list of methods and technologies for remediation, and then evaluate each to determine if it is appropriate and applicable for the given site. This two-step method is intended to give a clear, logical, and transparent consideration of how the final selections are made, and prevent a method, technology or cleanup alternative from being selected or excluded without clear justification and a factual basis...This FS fails to meet these criteria. Indeed, the apparent purpose of this Draft FS is to convey the message that a Duwamish River cleanup that protects both the environment and human health is too difficult, too time consuming, and too costly to attempt to implement at this site.	Thea Levkovitz	Duwamish River Cleanup Coalition
	To this end, the alternatives evaluation should continue to include MNR, ENR, capping and dredging given each of these proven remedial approaches/technologies may be most applicable under differing conditions. A uniform remedy (Le., wide scale removal identified in Alternative 5) is clearly inappropriate for this complex Site, as shown by the detailed analysis of alternatives.	Rod DeWalt	Douglas Management

Category	Comment	Commenter/Source	Organization/Event
Alternative selection, alternatives analysis	To this end, the alternatives evaluation should continue to include MNR, ENR, capping and dredging, given that each of these proven remedial approaches/technologies may be most applicable under differing conditions. A uniform remedy (e.g., wide scale removal identified in Alternative 5) is clearly not appropriate for this complex Site, as shown by the detailed analysis of alternatives.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	To this end, the alternatives evaluation should continue to include MNR, ENR, capping and dredging given each of these proven remedial approaches/technologies may be most applicable under differing conditions. A uniform remedy (i.e., wide scale removal identified in Alternative 5) is clearly inappropriate for this complex Site, as shown by the detailed analysis of alternatives.	Kevin Anderson	Alaska Marine Lines
	To this end, the alternatives evaluation should continue to include MNR, ENR, capping and dredging given each of these proven remedial approaches/technologies may be most applicable under differing conditions. A uniform remedy (i.e., wide scale removal identified in Alternative 5) is clearly not inappropriate for this complex Site, as shown by the detailed analysis of alternatives.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	We ask the regulatory agencies to weigh the following in evaluating alternatives and selecting a preferred alternative: The extent to which cleanup alternatives are conducive to timely habitat mitigation.	Dow Constantine	Water Resource Inventory Area 9 (WRIA) Watershed Ecosystem Forum
	We believe that Alternative 5 (complete removal) needs to be carried through the detailed alternatives evaluation to more fully evaluate the overall incremental benefit, restoration timeframes, and costs associated with this alternative.	Ron Altier	Jorgensen Forge Corporation
	We believe that Alternative 5 (complete removal) needs to be carried through the detailed alternatives evaluation to more fully evaluate the overall incremental benefit, restoration timeframes, and costs associated with this alternative.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	We believe that Alternative 5 (complete removal) needs to be carried through the detailed alternatives evaluation to more fully evaluate the overall incremental benefit, restoration timeframes, and costs associated with this alternative.	Kevin Anderson	Alaska Marine Lines
	We believe that Alternative 5 (complete removal) needs to be carried through the detailed alternatives evaluation to more fully evaluate the overall incremental benefit, restoration timeframes, and costs associated with this alternative.	Rod DeWalt	Douglas Management

Category	Comment	Commenter/Source	Organization/Event
Alternative selection, alternatives analysis	We believe that Alternative 5 (complete removal) needs to be carried through the detailed alternatives evaluation to more fully evaluate the overall incremental benefit, restoration timeframes, and costs associated with this alternative.	R. Stephen Wilson	Crowley Marine Services, Inc.
	We understand that Alternative 5 (complete removal) needs to be carried through the detailed alternatives evaluation to more fully evaluate the overall incremental benefit, restoration timeframes, and costs associated with this alternative. However, we believe the ultimate remedy for the LDW will be a combination of alternatives applied to distinct areas that balance water dependent uses, habitat improvements, and public access.	Curtis Lesslie	Ash Grove Cement Company
Background	(Section 4) After all outstanding data sets are finalized, the results should be presented for review and discussion. Setting PRGs equal to the upper end of a “light” urban background level is not considered to meet the intent of RAO 1. EPA should consider a range of background values that includes both natural and area background data.	Denice Taylor	The Suquamish Tribe
	(Section 4) In the draft FS, although a range of anthropogenic background values is provided, PRGs are set at the high end of the range. Natural background values are presented, but are not carried through the evaluation in a meaningful way. LDWG also introduces a concept referred to as “light” urban (see page 4-15), including sediment samples from RM 4.1 – 4.75 as an anthropogenic data set, and states that concentrations closer to the more industrialized areas of the site should be considered as background so as not to “under represent” background levels, and concludes that only anthropogenic background levels need to be considered in the FS.	Denice Taylor	The Suquamish Tribe
	(Section 4) No agreement has been reached to date regarding the use of urban values as background for the LDW, or what range of background values will be used as PRGs for achievement of RAOs related to seafood consumption. The Tribe regards upstream Green River data to represent an appropriate upstream/background for the LDW site, rather than sample data collected from within the site boundaries. CERCLA and MTCA guidance and requirements do not prescribe that only anthropogenic values be considered in the FS.	Denice Taylor	The Suquamish Tribe

Category	Comment	Commenter/Source	Organization/Event
Background	(Section 4.3.6) The discussion of background levels for dioxins/furans relies too heavily on values from areas that are likely to be influenced by contamination, including the DMMP disposal sites and sites characterized as Greater Seattle. The proposed range of values is much higher than what is being considered to be natural background based on the 2008 BOLD data.	Denice Taylor	The Suquamish Tribe
	(Section 4.3.6.2/Table 4-29) Although EPA's preliminary background values are presented, they are not considered in any meaningful way in the evaluation of anthropogenic background values or PRGs.	Denice Taylor	The Suquamish Tribe
	(Sections 4.3.5.3/4.3.6) The report states "This segment of the LDW does not contain any EAAs or Ecology Tier 1 area and, with the exception of Slip 6, no Ecology Tier 2 areas." and "this segment of the LDW is within the highly industrialized portion of the South Seattle area and is therefore more geographically representative (i.e., in terms of land use) than land area surrounding the Green/Duwamish River. Thus localized or small-scale variations in anthropogenic background associated with the urban-industrial land use along the LDW can best be discerned by considering this source of information." This area does contain Slip 6, Rhone Poulenc and may also be influenced by the Norfolk CSO and the marina and should not be considered as any part of a background data set.	Denice Taylor	The Suquamish Tribe
	Chapter 4, Section 4.3.4, page 4-3 and Table 4-5: The ten reference areas to estimate natural background are primarily Puget Sound embayments selected for various undefined purposes. All of the ten reference areas appear to be marine environments, and do not include estuarine areas. DNR also does not necessarily agree that these reference sites are outside the influence of localized activity, and believes that the feasibility study should use upstream sediment of the Duwamish River to estimate natural background (see Chapter 5, Section 5.6, page 5-36).	John A. Bower, Jr	Washington State Department of Natural Resources
	Chapter 4, Section 4.3.5.3, page 4-19 to 4-21: DNR does not believe that portions of the Lower Duwamish contaminated site (RM 4.0 to RM 4.75) should be used for calculation of background estimations. Natural background must mean nonanthropogenic background. Natural background must be assessed in an estuarine environment not severely impacted by the activities of man. This is a fundamental condition that requires a thorough discussion with all stakeholders.	John A. Bower, Jr	Washington State Department of Natural Resources

Category	Comment	Commenter/Source	Organization/Event
Background	DSI recommends the development of remedial action levels that account for documented, ongoing, upstream urban background sources. Simply stated, none of the identified cleanup alternatives will likely be able to clean up and maintain the Site at concentrations below upstream anthropogenic background concentrations entering the Site.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	ES-8: The information on background is not accurate. Further, the uncertainty is not about the true value of the area background numbers but rather the uncertainty of the value. The word "true" is misleading.	Thea Levkovitz	Duwamish River Cleanup Coalition
	LDWG's background value ranges are shown in Table ES-1 and discussed in section 4 of the draft FS. The upper values of the ranges are then used throughout the document, and form the basis of LDWG's Alternative 5 ("Maximum Removal").... For the purpose of this draft FS, the EPA values should be used, to provide a more accurate picture of the extent of removal needed to achieve background conditions, and the resulting level of human health protection "maximum" cleanup can be expected to achieve. In the next draft FS, the results of Ecology's background study will be available and should replace the LDWG values.	Thea Levkovitz	Duwamish River Cleanup Coalition
	P 4-29 and Figure 4-15: In addition to our general concern about how background is being derived for the Duwamish site, DRCC continues to specifically disagree with the dioxin assessment for background. We have asked for a meeting on this topic and, to date, this meeting has not been scheduled.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Pg. 4-89, Figure 4-15, Dioxin/Furan TEQs in Surface Sediment Samples Used as Line of Evidence for Anthropogenic Background: Samples 5a and 5b at the south end of Lake Washington are likely affected by a creosote CERCLA site (Quendall) in this vicinity. Similarly, samples 9a and 9b (and the sample at 54) are likely to be areas affected by the former coal gasification plant at Gas Works Park (also a CERCLA site). Because these samples are in proximity to intense sources of contaminants that contain dioxins/furans, they are not representative of ambient urban background.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	The cleanup of the LDW is complicated by a complex environment, including historical releases of chemicals, background levels of contamination and tidal action in the LDW.	Dave Christensen	Metropolitan Water Pollution Abatement Advisory Committee

Category	Comment	Commenter/Source	Organization/Event
Background	The FS states on page 2-1 that “The Upper Turning Basin serves as a trap for most of the bed load sediment carried downstream by the Green/Duwamish River. The Upper Turning Basin and portions of the navigation channel just downstream of the Upper Turning Basin are dredged periodically to remove accumulated sediment, reduce sediment transport into the lower reaches of the LDW, and maintain appropriate navigation depths.” Despite the statement that most of the sediments from the Green River are collected in the upper turning basin and then dredged by the ACOE, the document also states that sediments from the Green River are deposited downriver (Section 5) in sufficient volume for deposition to bury the contaminated sediments.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The ROD needs to account for ongoing anthropogenic background sources from areas and properties upstream of the Site.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	The ROD needs to account for ongoing anthropogenic background sources from upstream of the Site.	Curtis Lesslie	Ash Grove Cement Company
	The ROD needs to account for ongoing anthropogenic background sources from upstream of the Site.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	The ROD needs to account for ongoing anthropogenic background sources from upstream of the Site.	Kevin Anderson	Alaska Marine Lines
	The ROD needs to account for ongoing anthropogenic background sources from upstream of the Site.	R. Stephen Wilson	Crowley Marine Services, Inc.
	The ROD needs to account for ongoing anthropogenic background sources from upstream of the Site.	Rod DeWalt	Douglas Management
	The ROD needs to account for ongoing anthropogenic background sources from upstream of the Site.	Ron Altier	Jorgensen Forge Corporation
	The Tribe requests an FS that includes appropriate background values, PRGs that reflect appropriate background levels, and remedial alternatives that achieve PRGs on acceptable scales and within an acceptable timeframes (without reliance on CAD/CDFs, extended MNR, or institutional controls that limit treaty rights).	Denice Taylor	The Suquamish Tribe
	We recommend the development of remedial action levels that account for documented ongoing upstream urban background sources. Simply stated, none of the identified cleanup alternatives will likely be able to clean up and maintain the Site at concentrations below upstream anthropogenic background concentrations entering the Site.	R. Stephen Wilson	Crowley Marine Services, Inc.

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Background	We recommend the development of remedial action levels that account for documented ongoing upstream urban background sources. Simply stated, none of the identified cleanup alternatives will likely be able to clean up and maintain the Site at concentrations below upstream anthropogenic background concentrations entering the Site.	Ron Altier	Jorgensen Forge Corporation
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	We recommend the development of remedial action levels that account for documented ongoing upstream urban background sources. Simply stated, none of the identified cleanup alternatives will likely be able to clean up and maintain the Site at concentrations below upstream anthropogenic background concentrations entering the Site.	Kevin Anderson	Alaska Marine Lines
Beach/ Clamming	(Section 4) SWACs are not an appropriate measure of indirect exposure via organisms that do not use the entire LDW over their lifetimes. The FS should be revised to propose additional PRGs that are more "point-based" for such resources. In addition, the exposure interval for clams should be at least 18 inches, rather than 10 centimeters.	Denice Taylor	The Suquamish Tribe

Category	Comment	Commenter/Source	Organization/Event
Beach/ Clamming	<p>Pg. 8-41, Alternative 4: "Capping and ENR are applied only when removal is technically impractical or administratively unacceptable (eg. potential tribal clamming areas)." Please explain why dredging (and backfilling) would not be acceptable in a clamming area.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Table 8-4, Engineering Constraints and Generalized Assumptions for Implementation...: Land-based excavation can certainly be controlled with greater precision than the 3 ft assumed here as a minimum cut. Especially because we recommend excavation and backfilling (rather than ENR) for beach and shellfishing areas, this is an important refinement for land-based excavation.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>The surroundings and uses of each area needing remedial action will generally dictate what technology is most appropriate: a.) Clamming sites and play beaches can be expected to experience disturbance and mixing of sediment to depths greater than the assumed 10 cm (4 inch) biologically active zone. Furthermore, the elevation of these areas relative to tides is essential to their continued resource use, along with clean sediment of the appropriate texture for the intended use. Thus, enhanced natural recovery (ENR) of 6 inches would not be adequately protective in these areas. Containment capping is not feasible because it would make a significant change in elevation. Since these areas are along the shoreline, excavation can generally be accomplished from onshore; but if not, a small, shallow-draft barge could be used. Shoreline areas are ideal for shallow, precise land-based excavating on a low tide and backfilling. Because children (and dogs) dig holes in beaches, and because clams burrow to depths of 45 cm or more, beach and clamming areas need to meet RALs to this depth, or greater. [Note also, pg 2-15 reports that intertidal elevations above -4MLLW "may be subject to relatively low deposition".]</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
Bed composition model	<p>(Section 5.2.2) The underlying assumptions of the BCM that lead to the conclusion that "redistribution of existing sediments that exceed PRGs is not a significant process, and future bed sediment chemistry can be estimated as a mass balance between present bed sediment and incoming sediment loads from the Green/Duwamish River and lateral sources" do not account for ongoing dredging and construction projects within the LDW.</p>	<p>Denice Taylor</p>	<p>The Suquamish Tribe</p>

Category	Comment	Commenter/Source	Organization/Event
Bed composition model	<p>(Section 5.2.3) The post-remedy bed sediment replacement values are higher than EPA's proposed anthropogenic background levels and upstream Green River values. The report also states that the lines of evidence used to calculate replacement values included surface sediment concentrations from urban bays in Puget Sound and sediment concentrations in sediment traps deployed near Harbor Island. Bed replacement values should more accurately reflect the incoming sediment load from the Green/Duwamish River as the predominant source of incoming material.</p>	Denice Taylor	The Suquamish Tribe
	<p>5-19: Section 5.3.3.2 illustrates our concern that the generalized approach taken in both the BCM modeling and in the FS as a whole is inappropriate. Specific areas of the river behave in different ways and have different chemical-specific concerns, including loading potential. It is not adequate (page 5-20) to state that this information will only be assessed in the design phase ("Recovery estimates in some of these areas should be refined during remedial design.") . For other sites in Puget Sound as well as early action sites in the Duwamish, this approach was not allowed.</p>	Thea Levkovitz	Duwamish River Cleanup Coalition
	<p>Bed Composition Model (BCM) updates and input parameters. It is unfortunate that the draft Feasibility Study failed to incorporate the EPA written guidance on this issue transmitted to the Lower Duwamish Waterway Group from EPA via Memorandum on Sept. 11, 2008. By reference, this comment requests incorporation of the sediment post remediation replacement values and other background-based values referenced in that memorandum. This omission is potentially significant, since these numbers are critical in determining long-term chemical trends in the river sediments, and, hence, in evaluating how the river will respond to different remedial alternatives. As an example of this, the draft FS uses a sediment post remediation value for PCBs of 75 parts per billion (ppb), which is 50% higher than the value referenced in the EPA Memorandum (50 ppb).</p>	Glen St. Amant	Muckleshoot Indian Tribe
	<p>Chapter 5, Section 5.6, page 5-36 (and Section 8.2.4 and Figure 2-5): The statement that ship induced bed scour has been incorporated into the LDW sediment bed structure should be more fully developed. Many of the remedial action alternatives, such as enhanced natural recovery and capping, will be impacted by propeller scour. Any existing scour areas should be collocated with SMAs, since such scour will be an element effecting remedial design and cost.</p>	John A. Bower, Jr	Washington State Department of Natural Resources

Category	Comment	Commenter/Source	Organization/Event
Bed composition model	Ideally, a series of randomly generated hydrographs would be used for the projections of future recovery, because the timing of floods can greatly influence these results. If a Monte-Carlo type simulation isn't feasible, the 30 year hydrograph, or a table with the maximum flows for each year in the model run, should be provided as context for the STM/BCM projections.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Natural recovery predictions are based on the BCM. The BCM is a simplistic model that uses the output of the STM and makes estimates of contaminant concentrations in the surface sediment based on predicted rate of net deposition, the proportion of depositing sediment from upstream and lateral sources, and the concentrations of contaminants in the sediment source material. Two types of primary empirical information are used to support the predicted rates of natural recovery: surface concentrations in nominally co-located cores collected more than 5 years apart and vertical segmentation of concentrations in sediment cores. As discussed in our specific comments, both of these "lines of evidence" are extremely limited and have insufficient resolution to support model predictions. If predictions of natural recovery (MNR or ENR) are expected to play an important role in the selected remedial alternatives, NOAA recommends that EPA develop a sediment sampling plan to objectively assess temporal changes in surface sediment concentrations in the LDW.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Page 5-10: In-line sediment data should not be used for lateral calculations as these data have not been scientifically validated. In addition, DRCC disagrees with the manipulation of higher concentration samples. An adequate number of scientifically-valid samples should be collected so that valid modeling can be performed.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Page 5-11: Atmospheric deposition of chemicals from sources that are located in the Duwamish drainage should be included and to date, these data have not been adequately collected.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Page 5-13: The text on this page describing the BCM illustrates that adequate samples have not been collected. DRCC has requested and now requests again that a technical meeting among stakeholders be scheduled to discuss the BCM.	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Bed composition model	<p>Page 5-14: This statement is concerning: “No post-remedy bed sediment replacement values were used for these points. If a point was located in an actively remediated area, it was considered to be remediated below the SQS and removed from the point counts describing effectiveness for each remedial alternative” Would the recontamination of these areas be an important factor to assess and then plug into the model (although treated in a different way within the model)?</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>
	<p>Pg. 5-12: “These lines of evidence included data from upstream Green/Duwamish River inflows, surface sediment concentrations from urban bays in Puget Sound (in areas not listed as contaminated sites and not in dredged material disposal sites), and sediment concentrations in sediment traps deployed near Harbor Island.” Please explain why sediment traps near Harbor Island, downstream of the LDW, would provide useful post-remedy bed sediment replacement values.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Pg. 5-25: Chemical Trends at Resampled Surface Sediment Stations. The analysis presented here and in more detail in Appendix F should include analyses of spatial heterogeneity in nominally co-located samples in order to define what could be considered to be a meaningful difference among samples.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Pg. 5-7: “BCM Assumptions. “The surface sediment that erodes, moves, and redeposits within the LDW is primarily of Green/Duwamish River origin.” Implicit in this assumption is that sediment of Green River origin does not change concentration within the LDW.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Pg. 5-8: “Adherence to these assumptions means that redistribution of existing sediments that exceed PRGs is not a significant process, and future bed sediment chemistry can be estimated as a mass balance between present bed sediment and incoming sediment loads from the Green/Duwamish River and lateral sources.” Significant PCB mass exists in the surface and shallow subsurface sediment of Reach 2, an area described by the STM as mixed deposition and erosion, so it is likely that contaminant redistribution from this Reach will continue to be an important process. Rather than strict adherence to assumptions, the uncertainty associated with these assumptions should be considered.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>

Category	Comment	Commenter/Source	Organization/Event
Bed composition model	<p>Pg. 5-8: "The biologically active zone for most of the LDW is 10 cm or less, and therefore the top 10 cm model layer represents exposure concentrations for benthic organisms.... The 10-cm depth is also consistent with the STM and BCM assumptions of the active mixing layer." In the Ecology (2007) report, the median maximum void depth was 10.4 cm, which implies that more than half of the LDW locations evaluated with SPI had evidence of biological activity at depths below 10 cm. In addition, benthic organisms within any area exposed to scour (even if net depositional) would likely be exposed to layers deeper than 10 cm. Using assumptions to support assumptions seems like a stretch.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Table 5-6: estimated half-life for bed composition change: " a Stations with increased surface sediment concentrations in the re-occupied samples were excluded from rate calculations, but included in total sample count." Please explain why these data were excluded from the analysis.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Tables 5-5 and 5-6: Why were early action areas excluded from evaluation of temporal change in "co-located" surface sediment samples? Given the limited amount of data for this evaluation, it would make sense to include all of the data and then evaluate differences.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>The rates of natural recovery (sediment "burial") derived from the BCM are extremely optimistic. For example, in Alternative 3b/4b an RAL PCB concentration of 700 ppb is projected to reach 240 ppb in 10 years. This corresponds to a rate of decline of approximately 10% per year. If a similar rate of recovery was taking place in the past, 700 ppb in 2009 would have been 15000 ppb in 1980. Overestimation of the rate of natural recovery results in underestimation of the relative benefits of more active remedies (Field et al 2009).</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>

Category	Comment	Commenter/Source	Organization/Event
Bed composition model	Underestimation of mixing depth will result in overestimation of rate of recovery. In a sensitivity analysis of mixing depth for their PCB fate model for the Upper Hudson River, QEA (1999) found that increasing the depth of mixing from 10 cm to 15 cm in cohesive sediments improved the prediction of observed values. QEA also noted that because of the non-linear relationship between the volume of the surface mixed layer and the rate of dilution with deposited solids, their model is more sensitive to a reduction in mixing depth than to an increase in mixing depth. We recommend using a minimum mixing depth of 15 cm, which is consistent with the findings in Ecology's SPI report that more than half of the stations had evidence of biological activity at depths greater than 10 cm.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
Business issues/economics	AML is the current owner/operator of a containerized freight barge terminal located at 56005610 West Marginal Way SW (Property) on the west bank of the LDW. We purchased the property in 1989 and began operations at this location in December 1993. AML has supported the South Seattle business community for approximately 26 years, and we currently employ approximately 102 people at the Property.	Kevin Anderson	Alaska Marine Lines
	Ash Grove has owned and operated the facility located at 3801 East Marginal Way South in Seattle, Washington (Facility) since 1984, although the plant has been used for cement production since 1920. The Facility has supported the South Seattle business community for approximately 89 years and currently generally employs approximately 81 people.	Curtis Lesslie	Ash Grove Cement Company
	Boyer Towing, the Halvorsens and Kelly-Ryan wish to join in and support the written comments submitted by Duwamish Shipyard, Inc. ("DSI") on the draft Feasibility Study for the LDW Superfund Site. DSI's five-page comment letter dated June 30, 2009 was submitted to you via fax and by regular mail today.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	DMC owns the property located at 7100 First Avenue S. in Seattle, Washington (Property) having purchased it from Swan Bay Holdings, Inc. The Property's moorage along the LDW is actively used.	Rod DeWalt	Douglas Management
	EMJ previously owned and operated the Jorgensen Forge Corporation facility located at 8531 East Marginal Way South in Seattle, Washington (Facility), which supported the South Seattle business community for approximately 68 years. EMJ sold the Facility to Jorgensen Forge Corporation in 1992.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company

Category	Comment	Commenter/Source	Organization/Event
Business issues/ economics	I hear the need to consider fish consumption in selecting a cleanup option. But I need a certain amount of draft in front of my business for safe operation of propellers.	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	The information request in the (104E) letter asks for details about my business' financial status. Will this be kept private?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	The Jorgensen Forge Corporation has owned and operated the facility located at 8531 East Marginal Way in Seattle, Washington (Facility) since 1992. The Facility was purchased from the previous owner and operator Earle M. Jorgensen Company (EMJ). The Facility has supported the South Seattle business community for approximately 68 years and currently generally employs approximately 250 people.	Ron Altier	Jorgensen Forge Corporation
	The Record Of Decision ("ROD") must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to provide clear incentives for businesses to consider active remediation.	R. Stephen Wilson	Crowley Marine Services, Inc.
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to provide clear incentives for businesses to consider active remediation.	Curtis Lesslie	Ash Grove Cement Company
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to provide clear incentives for businesses to consider active remediation.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to provide clear incentives for businesses to consider active remediation.	Kevin Anderson	Alaska Marine Lines
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to provide clear incentives for businesses to consider active remediation.	Rod DeWalt	Douglas Management
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to provide clear incentives for businesses to consider active remediation.	Ron Altier	Jorgensen Forge Corporation
	The ROD needs to provide clear incentives for businesses to consider active remediation.	Kim Maree Johannessen	Duwamish Shipyard, Inc.

Category	Comment	Commenter/Source	Organization/Event
Business issues/ economics	This is really tough on small businesses.	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	Through its operations, Crowley has supported the South Seattle business community for over five decades, in recent years employing as many as 100 workers in and around South Seattle. Our annual revenue continues to help maintain a strong local economy through services we provide.	R. Stephen	Crowley Marine Services, Inc.
	We are not a publicly held business. Will this information be made public?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
Capping	(Section 7.1.4 and 8.3.3.2) Capping: In areas where capping (or ENR) is proposed, potential impacts to the nature of the substrate and to the benthic community must be considered. At the least, design should include a cover of material that is the appropriate grain size, etc. Composite or reactive caps: The use of composite or reactive caps should be more fully explored as an implementable technology. It may be appropriate to propose several pilot projects.	Denice Taylor	The Suquamish Tribe
	Capping has been used most successfully in places that are not subjected to much ship traffic, are in deep waters (>30 feet); are not subject to groundwater flows through the site; are not subjected to scouring or other flow- related events; and are not likely to experience physical stresses from the waterway above (e.g., trees and cultural debris). However, these conditions all occur in the Duwamish.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Capping or burial of contaminated sediments with either less contaminated or clean sediments poses additional problems. As a new layer of clean sediment is deposited, a richer fauna will inhabit the new surface sediment, but the underlying contaminants will be drawn into the clean sediments from below. Each successive layer of clean sediment will both add to the distance between contaminants and the overlying water, and provide a suitable (or more suitable) substrate for benthic organisms. But as benthic organisms populate the overlying sediments, the actions of the benthos will draw contaminants into the overlying sediments, through bioturbation, increasing the concentrations of contaminants migrating upward. The result is not a layer of clean sediments on top of contaminated sediments, but rather a gradation in concentrations.	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Capping	Due to the constricted valley floor that receives high volumes of groundwater from the Duwamish drainage area, we know that groundwater could be a significant problem for caps, particularly if, and where, it is contaminated with solvents and is moving through PCB-contaminated soils.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Granular activated carbon (GAC) is an engineering/treatment option used in conjunction with capping that should be included in the FS analysis. Typically, a layer of GAC is placed on top of any contaminated sediments remaining at depth prior to capping. Due to its high adsorption coefficient, persistent organic compounds, such as the “driver” chemicals within the Duwamish, adhere to the carbon, isolating the contaminants from the sediment.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Several issues arise with applying a capping-driven strategy to the Duwamish. A great deal of acreage is proposed to be capped by either conventional caps or caps intended to promote biodegradation. However, the driver chemicals in the Duwamish are not amenable to breakdown. Additionally, the Duwamish is not a deep and isolated waterway, but will remain an active shipping area (indeed, shipping is expected to increase).	Thea Levkovitz	Duwamish River Cleanup Coalition
	Table 7-2c, Containment Process Options should note the conflict of armored capping, composite capping and reactive capping with the use of inter-tidal areas for clamming and/or recreational beaches. This table should also note that use of a shotcrete cap reduces the habitat value of the intertidal sediment bed.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Table 7-3, pg. 7-42: For the process option named Composite Cap, the disadvantages should include a requirement for institutional controls.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Table 7-3, pg. 7-43: For the process option named Reactive Caps, the disadvantages should note: “probably not acceptable in beach areas”.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Table 7-3, pg. 7-43: For the process option named Spray Cap, the disadvantages should include requirements for institutional controls, for long-term monitoring and maintenance, and a potential requirement for replacement habitat.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Chemical nature, extent, or volumes	(Pages 4-17 and 4-20) Outliers are typically defined by analytical data quality concerns. Data that passes QA/QC review and is accepted should be considered in data evaluation. It is unclear how LDWG is using the term "outlier" and the effect on the evaluation. Please provide clarification.	Denice Taylor	The Suquamish Tribe
	(Section 5.4.1.2) Given recent data from the Boeing Plant 2 EAA, assumptions regarding vertical PCB concentrations trends are going to need to be revisited.	Denice Taylor	The Suquamish Tribe
	Appendix H: Computing Halls Upper Confidence Limit for IDW-Interpolated Data. Pg. H-2: The IDW dataset has over 182,000 interpolated values based on the 10x10 grids. Pg. H-3: The LDW RI datasets have 1,327 samples for PCBs, 828 for cPAHs and 852 for arsenic. Comment: This means that less than 0.75% of the values used in the statistical analyses are actual measurements, and over 99.25% are interpolated estimates of the variation between these (few?) samples. Statistics based on such an overwhelmingly fabricated dataset are difficult to accept. The overwhelming number of interpolated values in the dataset probably explains why the results are all so similar in Table 9-2a: the great majority of values used as the basis for the statistics don't change (all 10x10grids in any area not affected by a remedial action.)	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Appendix H: see Attachment 1.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Please see Review of Appendix-H.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Table 9-2a: Please see comment on Appendix H.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
Cleanup areas	(Section 2.6 and Section 9.3) EAAs: There needs to be an in-depth discussion of how EAAs are being incorporated in the FS.	Denice Taylor	The Suquamish Tribe

Category	Comment	Commenter/Source	Organization/Event
Cleanup areas	(Section 5.3.3.1) The purpose of this scenario is unclear and the conclusion that "it is unlikely that remediated areas will be recontaminated by unremediated areas unless the areas are adjacent to each other" does not seem particularly useful. There needs to be a real, detailed discussion of how EAAs are going to be included in this FS.	Denice Taylor	The Suquamish Tribe
	(Section 6.1.1) The AOPC includes areas previously identified as EAAs. Given that investigations regarding sources and extent of contamination are ongoing at the EAAs, it is likely that the AOPC delineation is inaccurate and likely under-represents contaminated areas requiring remediation. In addition, it is unclear what assumptions have been made regarding the level of expected clean up at EAAs, and how that compares to PRGs for the LDW. (Are they assuming replacement values for EAAs?).	Denice Taylor	The Suquamish Tribe
	(Section 6.2.1.2) To be conservative, partial grid cells should be included in an SMA boundary, rather than excluded if there is less than 50% overlap with the AOPC. Additionally, grid cells should not be excluded for human health concerns based on sediment toxicity data.	Denice Taylor	The Suquamish Tribe
	Appendix D: It is difficult to track the "unsponsored" EAAs at RM 3.8E and RM 2.2W. The one at RM 2.2 is included in Table D-1 (Trotsky, SMA 26 on Figure 6-2b), but the EAA at RM 3.8E doesn't seem to be in Table D-1 or D-2, and it does not have an SMA designation in Figure 6-2d, although it is identified as an EAA, and is shown as an EAA in Figure 2-13d. If there are commitments to cleanup these two EAAs, they should be noted. Since they seem to be evaluated similar to other SMAs, why are they identified as EAAs on the Figures? This gives the impression that they are part of the baseline remedy, Alternative 1.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Cleanup areas	<p>Determining achievement of PCB RAOs/PRGs by averaging (or doing other statistical analyses) over the entire 5 miles of LDW, allows clean upstream areas that were never contaminated to “compensate” for contaminated areas downstream. Averaging over the entire length of the LDW to establish compliance is not consistent with most of the exposure scenarios for both human and ecological receptors:</p> <p>a.) Exposure locations for beach play and clamming are specific locations, each of which should achieve PRGs.</p> <p>b.) Forage fish, e.g., blennies and sculpins; (and shellfish) that are prey both for larger fish consumed by humans and for the selected ecological receptor (river otter, <i>Lutra canadensis</i>) do not generally range over 3 or 4 miles of river, so it is inappropriate to average contaminant concentrations over this length to estimate food chain exposure.</p> <p>c.) Research using radio-telemetry by the University of Alaska, Fairbanks, demonstrated that denning female river otters do more than 50% of their foraging within a 4 km (2.5 miles) stretch of shoreline (Blundell et al, <i>Wildlife Life History</i>, pgs 325-333, Table 2). Thus, averaging exposure over the entire LDW length would not be appropriate for estimating the exposure of denning female otters, a critical lifecycle consideration for PCB exposure.</p>	Marla	National Oceanic and Atmospheric Administration (NOAA)
	EAA 4 was initially identified by LDWG as the combined areas adjacent to the Facility and the Boeing Plant 2 Facility. We request that the Draft FS figures be revised to show the Boeing/EMJ-Jorgensen Forge cleanup boundary identified in the EPA-approved Memorandum of Understanding (MOD) between Boeing and EMJ/Jorgensen Forge (dated August 2007)	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	EAA-4 was initially identified by LDWG as the combined areas adjacent to the Jorgensen Forge Facility and the Boeing Plant 2 Facility. We request that the Draft FS figures be revised to show the Boeing/EMJ-Jorgensen [sic]	Ron Altier	Jorgensen Forge Corporation
	ES-3: Because early action areas are included in the “study area,” the maps should include the known PCB and dioxin contaminated upland areas.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Following remediation of the most contaminated sites, MWPAAC agrees with the Draft FS approach of progressively remediating the next most contaminated areas as necessary to achieve remedial action objectives	Dave Christensen	Metropolitan Water Pollution Abatement Advisory Committee

Category	Comment	Commenter/Source	Organization/Event
Cleanup areas	It is critical that contaminated sites be cleaned up and protected.	David Williams	Association of Washington Cities
	It is inappropriate to completely screen out Early Action sites, as we have seen that these cleanups have not resulted in adequately clean sites. In fact, EPA does not consider the only Early Action Area cleanups that have been conducted to be complete or final.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Pg. 6-13: "Finally, even given the above factors by which a grid cell was included or excluded, a grid cell was generally excluded if sediment toxicity test data were available for that area, and the sample(s) passed (except areas with high PCB concentrations were retained for the protection of RAOs 1, 2, and 4)." Please clarify the decision process/criteria and provide a table showing which SMAs were excluded based on toxicity test results. Is it possible that one sample below the toxicity threshold was sufficient to exclude an SMA even if other samples showed high chemistry?	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Sediment Management Area (SMA)-38 is driven by polychlorinated biphenyl exceedences at depth adjacent to the Plant 2 facility some distance downstream from the Boeing/EMJ-Jorgensen Forge cleanup boundary. The Draft FS provides no chemical data supporting extending this SMA south adjacent to the Jorgensen/EMJ RAB. We request further technical rationale supporting the southern aerial extents of this SMA.	Ron Altier	Jorgensen Forge Corporation
	Sediment Management Area (SMA)-38 is driven by polychlorinated biphenyl exceedences at depth adjacent to the Plant 2 facility some distance downstream from the Boeing/EMJ-Jorgensen Forge cleanup boundary. The Draft FS provides no chemical data supporting extending this SMA south adjacent to the Jorgensen/EMJ RAE. We request further technical rationale supporting the southern aerial extents of this SMA.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	The Draft FS does not clearly present a summary of the large number of cleanup activities currently in progress. The Draft FS should identify areas in the Site that are already identified for cleanup beyond the Early Action Areas either as part of planned maintenance dredging or ongoing source control activities coordinated with Ecology.	Rod DeWalt	Douglas Management

Category	Comment	Commenter/Source	Organization/Event
Cleanup areas	The Draft FS does not clearly present a summary of the large number of cleanup activities currently in progress. The Draft FS should identify areas in the Site that are already identified for cleanup beyond the Early Action Areas either as part of planned maintenance dredging or ongoing source control activities coordinated with Ecology.	Ron Altier	Jorgensen Forge Corporation
	The Draft FS does not clearly present a summary of the large number of cleanup activities currently in progress. The Draft FS should identify areas within the Site that are already identified for cleanup beyond the Early Action Areas either as part of planned maintenance dredging, ongoing source control activities coordinated with Ecology, or under Agreed Orders with Ecology.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	The Draft FS does not clearly present a summary of the large number of cleanup activities currently in progress. The Draft FS should identify areas in the LDW Site that are already identified for cleanup beyond the Early Action Areas either as part of planned maintenance dredging or ongoing source control activities coordinated with Ecology.	Curtis Lesslie	Ash Grove Cement Company
	The Draft FS does not clearly present a summary of the large number of cleanup activities currently in progress. The Draft FS should identify areas in the Site that are already identified for cleanup beyond the Early Action Areas either as part of planned maintenance dredging or ongoing source control activities coordinated with Ecology.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	The Draft FS does not clearly present a summary of the large number of cleanup activities currently in progress. The Draft FS should identify areas in the Site that are already identified for cleanup beyond the Early Action Areas either as part of planned maintenance dredging or ongoing source control activities coordinated with Ecology.	Kevin Anderson	Alaska Marine Lines
	The Draft FS does not clearly present a summary of the large number of cleanup activities currently in progress. The Draft FS should identify areas in the Site that are already identified for cleanup beyond the Early Action Areas either as part of planned maintenance dredging or ongoing source control activities coordinated with Ecology.	R. Stephen Wilson	Crowley Marine Services, Inc.

Category	Comment	Commenter/Source	Organization/Event
Cleanup areas	The figures in Sec. 8 show SMAs extending to RM 5.0, but the Sec. 9 detailed analyses of remedial alternatives and subsequent natural recovery extend only to RM 4.75, eliminating changes related to remediation of the Norfolk EAA and SMA 48, significant PCB sources during the RI.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	The FS Workplan (Windward, 2007) notes that the FS will include proposals for addressing the two EAAs that "are not sponsored", but little information is provided in the draft FS. The information about the EAA at RM 3.8E, is very limited, although it is shown on Figures 2-13d and 6-2d.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	The portions of sediment management area (SMA)-31 and SMA-33 adjacent to the Property include exceedances of polychlorinated biphenyls that are not associated with our historical or current operations, as evidenced by a recent source control investigation that did not identify any reasonable potential pathways for releases of contaminants from the Property to Duwamish sediments or Slip 4. In addition, the most recent data (2006) collected in SMA 33 show only low level surface sediment PCB exceedances adjacent to the Slip 4 Early Action Area. This suggests the exceedances are due to migration of contaminated sediments within the Early Action Area and/or source loadings from the Early Action Area drainage basin.	R. Stephen Wilson	Crowley Marine Services, Inc.
	The Property is currently used by Alaska Marine Lines and other companies for mooring barges, transferring gravel and other cargoes, storage of shipping containers and other equipment, and other purposes.	Rod DeWalt	Douglas Management
Cleanup levels/ cleanup goals	(page 4-33 - as an example): It does not seem appropriate to focus the establishment of PRGs at the high end of anthropogenic background because it would result in a "higher probability of actually achieving the PRG in practice." PRGs should reflect the remediation goals necessary to meet RAOs, not what LDWG thinks they might be able to do.	Denice Taylor	The Suquamish Tribe
	(Section 4) Ideally, RBTCs would form the basis of appropriate PRGs for RAO 1. The LDWG maintains that RBTCs cannot be developed for dioxin/furans, arsenic or cPAHs because of a lack of tissue data (for dioxin/furans) and because the relationships are complex and not well understood (arsenic and cPAHs). For these 3 contaminants, PRGs revert to background levels. The 10-4 PCB risk-related sediment concentration also drives the PCB PRG to background levels.	Denice Taylor	The Suquamish Tribe

Category	Comment	Commenter/Source	Organization/Event
Cleanup levels/ cleanup goals	<p>Pg. 5-1: "Compare model results to empirical measurements to show convergence of information. Both the modeling results and empirical data have some measure of uncertainty;..." The analyses presented in this chapter (and Appendix F) would be more useful if uncertainty associated with the model predictions and empirical data and analysis was quantitatively addressed in the evaluation.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Pg. 5-1: "Predict contaminant fate and recovery potential for risk-driver chemicals over periods of time (e.g., 10 years) via the primary mechanisms of burial and source control". Other goals for the modeling efforts that should be addressed include the potential for contaminant re-distribution within the LDW and export from the LDW to Elliott Bay.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Pg. 8-48, Sec. 8.5.2.2: "The area and volume uncertainty are likely to be smaller for higher RALs, and greater for lower RALs." The analysis in Table 6-2 contradicts this statement by showing the interpolated footprint with the lowest percentage of false values was a PCB RAL of 240 ug/kg dw. The statement and subsequent discussion should be deleted.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Pg. 8-5: What is the CSL? Is this the same as the MCUL? If not, please explain how they are related and the rationale for using a screening level as a goal for 10 years post remedial action.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>

Category	Comment	Commenter/Source	Organization/Event
Cleanup levels/ cleanup goals	<p>Remedial Action Level- The approach taken to develop the proposed Remedial Action Levels (RALs) is critical to the development of appropriate Remedial Alternatives. Development of RALs must be consistent with all applicable or relevant and appropriate requirements (ARARs). We do not believe that all of the RALs are consistent with the Washington State Sediment Management Standards (SMS), which is a primary ARAR to consider in this circumstance. The SMS calls for the development of remedial alternatives that meet all cleanup objectives within a period of zero to ten years following the completion of the cleanup action. Therefore, all RALs evaluated in this draft FS should be designed to achieve all of the Remedial Action Objectives within zero to ten years following completion of the remedial action. Since several of the Remedial Action Objectives (RAOs) for the site involve achieving background concentrations of four risk-driving chemicals (PCBs, carcinogenic PAHs, arsenic, and dioxin) in the river, RALs that allow concentrations above background levels for a period of greater than 10 years following cleanup should be excluded. Please revise the methodology to develop RALs to enable all RAOs to be met within zero to 10 years following cleanup. This comment primarily relates to Chapter 6 of the draft Feasibility Study, but is significantly integrated into much of the rest of the document.</p>	<p>Glen St. Amant</p>	<p>Muckleshoot Indian Tribe</p>
	<p>The discussion of RALs for PCBs as they pertain to the State Sediment Management Standards is potentially misleading. The document seems to infer that 240 ppb dry weight was used as a surrogate for the State SQS value. Only the 12 ppm TOC or 130 ppb LAET value should be used in discussions of whether the PCB SQS was met or exceeded. The document also carries this inference through when developing RALs to address the PCB Cleanup Screening Level (CSL). Please revise these specific RALs to only refer to the actual SMS values.</p>	<p>Glen St. Amant</p>	<p>Muckleshoot Indian Tribe</p>
	<p>The PRGs put forward relate to sediment concentrations. It's important to address contamination in the sediment. However, risk is also tied to elevated contaminant concentrations in tissue. If sediment concentrations are reduced, but tissue remains elevated, the site has not been cleaned up to address risk. There are multiple reasons why reducing sediment concentrations may not sufficiently address risk. For example, the Sediment Transport Model and BCM may overestimate natural recovery and the depositional nature of the waterway. The FWM model may not be adequately calibrated to determine the relationship between sediment and tissue. For these reasons, the PRGs should also state goals related to concentrations in tissue, not just sediment.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>

Category	Comment	Commenter/Source	Organization/Event
Cleanup levels/ cleanup goals	Urbanized areas containing contaminated sites are unlikely able to be brought back and maintained in a natural state. Clean-up alternatives need to recognize this and identify ones that can be achieved.	David Williams	Association of Washington Cities
Community issues/ public outreach	...so the public is clear what area will be remediated by Boeing and Jorgensen Forge/EMJ.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	Additional outreach to persons and businesses who may ultimately be responsible for Site cleanup actions is necessary to avoid a litigious process and to ensure that the Site is remediated expeditiously.	Curtis Lesslie	Ash Grove Cement Company
	Appreciation for coming out, interest in staying informed as process moves forward.	LDWG Briefing	West Seattle Chamber Board of Directors
	Are you recording names at this meeting?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	Confused as to how this process relates to the "interviews at the Colman School a few months ago about the Duwamish." Speakers should be clear as to how T-117 project, Ecology's upland work, etc. are the same as or different from this process.	LDWG Briefing	West Seattle Chamber Board of Directors
	DSI believes that additional outreach to persons and businesses who may ultimately be responsible for Site cleanup actions is necessary to avoid a litigious process and to ensure that the Site is remediated expeditiously.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	EPA has maps showing where the pollution is. One map should be distributed to South Park residents to have a better idea where the pollution is.	LDWG Briefing	South Park Neighborhood Association
	ES-20: Public acceptance needs to be included in the next draft.	Thea Levkovitz	Duwamish River Cleanup Coalition
	If I send in a comment or request, is this public information?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	Is the project planning on sponsoring boat tours along the site for public education and outreach? (similar to DRCC boat tours)	LDWG Briefing	Delridge Neighborhood District Council
Prefer calling it a river rather than waterway.	LDWG Briefing	Georgetown Community Council	

Category	Comment	Commenter/Source	Organization/Event
Community issues/ public outreach	<p>The best way for Ecology and EPA to provide information to the community is: Newspapers- Seattle Times, West Seattle Herald, Stranger, Weekly; Association meetings; List Serves; DRCC; Workshops; West Seattle Blog; and information booths at community festivals and farmer's markets.</p>	<p>LDWG Briefing</p>	<p>Delridge Neighborhood District Council</p>
	<p>The best way for Ecology and EPA to provide information to the community is: Newspapers- Seattle Times; Association meetings- South Park; List Serves- South Park and Georgetown; DRCC; Workshops</p>	<p>LDWG Briefing</p>	<p>South Park Neighborhood Association</p>
	<p>The draft FS states that there is currently insufficient information to evaluate public and community acceptance of the cleanup alternatives. However, more is known about public acceptance of alternatives at this site than perhaps any other site in the country, as a result of "enhanced" public involvement and previous Early Action Area cleanup decisions. For example, disposal of contaminated sediments in a CAD – even one in another location in Puget Sound – was rejected during development of the Early Action Area #1 (Duwamish/Diagonal CSO) cleanup project; and cleanup levels that were not protective of human health were rejected during development of plans for the Early Action Area #5 (Terminal 117) cleanup site. While public acceptance will continue to be a modifying factor in the Duwamish remedial decisions, there is sufficient information currently available to begin to help shape the FS alternatives. This information needs to be included in the analysis, and should inform the draft FS. Specifically, the high public interest in treatment should be reflected in a more robust evaluation of treatment alternatives in the FS, and the established public rejection of disposal in a CAD is well established, and should be sufficient to exclude consideration of a CAD from</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>
	<p>To date, the decision-making process has been limited to the Agencies (EPA and Ecology), Tribes, community advisory groups (i.e., Duwamish River Cleanup Coalition), and the Lower Duwamish Waterway Group, composed of the Port of Seattle (Port), King County, the City of Seattle (City), and The Boeing Company (Boeing). This process has not adequately incorporated the waterfront business perspective and likely does not reflect a balanced view of the entire community.</p>	<p>Ron Altier</p>	<p>Jorgensen Forge Corporation</p>
	<p>To date, the decision-making process has been limited to the agencies (EPA and Ecology), Tribes, community advisory groups (i.e., Duwamish River Cleanup Coalition), and the Lower Duwamish Waterway Group, comprised of the Port of Seattle, King County, the City of Seattle, and The Boeing Company. This process has not adequately incorporated the waterfront property owners' perspectives and likely does not reflect a balanced view of the entire community.</p>	<p>Kim Maree Johannessen</p>	<p>Duwamish Shipyard, Inc.</p>

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Community issues/ public outreach	<p>To date, the decision-making process has been limited to the Agencies (EPA and Ecology), Tribes, community advisory groups (Le., Duwamish River Cleanup Coalition), and the Lower Duwamish Waterway Group, composed of the Port of Seattle (Port), King County, the City of Seattle (City), and The Boeing Company (Boeing). This process has not adequately incorporated the waterfront business perspective and likely does not reflect a balanced view of the entire community.</p>	<p>E. Gilbert Leon Jr.</p>	<p>Earl M. Jorgensen Company</p>
	<p>To date, the decision-making progress has been limited to the agencies (EPA and Ecology), Tribes, community advisory groups (i.e., Duwamish River Cleanup Coalition), and the Lower Duwamish Waterway Group, composed of the Port of Seattle (Port), King County, the City of Seattle (City), and The Boeing Company (Boeing). This process has not adequately incorporated the waterfront property owner perspective and likely does not reflect a balanced view of the entire community.</p>	<p>Rod DeWalt</p>	<p>Douglas Management</p>
	<p>To date, the decision-making progress has been limited to the agencies (EPA and Ecology), Tribes, community advisory groups (i.e., Duwamish River Cleanup Coalition), and the Lower Duwamish Waterway Group, composed of the Port of Seattle (Port), King County, the City of Seattle (City), and The Boeing Company (Boeing). This process has not adequately incorporated the waterfront property owner perspective and likely does not reflect a balanced view of the entire community.</p>	<p>Curtis Lesslie</p>	<p>Ash Grove Cement Company</p>
	<p>To date, the decision-making progress has been limited to the agencies (EPA and Ecology), Tribes, community advisory groups (i.e., Duwamish River Cleanup Coalition), and the Lower Duwamish Waterway Group, composed of the Port of Seattle (Port), King County, the City of Seattle (City), and The Boeing Company (Boeing). This process has not adequately incorporated the waterfront property owner perspective and likely does not reflect a balanced view of the entire community.</p>	<p>Kevin Anderson</p>	<p>Alaska Marine Lines</p>

Category	Comment	Commenter/Source	Organization/Event
Community issues/ public outreach	To date, the decision-making progress has been limited to the agencies (EPA and Ecology), Tribes, community advisory groups (i.e., Duwamish River Cleanup, Coalition), and the Lower Duwamish Waterway Group, composed of the Port of Seattle (Port), King County, the City of Seattle (City), and The Boeing Company (Boeing). This process has not adequately incorporated the waterfront property owner perspective and likely does not reflect a balanced view of the entire community.	R. Stephen Wilson	Crowley Marine Services, Inc.
	Under what conditions are questions or comments made in public part of the public record and attributable to a particular person / entity / business?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	We believe that additional outreach to persons and businesses who may ultimately be responsible for Site cleanup actions is necessary to avoid a litigious process and to ensure that the Site is remediated expeditiously.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	We believe that additional outreach to persons and businesses who may ultimately be responsible for Site cleanup actions is necessary to avoid a litigious process and to ensure that the Site is remediated expeditiously.	Kevin Anderson	Alaska Marine Lines
	We believe that additional outreach to persons and businesses who may ultimately be responsible for Site cleanup actions is necessary to avoid a litigious process and to ensure that the Site is remediated expeditiously.	R. Stephen Wilson	Crowley Marine Services, Inc.
	We believe that additional outreach to persons and businesses who may ultimately be responsible for Site cleanup actions is necessary to avoid a litigious process and to ensure that the Site is remediated expeditiously.	Rod DeWalt	Douglas Management
	We believe that additional outreach to persons and businesses who may ultimately be responsible for Site cleanup actions is necessary to avoid a litigious process and to ensure that the Site is remediated expeditiously.	Ron Altier	Jorgensen Forge Corporation
	Would like more information about hazards to the community.	LDWG Briefing	South Park Neighborhood Association
	Would like more information on any proposed action you plan to take in the Duwamish.	LDWG Briefing	South Park Neighborhood Association

Category	Comment	Commenter/Source	Organization/Event
Contaminants: PCBs, As, dioxin, PAHs, TBT and others	(Section 3.2.2) All COPCs that present an excess cancer risk of 1×10^{-6} or an HQ greater than 1 for any scenario, including Suquamish seafood consumption, should be identified as COCs.	Denice Taylor	The Suquamish Tribe
	(Section 5.2.4) SQS is point by point and contaminant-specific. The assumption that one chemical represents the potential impacts of all COCs is not protective. Sediment toxicity tests may be used as a measure of cumulative impact (and trump SQS criteria); however, sediment toxicity tests are location specific and do not represent "SWACs", which are generally not considered protective for benthic organisms in any case.	Denice Taylor	The Suquamish Tribe
	Appendix F: Table F-3, Percent Change in Resampled Surface Sediment Location PCB Concentrations Ordered by Original Total PCB Concentration, pgs F-58 -59: The PCB sample concentrations for approximately co-located samples are compared to estimate a half-life for PCBs, one line of evidence for natural recovery. It is interesting that when the data are ordered from the highest initial concentration to the lowest, the 12 highest concentrations all decrease (all but one by 50% or more), and six of the lowest 12 concentrations increase, three by 50% or more. That is, the highest and lowest concentrations in the dataset all are closer to the mean when resampled. This suggests mixing of sediment within the LDW, rather than uniform burial with sediment at background concentrations.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Depth of Contamination. This document should layout specific criteria for remedial action levels for contaminants found deeper than in the top 10 cm of surface sediments. Additional RALs should be developed for other sediment depth horizons (e.g., the top 45 cm), when cleanup of contaminants at depth is warranted to protect certain resources. These RALs shouldn't replace any RALs developed for the top 10 cm, but, rather, should be used in addition to those RALs.	Glen St. Amant	Muckleshoot Indian Tribe

Category	Comment	Commenter/Source	Organization/Event
Contaminants: PCBs, As, dioxin, PAHs, TBT and others	<p>F-21, footnote 5: "Sometimes, lower resolution data would indicate that the peak concentration was in the surface interval; however, when the high resolution data were considered, the peak was found to be below the surface. For example, 5 of 7 cores having both high and low resolution data had peaks in the subsurface using the 0.5-ft (high) resolution data, but the lower resolution data led to the conclusion that the peak was in the surface interval. The low resolution data (i.e., 1- to 2-foot intervals) was not fine enough to reveal the true depth of the peak." Almost all of the information used to support the conclusions in this section is based on cores downstream of River Mile 2. Excluding cores from the navigation channel and within slips, only 3 cores from upstream of RM 2.0 show higher concentrations at depth (Table F-5a), while 9 cores show no pattern with depth (Table F-5b) and 5 cores showed higher concentrations in the surface (Table F-5c).</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Figure 2.13a shows the vertical distribution of SMS contaminants in the lower Duwamish, from river mile 0 to 1.4. Contaminants exceeding standards are distributed in the sediments both 0-2 ft (16 sites) and > 2 feet in depth (22 sites). At 10 sites, contamination occurs above and below the 2 foot depth contour. These data do not support the conclusion that surface sediments are cleaner than deeper sediments at most locations in this reach. Surface sediments are less contaminated in isolated locations within the lower river, but not generally.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>
	<p>Figure 2-14a: The term "historic" is misleading in this figure, even though it has a footnote. PCB-contaminated caulk may have been historically installed, but it continues to impact stormwater quality. Therefore, a new category should be created for the map, or these sources should be described as "Ongoing." The term "potentially ongoing" is also misleading. We know that these ARE ongoing sources. Also, there should be figures for some of the other important chemicals, such as BEHP.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>
	<p>Green River/Duwamish sediments: explain equilibrium. What is in the sediments coming into the Waterway?</p>	<p>LDWG Briefing</p>	<p>Delridge Neighborhood District Council</p>
	<p>P 2-18: Given the new information being generated about dioxin concentrations, it is not clear that enough dioxin samples have been collected in the river.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>

Category	Comment	Commenter/Source	Organization/Event
Contaminants: PCBs, As, dioxin, PAHs, TBT and others	P 2-20: This statement should be supported by a map and much more text. As it is, it is an unsubstantiated statement: "Some areas exhibited high chemical concentrations in both subsurface and surface sediment, coincident with low net sedimentation rates calculated in the STAR and supported by the STM."	Thea Levkovitz	Duwamish River Cleanup Coalition
	P 2-21: PCBs continue to be discharged into the river.	Thea Levkovitz	Duwamish River Cleanup Coalition
	P 2-22: This statement is, unfortunately, not substantiated, in this FS. An adequate assessment of the recontamination potential for all chemicals of concern has not been performed: "Although there are existing (current) releases of chemicals to the LDW, the magnitude of these releases is likely smaller than historical releases"	Thea Levkovitz	Duwamish River Cleanup Coalition
	P 2-22: We strongly disagree with this statement: "Groundwater is not generally considered to be a major source of the risk-driver chemicals to sediment in the LDW, based on the results of porewater and seep sampling and a review of available groundwater data." There are several areas of the river, including Boeing Plant #2 where the groundwater pathway has not been adequately characterized and solvent plumes may well be a transport mode for chemicals of concern into the river:	Thea Levkovitz	Duwamish River Cleanup Coalition
	P 2-23: The PCB and other chemical stormdrain sampling, if it include inline sampling, that is described in this section involves samples that did not have a strong and agreed upon scientific basis and can only be considered preliminary screening samples. Therefore, the concentrations should NOT be included in the FS. DRCC requests that improved inline sediment monitoring be required by USEPA/Ecology as soon as possible.	Thea Levkovitz	Duwamish River Cleanup Coalition
	P 2-26: The Groundwater assessment should now be reconsidered based on new information that has been generated (this section is now out of date). In addition, groundwater monitoring wells should be installed, rather than relying on old data reports, in order to adequately characterize the groundwater pathway.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Page 5-22: These areas should be described here (in this section) in addition to elsewhere in the document. We should not have to dig this information out: "In areas where these lines of evidence are not similar or where recovery is not predicted, more attention is given to ascertain the reasons for these differences and these areas are prioritized in the FS."	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Contaminants: PCBs, As, dioxin, PAHs, TBT and others	<p>Pg. F-15, Analysis of nominally co-located samples: "It is important to consider the analytical accuracy and precision when comparing two sample results. Combined analytical variability between two samples can commonly be as high as 20 to 50%, even between two analyses of the same sample. Thus, location-specific conclusions when comparing two sample results from one location that were collected at different times and potentially by different parties, must be used cautiously. In contrast, comparing populations of resampled data is a more statistically powerful analysis; but this analysis (evaluation of the entire LDW-wide population) can only lead to conclusions regarding large spatial areas. Therefore, this appendix evaluates recovery at two scales: site-wide trends and station-by-station trends." Although the report acknowledges the importance of analytical variability and spatial heterogeneity, how is this taken into account in the analysis? Many of the re-sampled locations were selected to re-visit samples with SQS exceedances what is the probability of re-sampling elevated concentrations from a lognormal distribution? Because of the major differences in deposition and erosion identified by the STM among the three reaches, rather than conducting a site-wide analysis, complete separate analyses by Reach are recommended.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Pg. F-4: "...the human health risk drivers (total polychlorinated biphenyls [PCBs], arsenic, carcinogenic polycyclic aromatic hydrocarbons [cPAHs], and dioxins/furans), are largely conserved in surface sediment and do not significantly desorb into the water column or volatilize." It's not clear what is meant by "significantly desorb", but data from other sites indicate that PCBs are released from the sediment to the water column at rates greater than predicted by equilibrium partitioning.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Sediment Management Area (SMA)-14b located adjacent to the Property is driven by a single surface sediment sample low level exceedance of the polychlorinated biphenyl screening level that is indicative of waterway-wide source loadings, not releases from the Property.</p>	<p>Kevin Anderson</p>	<p>Alaska Marine Lines</p>
	<p>Sediment management area (SMA)-23 was identified within the LDW adjacent to the Property based on a limited number of surface and subsurface sediment exceedances for polychlorinated biphenyls (PCB's). As indicated our response to the EPA's 104(e) request, DMC has not had any operations on the Property involving PCB's.</p>	<p>Rod DeWalt</p>	<p>Douglas Management</p>

Category	Comment	Commenter/Source	Organization/Event
Contaminants: PCBs, As, dioxin, PAHs, TBT and others	Several major contaminants, including PCBs, dioxins, arsenic, and other metals, are listed as “drivers” for the river cleanup. These persistent chemicals do not easily breakdown into less toxic products, if at all, and are not degraded by microbial activity to any measurable extent. The persistence of these contaminants limits the range of possibilities for handling contaminated sediments in the cleanup.	Thea Levkovitz	Duwamish River Cleanup Coalition
	SMA-2 and SMA-3 were defined based on surface and subsurface sediment screening level exceedances for chemicals that are not associated with our historical or current operations and can likely be attributed to waterway-wide source loadings [PCB’s, hexachlorobenzene, BEHP, arsenic, cPAHs].	Curtis Lesslie	Ash Grove Cement Company
	Table F-2 shows lack of chemical data from Reach 2 in anything other than 1-2 foot cores, which are too coarse to provide useful resolution. Since this area is identified by the STM as an area of mixed deposition and erosion, this is an important data.gap.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
Cost, liability, or allocation	Am I responsible for ‘the sins of our fathers’ (historic contamination)?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	Applying the adaptive management approach while cleaning the most contaminated sites in the LDW first will ensure the funds spent on cleanup efforts are maximized to achieve the greatest benefit to human health and the environment... MWPAAC asks the U.S. Environmental Protection Agency and the Washington State Department of Ecology to apply the adaptive management approach using the most cost effective approach to clean up the LDW.	Dave Christensen	Metropolitan Water Pollution Abatement Advisory Committee
	Are the costs in the information you have provided in today’s dollars?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	Can you provide information about the (types; magnitude) of costs that EPA, Ecology and LDWG will seek to recover?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)

Category	Comment	Commenter/Source	Organization/Event
Cost, liability, or allocation	DSI generally supports the assumptions used to evaluate the restoration timeframes and costs associated with each of the cleanup alternatives. Further, DSI agrees that attempting to actively manage all areas currently showing chemical concentrations above the screening levels, regardless of the exceedence factors, will result in lower overall benefits, grossly disproportionate costs (approximately \$500 million to greater than \$1 billion), and significantly longer restoration timeframes (from 25 to 43 years) relative to the remedy identified in the adaptive management framework.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	DSI supports the selection of a waterway-wide remedy that incorporates all applicable, proven technologies at individual sites. This will ensure that protection of human health and the environment is achieved in the most implementable, but cost-effective, manner possible.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	ES-21: The FS evaluation factors for "Cost" should include a discussion of the benefit of jobs and other positive aspects for the local economy as a result of the cleanup.	Thea Levkovitz	Duwamish River Cleanup Coalition
	How do you assess who is responsible?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	How much money has been spent on cleanup thus far, both for studies and early action projects? I am concerned that the project will spend more than they are indicating.	LDWG Briefing	Delridge Neighborhood District Council
	I am waiting to do needed work at my business site because of uncertainty. Have you thought of doing an incentive program to get people to clean up in advance, eliminating liability and allowing businesses to get back to work?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	If I have not received a letter, and no one has knocked on my door (for an inspection), can I assume I am not liable?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	If I take cleanup action on my own, does this reduce my liability? Or relieve me from having to pay?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)

Category	Comment	Commenter/Source	Organization/Event
Cost, liability, or allocation	In order for this framework to be successful, the Agencies must provide incentives and legal protection (Consent Decrees) to parties who perform the initial cleanups. Legal protection is paramount to EMJ since the removal action of contaminated sediments and associated bank soils within the RAB in the LDW will likely be conducted in advance of the Record of Decision (ROD).	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	In order for this framework to be successful, the Agencies must provide incentives and legal protection (Consent Decrees) to PLPs who perform the initial cleanups.	Curtis Lesslie	Ash Grove Cement Company
	In order for this framework to be successful, the Agencies must provide incentives and legal protection (Consent Decrees) to PLPs who perform the initial cleanups.	Kevin Anderson	Alaska Marine Lines
	In order for this framework to be successful, the Agencies must provide incentives and legal protection (Consent Decrees) to PLPs who perform the initial cleanups.	R. Stephen Wilson	Crowley Marine Services, Inc.
	In order for this framework to be successful, the Agencies must provide incentives and legal protection (Consent Decrees) to PLPs who perform the initial cleanups.	Rod DeWalt	Douglas Management
	In order for this framework to be successful, the Agencies must provide incentives and legal protection (Consent Decrees) to PLPs who perform the initial cleanups. Legal protection is paramount to Jorgensen Forge since the removal action of contaminated sediments and associated bank soils within the RAB in the LDW will likely be conducted in advance of the Record of Decision (ROD).	Ron Altier	Jorgensen Forge Corporation
	In order for this framework to be successful, the agencies must provide incentives and legal protection (i.e., Consent Decrees) to PLPs who perform the initial cleanups.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	It is also important to consider the economic value of a faster schedule, which could result in (1) lower overall cost, (2) short term job creation during a significant economic crisis, and (3) the potential availability of federal stimulus or other cleanup funds specifically allocated for this purpose.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Most people in the Chamber group are not directly affected, as many have businesses up the hill in West Seattle. Talking about relative cost of the various options seemed to resonate with them.	LDWG Briefing	West Seattle Chamber Board of Directors
Public resources are strained to meet a variety of demands - and in particular in urban Washington, within which these communities must meet the challenge of providing more densely developed cities as required by our Growth Management Act. They need to spend whatever clean-up funds they have in a "smart" way - getting the most value possible.	David Williams	Association of Washington Cities	

Category	Comment	Commenter/Source	Organization/Event
Cost, liability, or allocation	Significant discussions need to occur with other businesses identified as additional potentially liable parties (PLP's) to gain their input and understand the concerns raised by PLP's who may be responsible for funding a portion of the cleanup.	Ron Altier	Jorgensen Forge Corporation
	Significant discussions need to occur with other businesses, whether or not they have been identified as additional potentially liable parties ("PLPs"), to solicit their input and gain a better understanding of their concerns. This is especially important given that those businesses may well be the parties who may be responsible for funding (or who will be asked to fund) a portion of the cleanup.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	Significant discussions needs to occur with other businesses identified as additional potentially liable parties (PLP's) to gain their input and understand the concerns raised by PLP's who may be responsible for funding a portion of the cleanup.	Curtis Lesslie	Ash Grove Cement Company
	Significant discussions needs to occur with other businesses identified as additional potentially liable parties (PLP's) to gain their input and understand the concerns raised by PLP's who may be responsible for funding a portion of the cleanup.	Kevin Anderson	Alaska Marine Lines
	Significant discussions needs to occur with other businesses identified as additional potentially liable parties (PLP's) to gain their input and understand the concerns raised by PLP's who may be responsible for funding a portion of the cleanup.	R. Stephen Wilson	Crowley Marine Services, Inc.
	Significant discussions needs to occur with other businesses identified as additional potentially liable parties (PLP's) to gain their input and understand the concerns raised by PLP's who may be responsible for funding a portion of the cleanup.	Rod DeWalt	Douglas Management
	Significant discussions needs to occur with other businesses identified as potentially liable parties (PLPs) to gain their input and understand the concerns raised by PLPs who may be responsible for funding a portion of the cleanup.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	Table 4-4, page 4-38: Clarification: Aquatic Land Management Act and applicable rules apply only if the aquatic lands are State Owned. Most of the Lower Duwamish Site is aquatic land owned by the Port of Seattle, and is not State Owned Aquatic Land as statutorily defined.	John A. Bower, Jr	Washington State Department of Natural Resources
	Table 4-4, page 4-39: Clarification: the Aquatic Land Management Act applies only to State Owned Aquatic Lands.	John A. Bower, Jr	Washington State Department of Natural Resources

Category	Comment	Commenter/Source	Organization/Event
Cost, liability, or allocation	The most cost effective approach should be used to clean up the LDW.	Dave Christensen	Metropolitan Water Pollution Abatement Advisory Committee
	There have been multiple owners at my location; I'm doing the right thing. Am I liable?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	There was concern that millions of dollars will be spent to clean up the waterway but the source will not be addressed so money will be "wasted" and the waterway will become polluted again.	LDWG Briefing	Delridge Neighborhood District Council
	This adaptive management approach would not only be environmentally responsible, but would be fiscally responsible as well. As we look at the enormous task of cleaning up waterways in King County and the entire Puget Sound Basin, it is essential that we balance our finite resources of time, labor and money in the most efficient way possible. As your feasibility study shows, these efforts can become extremely expensive and it would be easy to spend an enormous portion of our limited restoration resources on a single project, even though we know Puget Sound will need additional restoration in other areas as well.	Eric Johnson	Washington Ports
	Those legal mechanisms must offer contribution protection and preserve a party's right to pursue cost recovery and/or contribution claims or other remedies against uncooperative or non-participating parties.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	We also believe that the cleanup costs and impacts to local waterfront businesses are potentially so significant that there needs to be a careful balance between a practical cleanup process and reasonable cleanup objectives.	Curtis Lesslie	Ash Grove Cement Company
	We also believe that the cleanup costs and impacts to local waterfront businesses are potentially so significant that there needs to be a careful balance between a practical cleanup process and reasonable cleanup objectives.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	We also believe that the cleanup costs and impacts to local waterfront businesses are potentially so significant that there needs to be a careful balance between a practical cleanup process and reasonable cleanup objectives.	Kevin	Alaska Marine Lines

Category	Comment	Commenter/Source	Organization/Event
Cost, liability, or allocation	We also believe that the cleanup costs and impacts to local waterfront businesses are potentially so significant that there needs to be a careful balance between a practical cleanup process and reasonable cleanup objectives.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	We also believe that the cleanup costs and impacts to local waterfront businesses are potentially so significant that there needs to be a careful balance between a practical cleanup process and reasonable cleanup objectives.	R. Stephen Wilson	Crowley Marine Services, Inc.
	We also believe that the cleanup costs and impacts to local waterfront businesses are potentially so significant that there needs to be a careful balance between a practical cleanup process and reasonable cleanup objectives.	Rod DeWalt	Douglas Management
	We also believe that the cleanup costs and impacts to local waterfront businesses are potentially so significant that there needs to be a careful balance between a practical cleanup process and reasonable cleanup objectives.	Ron Altier	Jorgensen Forge Corporation
	We generally support the assumptions used to evaluate the restoration timeframes and costs associated with each of the cleanup alternatives. Further, we agree that attempting to actively manage all areas currently showing chemical concentrations above the screening levels, regardless of the exceedance factors, will result in lower overall benefits, grossly disproportionate costs (approximately \$500 million to greater than \$1 billion), and significantly longer restoration timeframes (from 25 to 43 years) relative to the remedy identified in the adaptive management framework.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	We generally support the assumptions used to evaluate the restoration timeframes and costs associated with each of the cleanup alternatives. Further, we agree that attempting to actively manage all areas currently showing chemical concentrations above the screening levels, regardless of the exceedance factors, will result in lower overall benefits, grossly disproportionate costs (approximately \$500 million to greater than \$1 billion), and significantly longer restoration timeframes (from 25 to 43 years) relative to the remedy identified in the adaptive management framework.	R. Stephen Wilson	Crowley Marine Services, Inc.
	We generally support the assumptions used to evaluate the restoration timeframes and costs associated with each of the cleanup alternatives. Further, we agree that attempting to actively manage all areas currently showing chemical concentrations above the screening levels, regardless of the exceedance factors, will result in lower overall benefits, grossly [sic]	Ron Altier	Jorgensen Forge Corporation

Category	Comment	Commenter/Source	Organization/Event
Cost, liability, or allocation	<p>We generally support the assumptions used to evaluate the restoration timeframes and costs associated with each of the cleanup alternatives. Further, we agree that attempting to actively manage all areas currently showing chemical concentrations above the screening levels, regardless of the exceedance factors, will result in lower overall benefits, grossly disproportionate costs (approximately \$500 million to greater than \$1 billion), and significantly longer restoration timeframes (from 25 to 43 years) relative to the remedy identified in the adaptive management framework.</p>	<p>Curtis Lesslie</p>	<p>Ash Grove Cement Company</p>
	<p>We generally support the assumptions used to evaluate the restoration timeframes and costs associated with each of the cleanup alternatives. Further, we agree that attempting to actively manage all areas currently showing chemical concentrations above the screening levels, regardless of the exceedance factors, will result in lower overall benefits, grossly disproportionate costs (approximately \$500 million to greater than \$1 billion), and significantly longer restoration timeframes (from 25 to 43 years) relative to the remedy identified in the adaptive management framework.</p>	<p>Kevin Anderson</p>	<p>Alaska Marine Lines</p>
	<p>We generally support the assumptions used to evaluate the restoration timeframes and costs associated with each of the cleanup alternatives. Further, we agree that attempting to actively manage all areas currently showing chemical concentrations above the screening levels, regardless of the exceedance factors, will result in lower overall benefits, grossly disproportionate costs (approximately \$500 million to greater than \$1 billion), and significantly longer restoration timeframes (from 25 to 43 years) relative to the remedy identified in the adaptive management framework.</p>	<p>Rod DeWalt</p>	<p>Douglas Management</p>
	<p>We support the selection of a waterway-wide remedy that incorporates all applicable, proven technologies at individual sites so that protection of human health and the environment is achieved in the most implementable but cost-effective, manner possible.</p>	<p>Curtis Lesslie</p>	<p>Ash Grove Cement Company</p>
	<p>We support the selection of a waterway-wide remedy that incorporates all applicable, proven technologies at individual sites so that protection of human health and the environment is achieved in the most implementable but cost-effective, manner possible.</p>	<p>E. Gilbert Leon Jr.</p>	<p>Earl M. Jorgensen Company</p>

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Cost, liability, or allocation	We support the selection of a waterway-wide remedy that incorporates all applicable, proven technologies at individual sites so that protection of human health and the environment is achieved in the most implementable but cost-effective, manner possible.	Kevin Anderson	Alaska Marine Lines
	We support the selection of a waterway-wide remedy that incorporates all applicable, proven technologies at individual sites so that protection of human health and the environment is achieved in the most implementable but cost-effective, manner possible.	R. Stephen Wilson	Crowley Marine Services, Inc.
	We support the selection of a waterway-wide remedy that incorporates all applicable, proven technologies at individual sites so that protection of human health and the environment is achieved in the most implementable but cost-effective, manner possible.	Rod DeWalt	Douglas Management
	We support the selection of a waterway-wide remedy that incorporates all applicable, proven technologies at individual sites so that protection of human health and the environment is achieved in the most implementable but cost-effective, manner possible.	Ron Altier	Jorgensen Forge Corporation
	What is the difference between the letters (104E; 'Notice Letter'; NRDA letters)?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	When will we know what the cost of cleanup will be, and who will be responsible?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	When will you have issued all information request letters (104E)?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	When will you offer/explore de minimis settlements?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)

Category	Comment	Commenter/Source	Organization/Event
Disposal	(Section 7.1.3.1 and) CAD/CDF: The Tribe and other stakeholders have expressed significant concern with the inclusion of one or more CAD/CDFs in the LDW, and it was our understanding that these had been (and should be) eliminated from consideration in the FS. In addition to impacting tribal treaty rights, these options do not remediate contamination, they concentrate contamination. Also, regarding the CAD option, the FS gives the impression that with a CAD, dredging production rates will not be constrained. This type of approach is guaranteed to result in contamination of areas outside of the CAD. Any costs saved by pushing production and placement rates during the dredging will be lost or offset in remediating adjacent areas.	Denice Taylor	The Suquamish Tribe
	CAD is not an acceptable option here, as per agreement among the stakeholders and agencies more than 2 years ago.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Disposal of dredged spoils at RRL is a great example of an opportunity to further regional cooperation through responsible environmental planning and management by providing a safe and efficient eastern Washington based solution to support the state's commitment to restoring the pristine natural beauty and health of the Puget Sound.	David Sauter	Klickitat County
	Klickitat County, as the host jurisdiction to Allied Waste's Roosevelt Regional Landfill (RRL), is supportive of contaminated dredge sediment disposal from the Duwamish Waterway.	David Sauter	Klickitat County
	On page 7-10, the FS includes a discussion regarding a small Confined Disposal Facility (CDF) The Duwamish has never been a good location for a CDF, and as for the CAD, above, stakeholders and agencies agreed to eliminate CDFs from consideration during previous document productions. There is no reason to include the CDF other than to explain at the beginning that it is not under consideration and explain why.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Pg. 8-34 to 8-35, Description of Alternative 2 CAD at Harbor Island: A construction complication not mentioned is the historic subsurface contamination of Harbor Island, particularly with NAPL. Dredging to construct a CAD in proximity to this industrial site could encounter concentrated contaminants requiring additional remedial actions.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Disposal	The moisture in dredged spoils accelerates the biodegradation of municipal solid waste in the landfill. Acceleration of the biodegradation process has the following benefits: waste will be stabilized in a shorter period of time and the post-closure care time period; should be able to be decreased because of this; landfill gas generation rates will be increased and will enable the green power produced by the landfill gas-to-energy plant to increase; waste densities within the landfill will be increased and less lined area will be required to dispose of an equivalent amount of waste; and the period of time during which organics within the waste are a threat to human health and the environment will be significantly reduced.	David Sauter	Klickitat County
	There is concern that neighboring states will not allow the hazardous material dredged from the site to travel across state lines. For example, if the project intends to dispose of the material in Oregon.	LDWG Briefing	Delridge Neighborhood District Council
	There is concern that there is not capacity in hazardous material facilities for the volume of waste that will be dredged.	LDWG Briefing	Delridge Neighborhood District Council
	Waste treatment before disposal.	LDWG Briefing	Georgetown Community Council
	(Section 7.1.1 and 8.3.3.1) Dredging: The assumptions that only partial dredging (and capping) will be necessary when contamination is over four feet thick and that the maximum volume that may require active management is determined by depth to native alluvium (which assumes native alluvium is clean and that will not act as an ongoing source of contamination) should be re-evaluated in light of the Boeing Plant 2 findings.	Denice Taylor	The Suquamish Tribe
	Before considering additional dredging beyond the most contaminated sites, the environmental, economic and social costs of more extensive dredging should be weighed against any benefits	Dave Christensen	Metropolitan Water Pollution Abatement Advisory Committee
	d.) Dredging to remove sediments contaminated above RALs, or containment capping, or a combination of dredging and containment capping are options for remaining areas needing remedial action.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Disposal	Dredging residuals should be managed through the process and should not be considered as a source of contamination; the Green/Duwamish River is background for the LDW.	Denice Taylor	The Suquamish Tribe
	Dredging, therefore, has proven to be an effective means of permanently reducing PCB concentration in the Duwamish, whereas natural recovery has not at any site across the country.	Thea Levkovitz	Duwamish River Cleanup Coalition
	DSI generally supports the detailed evaluation of removal implementation provided in the Draft FS. The evaluation of removal rates, offload rates, and transportation and disposal issues needs to continue to be carried through the alternatives evaluation. This will ensure that accurate timeliness for remedies, including but not limited to removal, are established.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
Dredging	Most people in the Chamber group are not directly affected, as many have businesses up the hill in West Seattle. Talking about...dredging and hauling large amounts of contaminants, and associated truck traffic...	LDWG Briefing	West Seattle Chamber Board of Directors
	Pg. 7-19, Sec. 7.2.1 Barge Dewatering: "Dewatering mechanically dredged sediment on transfer barges prior to additional handling is an important interim management step...the water is then released back to the water body within the defined limits of the dredge operating area." Why isn't this method permissible for hydraulic dredging, if it is allowed for mechanical dredging? Is the return water, or the edge of the dredge operating area, monitored for COC concentrations, as well as for turbidity? Has there been a study of the LDW sediment to demonstrate that contaminant concentrations correlate with water column turbidity? How is it demonstrated that these discharges comply with AWQC? (Contrast this with Sec. 7.2.2: "...alternatives that involve removal and handling of (contaminated) sediment invariably generate wastewater that must be managed, treated and discharged in a manner consistent with ARARs.")	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Please provide a summary of the evidence and citations for the predicted elevated fish concentrations during dredging discussed in the draft FS.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Production rates too conservative...It is possible that periodic maximum or increased removal capacity, coupled with year-round removal and stockpiling of dredged material, could significantly shorten the overall time to completion required for each of the alternatives – a major factor in the evaluation.	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Dredging	Table 7-3, pg. 7-43 and 7-44: For the process option named Hydraulic Dredging, the last disadvantage, "limited experience with mechanical dewatering and water treatment facilities" is hard to believe, since one of the RPs is the agency that operates all of the wastewater treatment facilities for Seattle and King County. It is particularly difficult to believe in contrast this comment with the Soil Washing advantages column on the following page, which states: "mobile units available for quick set-up and take-down time". Mobile dewatering and wastewater treatment plants also are available from numerous vendors, and have the potential to be barge mounted. Numerous engineering firms have the ability to operate these "package" wastewater treatment plants.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Table 7-3, pg. 7-44: For the process option Dry Excavating, it is difficult to understand the following disadvantage (2), "Runoff water may contain high concentrations of TSS and COPCs". What run-off water? The excavated material can be directly loaded into lined trucks, railroad tankers or settling containers; or loaded onto a shallow-draft barge, as would be done for a water-based dredge. Why is this a problem for a land-based excavator and not for a water-based excavator?	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	The approach in determining dredging areas for the RA alternatives should be revised. Currently existing sediment samples are interpolated to determine dredging footprints. In some cases, large dredging footprints may be based on 3 sample locations. This conservative approach may significantly overestimate the footprints and associated cost. This approach will make dredging appear to be much more expensive than less active options. However, these footprints could be reduced during remedial design with more extensive sampling. The interpolation methods should be revised to develop more realistic footprints based on available data.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Dredging	<p>The Draft FS seems to assume that dredging will not be well controlled and that substantial re-suspension of contaminated sediments will occur and be widespread. This is curious, given the document's dismissal of techniques specifically designed to control and minimize suspension and spillage of dredged material (e.g., silt curtains and specialized environmental dredges). With environmental bucket dredges and silt curtains, experience suggests re-suspension rates should be less than 0.5 % of the fine fraction. There are data available on this matter, and the Corps of Engineers provides information on their web site.</p>	Thea Levkovitz	Duwamish River Cleanup Coalition
	<p>The FS does not carry through any discussion of hydraulic dredging. The FS simply states that there is too much water in the hydraulically dredged sediments and not enough space to handle it once dredged. However, a more thorough investigation of current dredging practices indicates that hydraulic and other environmental dredging are in fact feasible options for the Duwamish site.</p>	Thea Levkovitz	Duwamish River Cleanup Coalition
	<p>The FS fails to examine the re-suspension of sediments in a meaningful way. The technical literature on dredging and the ACOE website and library have reports and results of re-suspension, including the results of modeled distributions and rates for several different situations.</p>	Thea Levkovitz	Duwamish River Cleanup Coalition
	<p>The FS needs to explicitly indicate the environmental bucket as the type of dredge discussed and carry this technology forward through the entire evaluation. There is no explicit mention of using environmental bucket dredges, widely recognized as the current and best technology for dredging contaminated sediments with a clamshell type dredge. The text does mention various features of the environmental bucket equipment, including operating guidelines, but fails to identify an environmental bucket as the name/type of equipment.</p>	Thea Levkovitz	Duwamish River Cleanup Coalition
	<p>The issue of increased PCB concentrations after dredging is also not clearly represented. Section F.2.2.2.1: Duwamish/Diagonal, wholly discounts the effects of sediment dredging by attributing the decline in total PCB concentrations after dredging to natural recovery processes. Section F7.4: Biological Endpoints, confuses the issue by making a point that source control has been a primary means of PCB concentration decline since the 1980s and indicating that recent rises may be the result of dredging.</p>	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Dredging	The permitted berthing areas will likely be dredged within the next 10 years to maintain our permitted depths (-25 feet MLLW) and we expect to perform this work under the Dredged Material Management Program (DMMP) process.	Curtis Lesslie	Ash Grove Cement Company
	The presence of debris in the Duwamish is cited as an issue because excess debris, large rocks, etc. can clog or jam the dredge. With current technologies, considerable amounts of debris do not automatically preclude the option of hydraulic dredging. The problem with debris may be solved with screens over the intake for the dredge, for example, used to prevent debris from damaging the equipment.	Thea Levkovitz	Duwamish River Cleanup Coalition
	We also urge a careful examination of the assumption that the construction "fish window" available for dredging will remain at 120 days.	Dow Constantine	Water Resource Inventory Area 9 (WRIA) Watershed Ecosystem Forum
	We generally support the detailed evaluation of removal implementation provided in the Draft FS. The evaluation of removal rates, offload rates, and transportation and disposal issues needs to continue to be carried through the alternatives evaluation so that accurate timeliness for remedies including removal are established.	Kevin Anderson	Alaska Marine Lines
	We generally support the detailed evaluation of removal implementation provided in the Draft FS. The evaluation of removal rates, offload rates, and transportation and disposal issues needs to continue to be carried through the alternatives evaluation so that accurate timeliness for remedies including removal are established.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	We generally support the detailed evaluation of removal implementation provided in the Draft FS. The evaluation of removal rates, offload rates, and transportation and disposal issues needs to continue to be carried through the alternatives evaluation so that accurate timeliness for remedies including removal are established.	Rod DeWalt	Douglas Management
	We generally support the detailed evaluation of removal implementation provided in the Draft FS. The evaluation of removal rates, offload rates, and transportation and disposal issues needs to continue to be carried through the alternatives evaluation so that accurate timeliness for remedies including removal are established.	Ron Altier	Jorgensen Forge Corporation

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Dredging	We generally support the detailed evaluation of removal implementation provided in the Draft FS. The evaluation of removal rates, offload rates, and transportation and disposal issues needs to continue to be carried through the alternatives evaluation so that accurate timeliness for remedies including removal are established.	Curtis Lesslie	Ash Grove Cement Company
	We generally support the detailed evaluation of removal implementation provided in the Draft FS. The evaluation of removal rates, offload rates, and transportation and disposal issues needs to continue to be carried through the alternatives evaluation so that accurate timeliness for remedies including removal are established.	R. Stephen Wilson	Crowley Marine Services, Inc.
Ecological risk	F-25 Tissue Concentrations: "It is noted that short-term PCB releases associated with more recent contaminated sediment dredging projects (e.g., Duwamish/Diagonal EAA, East Waterway, Lockheed, and Todd Shipyards) may have resulted in a temporary increase in fish tissue PCB concentrations in 2004, returning fish tissue PCB levels back to historical levels (Patmont 2008). However, more recent monitoring data indicate that fish tissue total PCB concentrations have since declined to close to pre-dredging levels (Windward 2008)." As NOAA and others have repeatedly pointed out, presenting PCB concentrations in fish on a wet weight basis for trend analysis, particularly when comparing fish collected in the spring with very low lipid content (pre-2004) with fish collected in late summer (2004-7) with much higher lipid content, is misleading at best. If the data are presented on a lipid-basis, the apparent trend is a reduction in English sole fillet concentrations post-dredging, including fish collected later in the same year dredging was completed. [see Figure 1].	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Ecological risk	F-46: "However, elevated fish tissue levels have been recently documented in the LDW (relative to other years) likely caused by exposure to dredge residuals during removal operations (see Section 9). The state-of-art dredging operations have much improved over the past several years as it relates to precision dredging and containment, but a small portion of resuspended, fine-grained material will always escape downstream from the dredging operations. Therefore, although natural recovery is occurring, fish tissue concentrations may not always reflect these improvements, because dredging residuals affect fish tissue over the short term." As discussed above, the data indicate that any short-term effects were over within the first year. Lipid-normalized results for English sole indicate recovery 7 months post-dredging and continued decline in subsequent years.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Figure F-16 Trends in English Sole Muscle Tissue Total PCBs in LDW and Nisqually/Carr Reference Area: There appears to be in error in the wet weight concentration for English sole fillet in 2004 the highest measured concentration in English sole fillet in 2004 was 2010 ng/g wet wt., much lower than the approximate 3500 ng/g shown in the figure.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Pg. 9-15: "Fish and shellfish tissue concentrations are not assumed to decrease from baseline concentrations during dredging operations and are assumed to require a post-construction recovery period of roughly 3 years to equilibrate to post-remedial conditions.9 [9 Elevated contaminant concentrations in fish tissue during and for multiple years following dredging operations are well documented (Floyd Snider 2007b; BBL 1995a and 1995b; Bauman and Harshbarger 1998)]." The assumption of a 3-year post-construction recovery time for fish and shellfish tissue concentrations is not warranted based on the documentation cited. The Floyd Snider 2007b report addresses Year 0 monitoring for remediation conducted in 2006 and appears to provide no relevant tissue data. BBL 1995a (Grasse River) and 1995b (Sheboygan River) both were pilot projects that only addressed a portion of the overall contaminated sediment. Recent studies on the Grasse River (Connolly 2007) and Bryant Mill Pond in the Kalamazoo River (Kern, personal comm.) show reductions in Year 1 post-removal fish tissue concentrations. English sole fillet data from the Lower Duwamish in the vicinity of Duwamish Diagonal dredging project demonstrate concentration reductions in Year 0 (2004) and additional reductions following additional remediation in 2005 and 2007 (see Figure 1).	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Ecological risk	Pg. 9-5: The assumption of a 3 year post-construction recovery period for fish and shellfish tissue concentrations is not warranted. Recent data from several sites including the Grasse River (Connolly et al 2007), Kalamazoo River (Kern et al 2009), the Queensbury site on the Upper Hudson River (Field et al 2007), and the Duwamish River (Figure 1) indicate that any increases in fish PCB concentrations are short-term and reduction in fish tissue PCB concentrations often occurs in Year 1 post-removal or sooner.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Table 7-3, pg. 7-40: Summary Assessment of Effectiveness, Implementability and Cost....: For the process option named, Access/Deed Restrictions the "Disadvantages" column should contain the same language for ecological receptors as it does for the Fish and Shellfish Consumption Advisories, i.e., "Not effective for ecological receptors because COPCs remain in place".	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Table 7-3, pg. 7-41: For the process option named Resuspension and Transport, the disadvantages should be revised to indicate (2)"facilitates PCB contamination of the marine foodchain".	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
ENR/ thin layer capping	(Section 5.3.2) The evaluation of the applicability of ENR relies on a thicker than normal sand layer and uses replacement values that are not reflective of upstream sediment values. ENR may be considered as part of some remedial actions, but should not be considered in areas subject to ship scour.	Denice Taylor	The Suquamish Tribe
	(Section 7.1.6 and 8.3.3.3) ENR: If the success of ENR depends on a thickness great enough to "armor" the substrate, the area should be considered for dredging/capping rather than ENR. ENR should not be considered for beaches or areas subject to scour.	Denice Taylor	The Suquamish Tribe
	A discussion is needed differentiating the permanence and reliability between a 3 ft thick containment cap and a 6 inch ENR layer. A 6 inch ENR layer should not be confused with containment capping. Since the STM only mixes the top 10 cm (4 inches) of sediment, and has no provision for contaminant migration through a cap, the STM will equate ENR with containment capping. This is a significant uncertainty (and bias) that should be noted in discussion of the model projections.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
ENR/ thin layer capping	Alternative 3 is characterized as ‘emphasizing containment’, but the primary emphasis is ENR. ENR is not containment or isolation and may be more aptly described as sediment dilution. The description of Alternative 3 and text throughout should not imply that ENR is a form of containment.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Pg. 8-5, Sec. 8.1.5.3, Alternative 3 notes that “active remediation extends laterally to the RAL boundary...the remainder of the SMA also receives ENR consistent with the engineering constraints of the technology.” No engineering constraints were noted for ENR in Table 7-2b or Table 7-3.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Section 2.6.1, page 2-44, This section describes the early action at Duwamish/Diagonal and explains that “Over time, the natural process of bioturbation is expected to mix this clean sand into the underlying sediment containing PCBs.” This explanation of “enhanced natural recovery” quite clearly explains that the process is one of mixing the contaminants, not covering contamination to isolate and not providing a means of detoxifying the contaminants. The total mass of PCBs remains in the sediments without any lessening and seemingly with greater exposure to the overlying water and benthos as the mixing takes place.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Thin-layer caps intended to encourage natural breakdown processes, unfortunately, are ineffective for persistent toxins such as PCBs, dioxins, arsenic and other metals. These chemicals are either elemental	Thea Levkovitz	Duwamish River Cleanup Coalition
FS Format/ Readability	(Section 10.2.1.2) There is no discussion of post clean up monitoring (appendix documents were not distributed to all stakeholders that received copies of the main body of the document). If the document is not stand alone (which apparently it is not) then ALL information for review needs to be provided with adequate time for review.	Denice Taylor	The Suquamish Tribe
	DNR is concerned that this report relies on previous documents by merely citing them, and is not a stand alone document. It would be appropriate for the report to add a paragraph or two with those citations to grasp fully the flow of information.	John A. Bower, Jr	Washington State Department of Natural Resources
	ES-14, The figure illustrating remedial technologies should be revised. Enhanced natural recovery is not containment. Rather, it’s an accelerated version of monitored natural recovery. NOAA recommends replacing the MNR category with a Natural Recovery category. MNR and ENR should be options within this category. ENR should not be confused with containment.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
FS Format/ Readability	ES-18: Pie charts are misleading.	Thea Levkovitz	Duwamish River Cleanup Coalition
	ES-4: "The LDW is an engineered waterway built in the early 1900s to serve developing industries in Seattle." Should be rephrased to an "existing river was modified...."	Thea Levkovitz	Duwamish River Cleanup Coalition
	ES-4: This paragraph should include a sentence that describes ongoing restoration sites and efforts (rather than "remnant habitat."	Thea Levkovitz	Duwamish River Cleanup Coalition
	ES-5: This entire page is misleading in its approach. The full extent of problem is not well described and even basic items like the actual number of early actions sites appears to be incorrect.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Figure 7-7, pg. 7-56: Surface Sediment PCB Trends at Slip 4 EAA. The graphical treatment of these data is very misleading. Careful analysis indicates there are only 6 samples in 2006, 4 of which are clustered outside the EAA and none of which were located near previous samples. This analysis is disingenuous and should be removed from the document.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Figure ES-2: This figure is misleading in that the ranges chosen for depiction of concentrations are so limited.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Organization of the document made review challenging. Not only was it difficult to follow what information applied to each clean up option but changes in format/text between documents made review an arduous task when trying to reference previous comments to ensure that issues have been adequately addressed.	Denice Taylor	The Suquamish Tribe
	P 2-26: The bank erosion section is woefully deficient.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Table 8-5: Again, this table is too generalized to be meaningful for each site.	Thea Levkovitz	Duwamish River Cleanup Coalition
	(page 2-9) The fish windows have changed as of April 09. Are the dates included in the FS current? My understanding is that for the Duwamish system the work window is August 1 – August 31. These dates do need to be verified with the local habitat biologist as they are sometimes adjusted depending on the specifics of a project.	Denice Taylor	The Suquamish Tribe

Category	Comment	Commenter/Source	Organization/Event
Habitat (and specific organisms/ animals)	<p>(page 3-5) Delete the last paragraph on this page (it extends on to the next page). The tribe objects to the use of "considerable" uncertainty and the references to quality and quantity of shellfish habitat currently present.</p>	Denice Taylor	The Suquamish Tribe
	<p>Successful recovery of Chinook salmon in Puget Sound under the Endangered Species Act requires the restoration/rehabilitation of estuarine ecosystems throughout the region, including the Duwamish River. Timely and enduring clean-up of contaminated sediments and stormwater in the Lower Duwamish River are critical to achieving recovery of Chinook salmon populations in our watershed.</p>	Dow Constantine	Water Resource Inventory Area 9 (WRIA) Watershed Ecosystem Forum
	<p>The Lower Duwamish is a critical link in the string of aquatic habitats that make up the Green/Duwamish Watershed...Most of the Lower Duwamish Superfund area provides or could provide transition zone habitat and the stretch from River Mile 3.0 to 5.5 - the upper part of the Superfund area - is likely to be a core area for transition zone habitat.</p>	Dow Constantine	Water Resource Inventory Area 9 (WRIA) Watershed Ecosystem Forum
	<p>The potential impacts on juvenile and/or adult fish include but probably are not limited to: Dredging creating turbidity and short-term higher concentrations of bio-available chemicals in the water column and prey species. Dredging activities (noise, light, dredging equipment) altering migration patterns. The cumulative impacts of the activities described in the preceding two bullets for a period of 15-30 years for a period of up to 120 days each year. The differing durations of availability of bio-available chemicals in the food web depending on the alternative selected.</p>	Dow Constantine	Water Resource Inventory Area 9 (WRIA) Watershed Ecosystem Forum
	<p>We encourage EP A and Ecology to evaluate the impacts of the various cleanup alternatives on salmonids when making the decision about a preferred alternative.</p>	Dow Constantine	Water Resource Inventory Area 9 (WRIA) Watershed Ecosystem Forum
	<p>Within the overall approach of cleaning the "worst first," prioritization for cleanup within groups of similarly-contaminated sites should go to: Sites that are exclusively or largely shallow water habitat, which are favored over deeper water habitats by juvenile salmonids. Sites farthest upstream, which are more likely to provide transition zone habitat for juvenile salmonids.</p>	Dow Constantine	Water Resource Inventory Area 9 (WRIA) Watershed Ecosystem Forum

Category	Comment	Commenter/Source	Organization/Event
Human health risk	(Section 4) The draft FS assumes that SWACs are the appropriate measure for the RAO 1: Reduce human health risks associated with the consumption of resident LDW seafood by reducing surface sediment concentrations of COCs to protective levels, with surface sediment defined using the SMS definition of the top 10 centimeters as the biologically active zone for benthic organisms.	Denice Taylor	The Suquamish Tribe
	(Section 4.1.1) RAO 1 relates to human health impacts via seafood consumption. Although a PRG will need to be established for sediment concentrations, there should also be a tissue-related remediation goal.	Denice Taylor	The Suquamish Tribe
	(Section 6.1) The report states that the AOPC "represents the area of surface sediment that has potentially unacceptable risk" and will likely require remediation. The definition assumes contaminated subsurface sediments (below 10 centimeters) do not present potentially unacceptable risk, if the contaminated area is not subject to scour. This definition is not protective of human exposures via clamming, or of resources that use a deeper sediment profile.	Denice Taylor	The Suquamish Tribe
	(Section 7.2.4.4) Information devices are not considered effective or practical for subsistence harvesters and are also not protective of ecological receptors.	Denice Taylor	The Suquamish Tribe
	(Tables 3-3a and 3-3b) Suquamish data needs to be included.	Denice Taylor	The Suquamish Tribe
	Adequate cleanup of this site is a necessary step for the protection of the health of tribal fishers exercising their treaty rights in these areas and for the protection of the aquatic ecosystem, which contributes to the health of the fishery itself.	Glen	Muckleshoot Indian Tribe
	All alternatives need to be designed and transparently evaluated based on their resulting reductions in ecological and human health risks. Rather than relying solely on SQS and CSL (benthic measures) as targets for remedial goals, eco- and human health risk levels (i.e., 10-5, 10-6) should be used as target remedial goals for the development of alternatives. Likewise, the residual risks remaining after implementation of each alternative need to be clearly presented, as discussed in section 1.d, above.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Concern about safety of fish from the river (salmon).	LDWG Briefing	West Seattle Chamber Board of Directors

Category	Comment	Commenter/Source	Organization/Event
Human health risk	Institutional controls are discussed as part of several of the proposed alternatives...fishing advisories not effective for certain segments of the population (e.g., low-income or homeless anglers who cannot afford other sources of food).	Thea Levkovitz	Duwamish River Cleanup Coalition
	LDWG is not protecting human health or protecting the environment by relying on methods designed to clean up areas with lower concentrations of chemicals than those found in the Duwamish.	Thea Levkovitz	Duwamish River Cleanup Coalition
	People are still fishing in the Waterway. Can you explain more about salmon and why it is ok to eat them?	LDWG Briefing	Delridge Neighborhood District Council
	Section 4.1.1 Remedial Action Objectives, RAO 1 on page 4-3 refers to the deeper sediments being isolated from exposure pathways to the extent that fish are unaffected by deeper contaminated sediments that remain in place and undisturbed. This conclusion is not supported by all the contaminated sites. The deepest sediments (>4-6 feet) may be well isolated, so long as undisturbed.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The remaining ecological and human health risks associated with each alternative is the single most important piece of information for informed public review and evaluation of the alternatives. The draft FS's discussion of risks remaining under each alternative is difficult to locate and to understand. This information must be provided in a clear format with the basic information presented for each alternative, such as in the summary in Table ES-1 that shows acreage and cost associated with each alternative, and Table ES-2 that shows the Remedial Action Levels (RALs) for the risk-driver chemicals.	Thea Levkovitz	Duwamish River Cleanup Coalition
	This document fails to adequately address ongoing health risks to the river's natural and human communities who are most at risk, most notably its "environmental justice" communities – tribes, immigrant/subsistence fishermen, and low-income residents.	Thea Levkovitz	Duwamish River Cleanup Coalition
Mitigation	Coordination of Superfund Cleanup with NRDA Restoration- The WRIA 9 Salmon Habitat Plan: Making Our Watershed Fit for a King (2005) recommends: Policy DU2: Encourage the Natural Resource Trustees to develop Natural Resources Damages Assessment (NRDA) approaches that allow habitat creation/restoration concurrent with Superfund cleanup of the Lower Duwamish Waterway. This will accelerate the rate at which mitigation occurs and be more efficient.	Dow Constantine	Water Resource Inventory Area 9 (WRIA) Watershed Ecosystem Forum

Category	Comment	Commenter/Source	Organization/Event
Monitored natural recovery	(ES – 30) The assumption that because the Duwamish is a depositional system and clean up alternatives other than natural recovery are not needed should be deleted. It has been 10 years since this process started and the waterway is not clean.	Denice Taylor	The Suquamish Tribe
	(Section 7.1.5 and 8.3.3.5) MNR: Allowing an additional 10 years for recovery after remediation construction, in areas that are already in the process of natural recovery, is not appropriate. If an area is designated for MNR, the recovery period should be 10 years at most, with the baseline monitoring as year 0. In addition, it is likely that any adaptive management decisions will be administratively difficult, depending on what wording is used in the ROD.	Denice Taylor	The Suquamish Tribe
	“Monitored natural recovery” in the LDW is predominantly burial with cleaner sediment, generally derived from the upstream river, which occurs regardless of any remedial action. MNR may not be effective for reducing contaminant concentrations at all locations due to hydrodynamic effects from pilings, islands, bridge abutments, piers, sinuosities, dolphins, propeller wash, boat wakes, and bed irregularities. Relying on MNR after the remedial actions to attain PRGs means waiting 10+ years to determine whether the remedy is complete and risks have been reduced to PRGs; means having to intensively sample specific areas again, with the added expense of that monitoring; and having to negotiate and mobilize for an appropriate action if the MNR does not occur as predicted. EPA guidance requires designing sampling plans as part of the remedial design. Thus, including MNR as part of the remedy also delays all of the remedial actions while the MNR sampling and analysis plan is negotiated. The plan also includes contingencies if there are areas that do not meet the expected PRG. Thus, if MNR is not part of the remedy (except for the natural recovery that occurred between the 2001 CERCLA listing and 2011 pre-design sampling), remedial actions can begin sooner. In addition, monitoring to determine whether MNR met the PRGs a decade after remedial action completion, and any contingent remedial actions, is eliminated.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	According to F.1.3: Conceptual Site Model of Natural Recovery in the LDW, active mixing in the upper 10 cm in the biologically active zone takes place. The report states that this plays a role in natural recovery by causing newer sediments to mix with older sediments. This mixing approach does not make sense if we are also to be concerned about scour by boats and high tide events that would move and displace depositional material.	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Monitored natural recovery	Appendix F covers the evidence of natural recovery as a usable method of cleanup for the Lower Duwamish. Monitored natural recovery simply relies on burial rather than removal, which only alleviates the current, immediate contamination issue. This approach is short sighted and relies heavily on assumptions that natural occurrences such as storms, extreme high tides and seismic activity, as well as man-made disturbances, will not disrupt the remediation process. The effort to remediate chemicals of concern found in the Duwamish River cannot be accomplished by sedimentation alone.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Appendix F does not list the congeners, purportedly resulting from the breakdown, nor does it give a detailed explanation for how this breakdown is occurring. It seems highly unlikely, or at least suspect, that PCBs are undergoing chemical transformations solely by ongoing sedimentation.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Appendix F: The analyses presented in this section attempt to make the best of very limited data of the type needed to assess temporal changes in sediment concentrations. The interpretation of these data appears biased to support the authors' hypothesis that natural recovery is taking place throughout the LDW at a rapid rate. Alternative ways of looking at the data are ignored and observations that do not support the hypothesis are explained away. The information supporting natural recovery is particularly sketchy for the STM middle reach (RM 2.2 - 4.0), the area with 5 un-remediated EAAs and identified by the STM as an area of mixed deposition and erosion.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Are there dioxins and furans in locations you've slated for natural recovery?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	DSI supports the use of the monitored natural recovery ("MNR") and enhanced natural recovery ("ENR") in areas where these technologies can result in short- and long-term protection of human health and the environment in a reasonably comparable timeframe.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	Explain what is meant by Monitored natural recovery?	LDWG Briefing	Delridge Neighborhood District Council

Category	Comment	Commenter/Source	Organization/Event
Monitored natural recovery	In addition, monitored natural recovery for the examples cited in Appendix F has not been either (1) in place long enough to indicate successful cleanup, based on the issue dates of respective Records of Decision or (2) been the sole selected remediation remedy. Consequently, MNR alone cannot be attributed with the successes in cleanup at these sites.	Thea Levkovitz	Duwamish River Cleanup Coalition
	None of the case studies or examples cited in Appendix F has been in place for the time required to call each respective remediation successful (Table 1).	Thea Levkovitz	Duwamish River Cleanup Coalition
	Table 7-2b, Monitored Natural Recovery and Enhanced Natural Recovery. This table fails to indicate the costs associated with the “intense” monitoring needed to demonstrate consistent MNR. It incorrectly equates the costs of MNR to those in Table 7-2a, No Action and Institutional Controls.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	The implications of heavier rainfall in the Seattle area on the Duwamish River cleanup are twofold: (1) The FS relies on the combination of source control and MNR as a remediation strategy. Increased precipitation and flooding can overload storm drains and create sewage overflows, both of which will amplify land-based pollution inputs to the river; and (2) increased rainfall often results in flooding events that increase the velocity of the river’s flow, as well as the amount of debris transported through the watershed. These two factors create a high probability of sediment disruption and scour that can result suspension and recontamination of the river if MNR is the dominant remedy selected.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The information provided in Appendix F repeatedly attributes the decreases in PCB concentrations solely to natural recovery when in fact several remediation strategies are concurrently affecting the rate of reduction as well as the health of the biota.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The long-term effectiveness of MNR is countered by many of the same natural processes that it wishes to exploit. In most cases MNR is not a desirable remedial option for persistent organic pollutants, particularly if the objective is to reduce fish tissue concentrations below levels that require consumption advisories, as every source from the Remedial Action Objectives to the Governor of Washington has stated.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The majority of the information in Appendix F is not supported by technical data and the sites listed do not share major site characteristics with the Duwamish River.	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Monitored natural recovery	The natural process analysis for the site should take into account that leaving the driver chemicals in sediment may result in degradation products of similar toxicity to the original chemicals. If and when these sediments are disturbed through anthropogenic or natural events, the resulting re-suspension and recontamination can be expected to be no less toxic.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The problem with MNR is twofold: that there is no evidence that it works to either a) cover the sediments with a sufficient layer of clean sediment to provide permanent containment, nor b) isolate the contamination to the point where the chemicals do not move into the aquatic food web.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The term "natural recovery" (NR) refers to the passive reliance on the processes of sedimentation in the river to "clean up" contamination by covering contaminated sediments with relatively clean, or less contaminated sediment.... Unfortunately, in the Duwamish River, most of the key contaminants of concern cannot be broken down by these other methods, leaving burial through sedimentation the only applicable function.	Thea Levkovitz	Duwamish River Cleanup Coalition
	There is little information on the long-term effectiveness of MNR. Preliminary data indicate that these techniques may not be as effective as predicted.	Thea Levkovitz	Duwamish River Cleanup Coalition
	We encourage you to recognize science and modeling that shows how natural recovery plays a key role in the preservation of the Lower Duwamish ecosystem. As a depositional river, the Lower Duwamish continues to repair itself and we would be wise to support this natural recovery. Rather than engaging in more expensive options that may do more harm than good over time, we encourage you to adopt an adaptive management approach that involves removing the worst materials first and then determining next steps based on diligent scientific monitoring.	Eric Johnson	Washington Ports
	We support the use of the monitored natural recovery (MNR) and enhanced natural recovery (ENR) in areas where these technologies can result in short- and long-term protection of human health and the environment in a reasonably comparable timeframe as active remediation.	Curtis Lesslie	Ash Grove Cement Company
	We support the use of the monitored natural recovery (MNR) and enhanced natural recovery (ENR) in areas where these technologies can result in short- and long-term protection of human health and the environment in a reasonably comparable timeframe as active remediation.	Ron Altier	Jorgensen Forge Corporation

Category	Comment	Commenter/Source	Organization/Event
Monitored natural recovery	We support the use of the monitored natural recovery (MNR) and enhanced natural recovery (ENR) in areas where these technologies can result in short and long-term protection of human health and the environment in a reasonably comparable timeframe as active remediation.	R. Stephen Wilson	Crowley Marine Services, Inc.
	We support the use of the monitored natural recovery (MNR) and enhanced natural recovery (ENR) in areas where these technologies can result in short- and long-term protection of human health and the environment in a reasonably comparable timeframe as active remediation.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	We support the use of the monitored natural recovery (MNR) and enhanced natural recovery (ENR) in areas where these technologies can result in short- and long-term protection of human health and the environment in a reasonably comparable timeframe as active remediation.	Kevin Anderson	Alaska Marine Lines
	We support the use of the monitored natural recovery (MNR) and enhanced natural recovery (ENR) in areas where these technologies can result in short- and long-term protection of human health and the environment in a reasonably comparable timeframe as active remediation.	Rod DeWalt	Douglas Management
	Will you give the same consideration of natural recovery to open water disposal sites?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
Navigation channel	(page 2-9) Flooding implies the system is not functioning properly. Prior to the 20th century "channel migration" was a common occurrence. Channel migration is a natural function of stream/river systems.	Denice Taylor	The Suquamish Tribe
	(Section 5.3.1) It is misleading to state that "vessel power high enough to scour sediment deeper than 10 cm is infrequently used", considering tug operations in berthing areas that occur on a routine basis.	Denice Taylor	The Suquamish Tribe
	b.) The navigation channel must be maintained at the appropriate depth, which discourages containment capping. Dredging is problematic because the USACE does not like to leave dredged depressions which may become traps for (contaminated) sediment. The navigation channel may be the best location for ENR, as the navigation channel is generally depositional. ENR also can be done relatively quickly, reducing the duration of construction interference with waterway use.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Navigation channel	<p>Chapter 7, Section 7.2.4.1, page 7-24 (Washington State Department of Natural Resources (WDNR) Aquatic Lease. This sub-section appears to be misstitled. Except for very small segments of the LDW CERCLA Site, the Port of Seattle owns the aquatic lands in the Duwamish Waterway. These lands were obtained from Commercial Waterway District No.1 of King County in 1963. These aquatic lands are not State Owned Aquatic Lands subject to Title 79 RCW, but rather to Title 53 RCW-or statutes relating to the powers and authorities of Port Districts. This section needs to be entirely reworked, and references to Port Ownership and Management authorities to implement institutional controls within the waterway should reference Title 53 RCW, including authorities to regulate anchorage areas above and beyond U.S. Coast Guard requirements; to control of vessel speed and wakes; to enter into restrictive covenants; to enter into proprietary documents other than leases (i.e. easements; and to restrict access to the beds of the waterway.</p>	John A.	Washington State Department of Natural Resources
	<p>Pg. 6-15, footnote: Potential vessel scour areas were identified based on the 2003 bathymetry survey sun illumination maps. Physical signs of vessel disturbance were mapped, based primarily on significant ridges and furrows on the order of 1-2 ft thick/deep in the sediments. These observations of erosion and mixing (1-2 ft or 31-63 cm) are significantly greater than the depth of scour/erosion used in any other part of the analysis. A one-time snapshot of the sediment bed showing furrows of this magnitude indicates LDW sediment is subject to deep scour and mixing by vessel passage, and/or other forces that create valleys and ridges of 1-2 ft magnitude. These observations also indicate a soft, unconsolidated sediment bed that is vulnerable to erosion, mixing and transport, not just within SMAs, but in many areas of the LDW, for example east of the navigation channel at RME 0.2thru0.5, and RME 1.2thru1.4, RME2.55-2.8, and RME 3.9-4.1 (Figure 2-5, pg 2-68).</p>	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Rankings (MTCA/ CERCLA)	<p>Chapter 4, Section 4.2.1, page 4-8 (and Chapter 9, Section 9.4.2, page 9-23 to 9-24): the Sediment Standards are not only promulgated under MTCA, but also under the Clean Water Act. DNR disagrees that surface waters impaired following the remedial action should be addressed through a separate regulatory program. EPA will have to make a determination in the Record of Decision whether water quality standards, and thus sediment management standards, will be met during and after the remedial action. The statement that releases resulting from remediation activities should be addressed through a separated regulatory program under the clean water act does not factor in the requirement that EPA must meet all substantive requirements of the ARARs. The RoD clean water act determination will have to include downstream impacts to water quality resulting from remedial actions at a minimum.</p>	<p>John A. Bower, Jr</p>	<p>Washington State Department of Natural Resources</p>
	<p>Sec. 9.1.1.2 discusses the threshold criterion of “compliance with ARARs” but seems to overlook chemical specific AWQC, protective concentrations in water that have regulatory compliance requirements for the remedial actions, and for considering a remedy successful.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>The AELs, shown as ug/kg dw in Table ES-2, are incorrect and do not conform to state law. MTCA provides these values as fixed numbers (just as for other SMS values – SQS and CSL). LDWG performed a TOC (total organic carbon) conversion to obtain the numbers shown in the table; this conversion is not permissible under MTCA (per Glen St. Amant, Muckleshoot Tribe). The AELs must be corrected, e.g., total PCBs of 1,300 ug/kg dw corrected to MTCA standard of 1,000 ug/kg dw (equivalent to CSL of 65 mg/kg) and total PCBs of 240 ug/kg dw corrected to 130 ug/kg dw (equivalent to SQS of 12 mg/kg). The misapplied conversions have the effect of skewing the RALs upward to exceed the corresponding SMS.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>
	<p>The draft FS states that EPA does not set cleanup levels below “man-made” background levels of contamination in the area of the site, but fails to include Washington state requirements that final cleanups must meet natural background levels (for example, naturally occurring concentrations of arsenic in the Duwamish Valley). Under state law, any “man-made” regional contamination must be cleaned up in order to complete cleanup of the Duwamish River; attaining “anthropogenic” or “area” background is only an interim action. The draft FS ignores this requirement.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>

Category	Comment	Commenter/Source	Organization/Event
Restoration time frame	<p>A major concern is the duration of time that the public perceives the LDW as still being contaminated, during which the site remains a continuing source of PCBs to Elliott Bay. Remediation of other contaminants also should proceed with alacrity; spending decades in studies and discussions is a detriment to the environment equivalent to never having listed the site. Natural resource trustees are obligated under CERCLA to make the public whole by seeking compensation from responsible parties for injury to trust resources. The amount of injury will continue to accrue until a protective remedy is implemented.</p>	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	<p>MNR at the Duwamish cannot be expected achieve Remedial Action Objectives in the time span predicted by LDWG. Furthermore, LDWG's main objection to performing the "maximum" cleanup is that it will take 20 to 30 years. It can be reasonably expected that MNR will take at least as long or longer. The time frame is simply not enough of a reason to throw out more aggressive and effective methods of remediation.</p>	Thea Levkovitz	Duwamish River Cleanup Coalition
	<p>Pg. 9-15: The rules adopted for restoration time frames differ depending on the RAO and are as follows:... In all cases, the estimated LDW concentration is compared to the higher estimated urban background concentration, when the site would be expected to revert to the mid-range background concentration. This erroneous assumption that natural recovery processes will stop at a calculated upper range background concentration eliminates any further analysis and causes all the alternatives to reach the same, artificially inflated, endpoint. [Over time, all the overall concentration will drift toward the most expected value, which is the mean of the distribution, not the upper UCL. See Table F-3 for confirmation.]</p>	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Restoration time frame	<p>Pg. 9-16: ...uncertainty in the point-in-time estimates suggests that interval or range of times is a more appropriate way to represent restoration time frames.Therefore, for each risk-driver chemical and each exposure scenario, the evaluation of alternatives designates a 5- or 10-year intervalFor example, a point-in-time estimate of 16 has an estimated restoration time frame of 15-20 years. Similarly,a point-in-time value of 19 years corresponds to the same range, 15 to 20 years. While we agree that the point-in-time estimates have considerable uncertainty (especially for any one location or grid cell), the estimates of restoration time among the various remedial actions should be distinguishable. Forcing these estimates into rigid intervals eliminates our capacity to identify relatively small differences in time to restoration among remedies that are quite similar. In the example, restoration time estimates of 16 years and 20 years (a four year difference) would both be reported as 15 to 20 years, but an estimate of 21 years (only one year different from 20) would be reported as 21 to 25 years. Please provide the exact estimate of point-in-time to restoration, so that we can evaluate the incremental improvement between remedial alternatives.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Removing MNR from the equation will reduce significant cost, time, and energy in the outyears. In summary, 10+ years of natural recovery has already elapsed since the baseline sampling that demonstrated significant contamination and risks in the LDW, waiting another 10 years following the completion of upcoming remedial actions means waiting 25 - 30 years for the site to be remediated to PRGs. This delay is insupportable. We recommend that the next sampling of each AOPC (3 reaches) be intensive enough to establish areas that do not meet PRG/RALs, and design for active remediation of these areas should then expeditiously commence. In the absence of MNR as a remedy component, RALs are equal to PRGs.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>The draft FS needs to clarify whether it appropriately measures time to RAO achievement from completion of construction, or whether MTCA requires RAO achievement within 10 years of the ROD. It appears, from a preliminary review of the governing statutes, that attainment is required within 10 years of completion of remedial actions for areas subject to active remedial measures, but within 10 years of the issuance of the ROD for areas subject to MNR (passive) remediation. Please clarify.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>

Category	Comment	Commenter/Source	Organization/Event
Restoration time frame	The Record Of Decision ("ROD") must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to identify the remediation sequencing and timeframes. An EPA-selected remedy that includes a restoration time frames extending beyond 20 years is not feasible given the Draft FS identifies a number of protective cleanup alternatives that can achieve the remedial action objectives within this timeframe.	R. Stephen Wilson	Crowley Marine Services, Inc.
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to identify the remediation sequencing and timeframes. An EPA selected remedy that includes a restoration time frame extending beyond 20 years is not feasible given the Draft FS identifies a number of protective cleanup alternatives that can achieve the remedial action objectives within this timeframe.	Curtis Lesslie	Ash Grove Cement Company
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to identify the remediation sequencing and timeframes. An EPA selected remedy that includes a restoration time frame extending beyond 20 years is not feasible given the Draft FS identifies a number of protective cleanup alternatives that can achieve the remedial action objectives within 20 years.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to identify the remediation sequencing and timeframes. An EPA selected remedy that includes a restoration time frames extending beyond 20 years is not feasible given the Draft FS identifies a number of protective cleanup alternatives that can achieve the remedial action objectives within this timeframe.	Kevin Anderson	Alaska Marine Lines
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: The ROD needs to identify the remediation sequencing and timeframes. An EPA selected remedy that includes a restoration time frames extending beyond 20 years is not feasible given the Draft FS identifies a number of protective cleanup alternatives that can achieve the remedial action objectives within this timeframe.	Rod DeWalt	Douglas Management

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	The ROD needs to identify the remediation sequencing and timeframes. An EPA selected remedy that includes a restoration time frame extending beyond 20 years is not feasible. This is demonstrated by the Draft FS' identification of a number of protective cleanup alternatives that can achieve the remedial action objectives within this timeframe.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
Risk (general mention)	Ability to use the river environment in the future without fear of risk.	LDWG Briefing	Georgetown Community Council
	Section 3.1.3 Risk Drivers for Ecological Receptors, This section fails to account for the combinations of chemicals that will interact on the same endpoint to pose an unacceptable risk. PCBs, TBT and other chemicals act on the reproductive systems of fish, combining sub-threshold doses to exert significant effects. The section needs to add in the risk drivers that act on common endpoints.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The proposed methods for estimating the 95% upper confidence limit (UCL95) for the average contaminant concentration in surface sediments are likely to understate risks, due to a biased estimation procedure using smoothed (i.e. less variable) interpolated values to estimate the population standard deviation. These methods are proposed for use as-“... one line of evidence for evaluating the effectiveness of remedial alternatives” and as a benchmark to evaluate how well the alternatives are achieving the preliminary remediation goals. Simulations using statistical distributions similar to those commonly encountered at contaminated sediment sites demonstrate that variance estimates based on the proposed methods understate the population variance in 95% of simulations and by more than a factor of 2 in 67% of simulated samples. As a result, risks due to exposure to contaminants in the surface sediments are likely understated and the benefit of proposed remedial actions are likely overstated.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Schedule/ Process (of FS, decision- making)	A decision to remediate any of the next most contaminated sites should be informed by the success of methods used to remediate the most contaminated sites and the benefits of ongoing natural sediment recovery processes.	Dave Christensen	Metropolitan Water Pollution Abatement Advisory Committee
	Feasibility Study (CERCLA) is only half the process; what about NRDA?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	Question ability to quantitatively assess feasibility.	LDWG Briefing	Georgetown Community Council
	The alternatives outlined in the Draft FS vary widely in their scope, cost and time estimated to achieve preliminary remediation goals.	Dave Christensen	Metropolitan Water Pollution Abatement Advisory Committee
	The Record Of Decision ("ROD") must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: How the ROD framework will determine the selected waterway-wide remedy and in what timeline and under what type of legal protection.	R. Stephen Wilson	Crowley Marine Services, Inc.
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: How the ROD framework will determine the selected waterway-wide remedy and in what timeline and under what type of legal protection.	Curtis Lesslie	Ash Grove Cement Company
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: How the ROD framework will determine the selected waterway-wide remedy and in what timeline and under what type of legal protection.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: How the ROD framework will determine the selected waterway-wide remedy and in what timeline and under what type of legal protection.	Kevin Anderson	Alaska Marine Lines

Category	Comment	Commenter/Source	Organization/Event
Schedule/ Process (of FS, decision- making)	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: How the ROD framework will determine the selected waterway-wide remedy and in what timeline and under what type of legal protection.	Rod DeWalt	Douglas Management
	The ROD must provide a process and contain incentives for waterfront businesses to conduct cleanup, such as: How the ROD framework will determine the selected waterway-wide remedy and in what timeline and under what type of legal protection.	Ron Altier	Jorgensen Forge Corporation
	To facilitate this outreach, we request additional opportunities to participate and offer input into the decision-making process, including attending future meetings with the other stakeholders and receiving technical information as it becomes available.	Curtis Lesslie	Ash Grove Cement Company
	To facilitate this outreach, we request additional opportunities to participate and offer input into the decision-making process, including attending future meetings with the other stakeholders and receiving technical information as it becomes available.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
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Category	Comment	Commenter/Source	Organization/Event
Schedule/ Process (of FS, decision- making)	To facilitate this outreach, we request additional opportunities to participate and offer input into the decision-making process, including attending future meetings with the other stakeholders and receiving technical information as it becomes available.	Ron Altier	Jorgensen Forge Corporation
Sediment transport model	(Section 11.4.2) Adaptive management triggers for contingency actions need to be identified upfront.	Denice Taylor	The Suquamish Tribe
	Chapter 5, Section 5.1.2 states that 50% of sediment flowing into the LDW is deposited there, while it is implied that the remainder would flow into East and West Waterway. It is uncertain whether the salt water wedge was included when this estimate was made. Figure 5-10a DNR is also concerned that East and West Waterways are not included in the 10 year model simulation- especially given the acknowledgement of the salt water wedge. The report does not reflect the uncertainty associated with the model. All interpretations that are based upon the model must show the uncertainty with those interpretations.	John A. Bower, Jr	Washington State Department of Natural Resources
	Chapter 9, Figures 9-2, 9-3, 9-4, 9-5 and 9-6: The expected year-by-year progression of natural recovery following each remedial alternative should be graphed and provided for RA comparisons. Showing each year is necessary for a fair comparison, because some remedies will reach full compliance at 8 years, and others will reach it at 15 years and others at 28 years (for example). Graphing each year would develop curves with real inflection points, rather than the artificial inflection points that appear because of the arbitrary 10-year and 30-year time steps. Because the STM has already been run to a 30-year duration, the STM output is available for every year. The only additional work is to apply the BCM.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	ES-10: Sediment modeling description acknowledges that mixing occurs. Does not adequately address propeller erosion other than the mixing aspect. (As a note, there are a large number of sites identified in Figure 6-2 that have evidence of scour – is that storm scour or propeller-induced scour?) Specify the 2 unsponsored sites and discuss why they are ignored.	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Sediment transport model	<p>Executive Summary, ES-4; Chapter 2, Section 2.1.3, page 2-6: Even though the executive summary mentions the salt water wedge influence on the Duwamish Waterway, and chapter 2 identifies the salt water wedge as affecting the hydrology of the Duwamish Waterway Site, that process is not modeled within the Sediment Movement and Recovery Model presented in Chapter 5. The effect of tidal influence on sediments should be considered as part of the model since "vertical mixing over the length of the saltwater wedge is almost non-existent," and that the salt water wedge extends at high tide to the navigation channel. How this phenomenon would effect the movement of bottom sediments, and thus natural recovery, or enhanced natural recovery, or even capping needs some discussion.</p>	<p>John A. Bower, Jr</p>	<p>Washington State Department of Natural Resources</p>
	<p>For example, estimates of sedimentation rates in the STM may be off by a factor of 2, resulting in burial timeframes that could be twenty years (twice as long) or five years (half as long). This quantifiable uncertainty must be clearly and transparently addressed in the body of the alternatives analysis. Non-quantifiable uncertainties include the effect of climate change and seismic activity.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>
	<p>P 5-5: The text should be revised to indicate the percentage of lateral load that impacts various segments of the river. If the bulk of the upriver load is deposited above RM 4.0, then the lateral loads in each area downriver (especially adjacent to outfalls) would be higher than 1% and should be so quantified (along with the percentage of fines, etc.) as is acknowledged on page 5-19.</p>	<p>Thea Levkovitz</p>	<p>Duwamish River Cleanup Coalition</p>

Category	Comment	Commenter/Source	Organization/Event
<p>Sediment transport model</p>	<p>Pg. 2-10: The STM was calibrated over a 21-year period (1960 to 1980) using upstream river flow data to set initial bed conditions. Boundary conditions (i.e., upstream inflow) were then calculated over a 30-year period (1960 to 1989) to model the movement of suspended and bed load sediment into the LDW from upstream and through the LDW. It also is reported that the Howard Hansen dam was constructed in 1961 and that it is located “approximately 65 miles upstream of the LDW” (pg. 2-2). As noted previously, NOAA is concerned that the sediment load released below the dam and potentially reaching the LDW has decreased over the last two decades. During this time clear-cutting of forest was all but eliminated and the Green River valley was converted from farmland to warehouses and parking lots. Both of these land-use changes would impact the river hydrograph and also would significantly reduce the sediment loading to the River. However, rather than continuing to argue with this aspect of the FS/STM, we recommend completing remedies at the EAAs and resampling the LDW to determine whether natural recovery in situ is consistent with the projections of the model.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>
	<p>Pg. 5-17: “Natural recovery over longer periods may still be occurring in areas with localized propeller scour. Propeller scour temporarily resuspends bed sediment, after which a portion of that material resettles in the same footprint.” The heavier material will be more likely to resettle within the area, while finer-grain material will be more likely to travel greater distance. Since most of the contamination is likely associated with fine-grained sediment, this emphasizes the importance of these areas as sources of contaminant loading to other areas.</p>	<p>Marla Steinhoff</p>	<p>National Oceanic and Atmospheric Administration (NOAA)</p>

Category	Comment	Commenter/Source	Organization/Event
Sediment transport model	<p>Pg. 5-25: "Of the 157 cores included in the analysis, 110 cores (70%) had peak total PCB concentrations at depths equal to or greater than the estimated depths, consistent with the STM's estimated net sedimentation rates. Forty-seven cores (30%) had maximum total PCB concentrations that were shallower than the estimated depth range based on net sedimentation rates from the STM, or the concentrations were too diffuse to detect a significant peak at depth. Thirty-two of these 47 cores were located in EAAs with either very low net sedimentation rates or in areas where source investigations have suggested the potential for ongoing releases of PCBs." This analysis includes 33 cores with the highest concentrations in the surface segment as supporting the STM predictions, where it is impossible for the data to contradict the model according to the evaluation framework. Using an alternative evaluation framework, more than 50% of the cores (80 of the 157) had the highest concentrations in segments that were shallower than the model estimates or were in the surface core segment. Because there is no discussion of the actual PCB peak concentrations, except to state that many of the cores that had peak concentrations shallower than the STM predictions had "relatively" high PCB concentrations, the reader has no way of knowing whether the concentration differences are meaningful (for example, greater than a factor of 2). If the STM predictions are less reliable for areas of elevated concentrations (e.g., EAAs), what does that say about the potential use of the STM in estimating natural recovery?</p>	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	<p>Section 5 of the draft FS discusses the Sediment Transport Model...there is little discussion of the uncertainties of the STM, described as "well understood" in the document, despite the fact that it is based on 30-50 year old data, does not clearly explain its assumptions, and does not discuss possible future influences on flow and sedimentation rates. In addition to a narrative discussion of all uncertainties, the numbers presented in text, figures and tables should indicate the estimated range of uncertainties in sedimentation rates.</p>	Thea Levkovitz	Duwamish River Cleanup Coalition
	<p>Ship scour is an important concern for the river, and remains poorly represented in the STM. The FS focuses on the potential for mixing of the sediment but not enough on the potential for unanticipated scour events resulting from excessive speeds or accidents (i.e., not ambient conditions).</p>	Thea Levkovitz	Duwamish River Cleanup Coalition
	<p>Table F-3: This table would be more useful if the STM predicted annual deposition rate was included.</p>	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Sediment transport model	The FS must include data relevant to current and projected shipping rates as an indicator for how much scour and boat traffic could impact sediment transport, and ultimately, the most feasible alternative.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The net mass transport of sediment is downriver, which the sediment transport model represents (the STM estimates 107K metric tons average net annual sediment discharge from LDW) but the STM can not accurately represent the net transport of PCBs, because a disproportionate amount of the PCBs are associated with fine organic-based particulates that do not readily settle from the water column. Thus, the particulates that are most concentrated with PCBs (and the other COCs) are the particulates that are most likely to be transported farther downstream than the average sediment particle, and are more likely to be exported from the LDW to receiving waters (See Figure 5-14, page 5-63).	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	The sediment transport model presented by LDWG indicates scour in the central channel, with river-wide flows sufficient to create problems for a cap, even one that might be covered with stone (armored). Additionally, any vessel accidents have the potential to damage a cap that will then have to be repaired. Accidents will create havoc by releasing untold amounts of contaminated sediments back into the water column for dispersal or transport.	Thea Levkovitz	Duwamish River Cleanup Coalition
	The STM is based on data from 1960–80. Flow and sedimentation rates may not be reflective of future or even current conditions. Particular consideration should be given to the as yet unmeasured (and unmodeled) effects of climate change, e.g., higher or lower annual flows and more frequent and severe flood events.	Thea Levkovitz	Duwamish River Cleanup Coalition
Source control	(Section 8.3.1) More discussion is needed on the issue of recontamination/source control (i.e. Boeing Plant 2, Jorgensen, Rhone Poulenc). It is understood that a lot of this information will be discussed during source control, however, some information needs to be included in the FS (background was discussed without having a final determination).	Denice Taylor	The Suquamish Tribe
	Concern about potential recontamination and question about how this can be avoided.	LDWG Briefing	West Seattle Chamber Board of Directors

Category	Comment	Commenter/Source	Organization/Event
Source control	Concerned that further remedial cleanup efforts may occur in advance of the department's source control program that is aimed at reducing contaminants entering the LDW. It is imperative to implement the source control program so that its impact enhances the success of any remediation efforts in the LDW.	Dave Christensen	Metropolitan Water Pollution Abatement Advisory Committee
	Consider potential for recontamination.	LDWG Briefing	Georgetown Community Council
	DSI feels that it is absolutely necessary that source control activities be completed prior to initiation of sediment cleanup actions to avoid iterative cleanup work (e.g., Duwamish Diagonal, Slip 4, Terminal 117 Malarkey) that is costly and ineffective.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	DSI supports additional and complete evaluation of background data upstream of the Site and incorporation of this data into the FS alternatives evaluation. This will more accurately assess the potential for recontamination and restoration timeframes associated with each cleanup alternative.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	Explain how each option prevents/minimizes recontamination. If we cleanup, and more contaminated sediment comes in from upstream, will we have to clean up again?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
	Figure 2-11: The BEHP figure (and all similar figures for other chemicals) should show more river detail. For example, this figure should show the locations of stormdrain outfalls and CSO outfalls.	Thea Levkovitz	Duwamish River Cleanup Coalition
	It is absolutely necessary that source control activities be completed prior to initiation of sediment cleanup actions to avoid iterative cleanup work (e.g., Duwamish Diagonal, Slip 4, Terminal 117 Malarkey) that is costly and ineffective.	Curtis Lesslie	Ash Grove Cement Company
	P 2-25 (top): Ecology should be focusing on chemical recontamination potential rather than source control at this phase of the investigation/study.	Thea Levkovitz	Duwamish River Cleanup Coalition
	P 4-4: Again, the emphasis should be on chemical recontamination potential, not source control at this phase. It is unacceptable at this stage that we do not have the knowledge to know whether this statement will be correct, or the degree to which it will not be correct: "An adequate level of source control is an assumed element of remedial design and implementation planning (see Sections 7 and 8) to preclude unacceptable levels of recontamination during or following the remediation of contaminated sediment areas.	Thea Levkovitz	Duwamish River Cleanup Coalition

Category	Comment	Commenter/Source	Organization/Event
Source control	P 4-4: This sentence does not make sense: "However, continuing sources contribute some fraction of the total ongoing contaminant loading to the LDW."	Thea Levkovitz	Duwamish River Cleanup Coalition
	Page 6-13: The grid system is very coarse. Rather than using a rigid grid approach, a more geographically based approach would be preferable so that local perturbations could be addressed (included). The resolution/scale of each site is inadequate (i.e., the text implies that one solution should apply to the entire SMA as shown on Figure 6-2). This emphasis on generalization is continued in table 8-3 and in the text on page 8-11.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Page 8-12: This section should be titled "Chemical recontamination potential" and should have that focus at this phase of the effort.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Pg. 6-6: ...anthropogenic background for the LDW is likely higher than that for the Green/Duwamish River due to the higher level of urbanization in the contributing drainage basin. At a minimum, this assertion should be documented by maps showing the respective drainage basins and the locations of the background samples. More significantly, the FS several times notes the STM shows sediment loading from urban drainages (delivered to the LDW by CSOs/SDs) is negligible in comparison to the sediment loading from the upper Duwamish River, except for a few model cells located at CSO/SD discharges. "Overall, at year 10, only 2% of site-wide bed composition is derived from lateral sources" (Appendix D, Sec. D.3.1, first paragraph following equations).	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Pg. 8-47, Sec. 8.5.1, Source Control. The STM is unequivocal that the biggest sources of persistent, bioaccumulative contaminants in the LDW are the contaminated sediments in the LDW: "The STM output for year 10 indicated that the site-wide average bed composition is expected to be about 23% original bed, 75% upstream source, and 2% lateral source." (Appendix D, Sec. D.3.1). The most effective source control action is the removal or containment of contaminated sediment at Boeing Plant 2. The STM demonstrates that this area is one more of scour rather than deposition. Continuing delay unnecessarily adds contaminant loading to the foodchain of the LDW and its receiving waters: Elliott Bay and, ultimately, Puget Sound.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Source control	The AOC between EMJ and EPA incorporates the MOD that administratively requires the coordination and cooperation of the aforementioned parties during design and implementation of the cleanup remedies. Therefore, we feel that it is absolutely necessary that source control activities be completed prior to initiation of sediment cleanup actions within the RAB adjacent to the Facility and adjacent to the Boeing Plant 2 Facility to avoid iterative cleanup work (e.g., Duwamish Diagonal, Slip 4, Terminal 117 Malarkey) that is costly and ineffective.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	The AOC between EMJ and EPA incorporates the MOU that administratively requires the coordination and cooperation of the aforementioned parties during design and implementation of the cleanup remedies. Therefore, we feel that it is absolutely necessary that source control activities be completed prior to initiation of sediment cleanup actions within the RAB adjacent to the Facility and adjacent to the Boeing Plant 2 Facility to avoid iterative cleanup work (e.g., Duwamish Diagonal, Slip 4, Terminal 117 Malarkey) that is costly and ineffective.	Ron Altier	Jorgensen Forge Corporation
	The DNR remains concerned that the source control measures being undertaken are ineffective and that in the absence of effective control measures the cleanup sites will become recontaminated.	John A. Bower, Jr	Washington State Department of Natural Resources
	The ROD needs to provide legal protection against ongoing sources of contamination to cleanup areas from offsite sources within the Site.	Curtis Lesslie	Ash Grove Cement Company
	The ROD needs to provide legal protection against ongoing sources of contamination to cleanup areas from offsite sources within the Site.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	The ROD needs to provide legal protection against ongoing sources of contamination to cleanup areas from offsite sources within the Site.	Kevin Anderson	Alaska Marine Lines
	The ROD needs to provide legal protection against ongoing sources of contamination to cleanup areas from offsite sources within the Site.	Kim Maree Johannessen	Duwamish Shipyard, Inc.
	The ROD needs to provide legal protection against ongoing sources of contamination to cleanup areas from offsite sources within the Site.	R. Stephen Wilson	Crowley Marine Services, Inc.
	The ROD needs to provide legal protection against ongoing sources of contamination to cleanup areas from offsite sources within the Site.	Rod DeWalt	Douglas Management
	The ROD needs to provide legal protection against ongoing sources of contamination to cleanup areas from offsite sources within the Site.	Ron Altier	Jorgensen Forge Corporation

Category	Comment	Commenter/Source	Organization/Event
Source control	We feel that it is absolutely necessary that source control activities be completed in the slightly upstream Duwamish Diagonal Early Action Area and associated drainage basin prior to any potential initiation of sediment cleanup actions within the SMA's adjacent to the Facility to avoid iterative cleanup work that is costly and ineffective.	Curtis Lesslie	Ash Grove Cement Company
	We feel that it is absolutely necessary that source control activities be completed in Trotsky Inlet (Le., source control Early Action Area 2) prior to any potential initiation of sediment cleanup actions within the SMA adjacent to the Property to avoid iterative cleanup work (e.g., Duwamish Diagonal, Slip 4, Terminal 117 Malarkey) that is costly and ineffective.	Rod DeWalt	Douglas Management
	We feel that it is absolutely necessary that source control activities be completed within the Glacier Bay source control Early Action Area prior to initiation of sediment cleanup actions adjacent to the Property to avoid iterative cleanup work (e.g., Duwamish Diagonal, Slip 4, Terminal 117 Malarkey) that is costly and ineffective.	Kevin Anderson	Alaska Marine Lines
	We feel that it is necessary that known sources of contamination to Duwamish sediments be controlled in the Slip 4 Early Action Area drainage basin prior to any potential initiation of sediment cleanup actions within the SMA's adjacent to the Property to avoid iterative cleanup work (e.g., Duwamish Diagonal, Slip 4, Terminal 117 Malarkey) that is costly and ineffective.	R. Stephen Wilson	Crowley Marine Services, Inc.
	We support additional and complete evaluation of background data upstream of the Site and incorporation of this data into the FS alternatives evaluation to more accurately assess the potential for recontamination and restoration timeframes associated with each cleanup alternative.	Curtis Lesslie	Ash Grove Cement Company
	We support additional and complete evaluation of background data upstream of the Site and incorporation of this data into the FS alternatives evaluation to more accurately assess the potential for recontamination and restoration timeframes associated with each cleanup alternative.	E. Gilbert Leon Jr.	Earl M. Jorgensen Company
	We support additional and complete evaluation of background data upstream of the Site and incorporation of this data into the FS alternatives evaluation to more accurately assess the potential for recontamination and restoration timeframes associated with each cleanup alternative.	Kevin Anderson	Alaska Marine Lines

Category	Comment	Commenter/Source	Organization/Event
Source control	We support additional and complete evaluation of background data upstream of the Site and incorporation of this data into the FS alternatives evaluation to more accurately assess the potential for recontamination and restoration timeframes associated with each cleanup alternative.	R. Stephen Wilson	Crowley Marine Services, Inc.
	We support additional and complete evaluation of background data upstream of the Site and incorporation of this data into the FS alternatives evaluation to more accurately assess the potential for recontamination and restoration timeframes associated with each cleanup alternative.	Rod DeWalt	Douglas Management
	We support additional and complete evaluation of background data upstream of the Site and incorporation of this data into the FS alternatives evaluation to more accurately assess the potential for recontamination and restoration timeframes associated with each cleanup alternative.	Ron Altier	Jorgensen Forge Corporation
	What about contamination ongoing now? Shouldn't we clean this up first?	LDWG Briefing	Environmental Coalition of South Seattle (ECOSS)
Treatment	Pg. 8-44, describing the treatment train for soil washing (Alternative 4d), bullet 2: "For FS purposes, assume use of the following treatment train: collect and settle, flocculate, filter, analyze and discharge." Why doesn't this include GAC treatment, as is noted for hydraulic dredging? [Its unlikely GAC treatment is needed for either technology, especially if it is acceptable to dewater mechanically dredged sediment loaded on a barge by filtration through geotextile and/or overflows.] These inconsistencies bias the analysis toward mechanical dredging.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)
	Table 7-2e, pg 7-38, Physical Solidification using lime or another solidification agent. The addition of lime to (wet) sediment causes an exothermic (heat generating) chemical reaction which has been shown to volatilize PCBs, transferring them to the air. This is phase transfer, not treatment.	Marla Steinhoff	National Oceanic and Atmospheric Administration (NOAA)

Category	Comment	Commenter/Source	Organization/Event
Treatment	The draft FS only includes a single “treatment” option, represented in Alternative #4d. The option evaluated is sediment washing, a process by which contaminants are physically separated from the sediments after dredging, but are not actually reduced in volume or toxicity (the volume of highly contaminated sediment is reduced, as the contaminants are removed from the soil particles, but the chemical component is not destroyed). There may be cost-savings as a result of soil washing, but DRCC considers this only partial “treatment” as it does not reduce the total volume or toxicity of the chemicals of concern. More complete treatment alternatives, including chemical (e.g., BioGenesis), thermal (e.g., CementLock), and biological (e.g., mycofiltration) treatment options and their associated efficiencies, byproducts and costs need to be included in the FS for public review and evaluation.	Thea Levkovitz	Duwamish River Cleanup Coalition
Tribes/ Tribal considerations	(ES – 4) The LDW lies with the U&As of the Muckleshoot and Suquamish Tribes. Tribes have treaty protected rights to access and harvest all types of fish and shellfish at subsistence levels. The way it is stated it sounds as if only the Muckleshoot have fishing rights in the LDW (this comment was submitted previously and was not addressed).	Denice Taylor	The Suquamish Tribe
	(page 2-9) Under primary activities of Tribes add “gathering” (previously submitted comment).	Denice Taylor	The Suquamish Tribe
	(page 3-5) Although the Suquamish survey is not limited to just the Duwamish system it is most certainly applicable. The Suquamish survey represents the Suquamish Tribe, a specific people who have traditionally harvested and consumed fish and shellfish from the LDW and who will do so in the future. Risk management decisions should be protective of tribal rights to access and harvest and should not limit or restrict future expression of those rights based on current contaminated conditions. The Suquamish Tribe does not agree with the EPA policy decision to use the Tulalip survey in place of the Suquamish survey. The consumption survey states consumption rates for Suquamish Tribal members and those should be used when determining the level of clean up in the Duwamish River. In addition, when considering existing versus future conditions, EPA has a trust responsibility to preserve resources for the Tribes. The Suquamish Tribe does not intend to compromise treaty-reserved rights or give up on resources, and has been working diligently to restore resources and habitat throughout the U&A. The Suquamish survey is relevant to the Suquamish Tribe and is the preferred survey within the Suquamish U&A.	Denice Taylor	The Suquamish Tribe

Category	Comment	Commenter/Source	Organization/Event
Tribes/ Tribal considerations	(Section 7.2.4 and 8.3.3.7) Institutional controls: Institutional controls which limit or restrict treaty rights, such as fishing and consumption restrictions, are generally not acceptable to tribes as permanent or long-term solutions. The Suquamish Tribe has invested considerable time and resources to the recovery of valuable habitat and treaty-reserved resources within the LDW. RAOs have been established for the site which emphasizes remediation to levels protective of human health and the environment.	Denice Taylor	The Suquamish Tribe
	(Section 7.2.4) Zoning: The tribes should be consulted regarding changes in land/waterway use or activities that may impact the LDW remedy (i.e. future stormwater), as well as state and federal agencies.	Denice Taylor	The Suquamish Tribe
	...relying on fishing advisories as part of the selected remedy likely violates the treaty rights of recognized tribes for whom the Duwamish River is part of their Usual and Accustomed Fishing Area (the Muckleshoot and Suquamish Tribes).	Thea Levkovitz	Duwamish River Cleanup Coalition
	DRCC believes that the Suquamish survey should be used rather than the Tulalip one as it more accurately reflects fish consumption. The cleanup decisions should be focused on future use and treaty rights.	Thea Levkovitz	Duwamish River Cleanup Coalition
	Is anyone from the tribe sitting at the table during the planning process?	LDWG Briefing	Delridge Neighborhood District Council
	Question about Tribal fishing rights/if used today.	LDWG Briefing	West Seattle Chamber Board of Directors
	The FS document minimizes potential ecological and human health impacts in the LDW, especially to affected Tribes. It oversimplifies the decisions that need to be made and seeks to steer the reader into accepting that natural recovery will be enough to reduce chemical concentrations in surface sediments by up to 50% within 5-10 years (assuming local sources are controlled and "hotspots" are remediated).	Denice Taylor	The Suquamish Tribe
	The report does not adequately or accurately represent the importance of the LDW to the tribes who retain treaty-reserved rights to harvest. Risk management decisions should be protective of tribal rights to access and harvest and should not limit or restrict future expression of those rights based on current contaminated conditions.	Denice Taylor	The Suquamish Tribe

Category	Comment	Commenter/Source	Organization/Event
Tribes/ Tribal considerations	This draft Feasibility Study clearly identifies many issues of direct concern to the Tribe. In fact, many of the scenarios considered in this document specifically focus on either current or future use of the Duwamish River by the Muckleshoot Indian Tribe. Hence, it is fundamentally important that EPA and Ecology closely consult with the Muckleshoot Indian Tribe during the next critical cleanup planning phases, in order to assure that the unique impacts to the Tribe are appropriately remedied.	Glen St. Amant	Muckleshoot Indian Tribe
	We request the opportunity to meet with EPA to discuss these issues further. The Tribe looks forward to an expeditious and adequate cleanup of the Duwamish River sites to protect its current and future uses. Thank you for the opportunity to comment on this very important activity.	Glen St. Amant	Muckleshoot Indian Tribe