



Technical Advisory Group

Community Advisory Board:

Community Coalition for
Environmental Justice

The Duwamish Tribe

Environmental Coalition
Of South Seattle

Georgetown Community
Council

IM-A-PAL Foundation

People for Puget Sound

Puget Soundkeeper
Alliance

South Park Neighborhood
Association

Washington Toxics
Coalition

Waste Action Project

*Working to ensure a
Duwamish River cleanup
that is accepted by and
benefits the community
and protects fish, wildlife
and human health.*

1620 18th Avenue
Seattle, WA 98122
206.954.0218
www.duwamishcleanup.org
contact@duwamishcleanup.org

Allison Hiltner, EPA Region 10
1200 6th Avenue, Suite 900, MC ECL-111
Seattle, Washington 98101

January 14, 2011

Dear Ms. Hiltner:

The Duwamish River Cleanup Coalition/Technical Advisory Group (DRCC/TAG) was founded in 2005 by the member organizations of the Duwamish River Cleanup Coalition (DRCC), the Environmental Protection Agency's (EPA) Community Advisory Group (CAG) for the Lower Duwamish Waterway Superfund Site (the Site). DRCC/TAG provides technical support and public education, outreach and involvement services to the DRCC member organizations, the communities affected by the Superfund site, other Duwamish River stakeholders, and the general public.

DRCC/TAG has reviewed the Lower Duwamish Waterway Group's (LDWG) Draft Feasibility Study (FS) for the Site and is submitting the following comments for consideration by EPA and the Washington State Department of Ecology, which has also listed the Lower Duwamish River as a contaminated site under the state Model Toxics Control Act (MTCA).

SUMMARY

- An alternative that protects the health of tribal and subsistence seafood consumers to the maximum extent feasible must be included in the Study.
- The cleanup plan selected must fully comply with the WA State Model Toxics Control Act, which is more health protective than federal law and requires cleanup of contaminants to natural background levels.
- Options for pollution source control, both laterally and upriver, must be integrated into the river cleanup alternatives described in the Study.
- An environmental justice assessment of the health risks resulting from contaminants left behind in the river must be included in the Study and be a key consideration in selecting a final cleanup plan.

1. Cleanup Plan Fragmented

The Draft FS offers 12 alternatives for cleaning up the LDW. Alternative #1 is provided for comparative purposes only, and only includes cleanup of the five Early Action Areas already completed or in the planning stage. Alternatives 2C through 6R (11 alternatives in all) combine dredging, capping, treatment, “monitored natural recovery,” and “enhanced natural recovery” in varying degrees and based on different “Remedial Action Levels” (RALs) – chemical concentrations in the sediment that trigger cleanup action. Each of these alternatives is applied to 299 of the 441 acres that comprise the sediments of the LDW; the remaining 142 acres of sediment are considered to be at chemical “equilibrium” and are not included in any of the proposed cleanup alternatives.

The Draft FS acknowledges that pollution source control efforts are a necessary part of the future cleanup plan, but the alternatives only describe options for managing the contaminated sediments currently in the river, not the options for how to implement pollution source control. As a result, the way in which the cleanup options are presented to the public is fragmented – only one part of the plan is presented in the FS. Yet at the same time, the alternatives in the FS are shaped in part by assumptions about the scope and efficacy of source control. All alternatives are assessed with the assumption that while lateral loading of contaminants will decrease over time in response to source control efforts, upriver loading of contaminants will not change significantly, because no targeted source control program is currently planned for upriver. In addition, Alternatives 6C and 6R are based on an RAL that is selected specifically to achieve the estimated mid-range of future contaminant loading – different assumptions about source control would presumably result in different Alternatives 6C and 6R.

The final FS should better integrate pollution source control assumptions and options into the description of cleanup alternatives. The cleanup alternatives should describe the entire cleanup plan, not just the legacy sediment contamination portion of the plan under development, and should be more transparent about the relationship between source control decisions and outcomes and the FS alternatives. Specifically, upriver as well as lateral source control efforts should be considered as two different options across all cleanup alternatives.

2. Remedial Action Objectives

The discussion of Remedial Action Objectives (RAOs) in the Executive Summary and some other sections of the Draft FS is misleading. EPA has established four RAOs for the Site cleanup:

- (1) Reduce human health risks associated with the consumption of resident LDW fish and shellfish by reducing sediment and surface water concentrations of chemicals of concern *to protective levels* [emphasis added];

- (2) Reduce human health risks associated with exposure to chemicals of concern through direct contact with sediments and incidental sediment ingestion by reducing sediment concentrations of chemicals of concern to protective levels;
- (3) Reduce risks to benthic invertebrates by reducing sediment concentrations of chemicals of concern to comply with the Washington State SMS; and
- (4) Reduce risks to crabs, fish, birds, and mammals from exposure to chemicals of concern by reducing sediment and surface water concentrations of chemicals of concern to protective levels.

While portions of the Draft FS accurately state that none of the proposed alternatives will succeed at achieving RAO 1, other parts of the document repeatedly make statements suggesting that one or more of the alternatives *will* achieve RAO 1, or all RAOs (e.g., “Alternatives 2 through 6 would achieve RAO 1 through a combination of...”). *All such misleading statements should be removed from the final FS.*

It must be noted that the RAOs explicitly require that reductions in risk be achieved by *reducing sediment and surface water concentrations of contaminants of concern (COCs)*. Reducing risk by other methods, such as fishing advisories and other “institutional controls” (ICs) does not satisfy the RAOs. While ICs are important in the short term prior to and during cleanup, and to a lesser degree may be required in the long term to help reduce or prevent exposure to concentrations of contaminants that are below natural background but still potentially harmful, they are not a substitute for actual cleanup and should not be used in lieu of reducing concentrations of COCs in sediments. *The Draft FS must present at least one alternative that satisfies all of the RAOs.* This and the role of ICs are addressed further in separate sections of these comments.

The RAOs are also lacking in their exclusion of objectives relating to surface water contamination, beneficial uses, and most notably, pollution source control. In 2007, DRCC submitted comments to EPA on the Draft RAO Memorandum suggesting language for RAOs to address each of these areas. It is now clear how dependent a successful Site cleanup is on effective control of ongoing pollutants (see comments below).

A source control RAO should be added for the Site, as follows:

RAO 5: “Prevent recontamination of the Lower Duwamish River by controlling sources of COCs entering the river from stormwater, groundwater, soil and other sources in excess of established background concentrations.”

3. Pollution Source Control

EPA and the Washington State Department of Ecology have both listed the LDW Site as a Superfund (CERCLA) and MTCA site, respectively. The agencies have agreed to a division of labor in preparing the site for cleanup that assigns EPA the lead role for sediment remediation and Ecology the lead role for source

control. However, both of these elements of the final cleanup plan must be fulfilled to meet both the federal and state cleanup requirements, and both agencies are equally responsible for ensuring that the final cleanup plan adequately addresses legacy contaminants in the sediment and ongoing sources of contamination entering the site.

The source control side of the equation has proved to be a much larger and more complex task than originally imagined, and the agencies have not yet developed a comprehensive plan with adequate assurances that the site will not be recontaminated, or even that cleanup efforts will not be undermined from the outset due to ongoing pollution. There are two categories of ongoing pollution to the Site: (1) low volume/high concentration sources of contaminants entering the Site through constructed drainage discharging along the five miles of the Superfund/MTCA listed waterway (lateral sources); and (2) high volume/lower concentration sources of contaminants entering the Site from the upper Duwamish and Green Rivers (upriver sources). The Draft FS assumes that only lateral sources will be controlled, giving up the upriver pollution source control effort before it has even begun and undermining expectations for the cleanup effort from the very start.

If upriver sources of contaminants of concern are determined to be high enough to prevent an effective cleanup, then an upriver source control program must be part of the final cleanup plan. This is critical to a cost-effective and health-protective cleanup, to satisfy the RAOs for the Site, and to comply with Washington State law.

EPA and Ecology must (1) make a determination about the potential for upriver pollution sources to contaminate the Site above cleanup levels, and (2) develop and implement an upriver pollution source control program to the extent necessary to protect the Site and prevent recontamination.

4. MTCA Compliance

The Draft FS correctly states, “MTCA cleanup levels cannot be set at concentrations below natural background (WAC 173-340-705(6))” [ES-14]. The document then goes on to say, “For RAO 1 (human consumption of seafood), the sediment PRG for PCBs and dioxins/furans are set at natural background, *which is not predicted to be achieved in sediments under any alternative*” [ES-26, emphasis added]. These two statements put a spotlight on the fact that none of the proposed alternatives satisfy the requirements of Washington State law.

The draft FS goes on to make repeated statements that suggest an attempt to sidestep the requirements of MTCA on the basis that compliance is infeasible:

- Executive Summary: “The goal of Alternatives 2 through 6 is to reduce chemical concentrations as low as practicable given the ongoing inputs from the Green/Duwamish River” [ES-26];

- Section 4 – Remedial Action Objectives and Preliminary Remediation Goals: “Sediment concentrations approaching site-specific anthropogenic levels are the best that can realistically and practicably be achieved in the LDW given the urban setting of the site and inputs from upstream of the site.” [4-16];
- Section 6 – Areas of Potential Concern, Remedial Action Levels, and Recovery Potential: “The PRG for RAO 1 is natural background and, thus, is not expected to be achievable.” [6-2];
- Section 10 – CERCLA Comparative Analysis: “...none of the alternatives are capable of lowering total [PCBs] and dioxins/furans in surface sediment to their respective [PRGs], which are set at natural background.” [10-1]
- Conclusions: “It is not technically feasible for the alternatives to achieve the total PCB and dioxin/furan PRGs for the human seafood consumption pathway because they are set at natural background conditions” [12-4].

The document suggests that the obligations of state law can be waived for “technical impracticability” [ES-32] and that a “TP” waiver can be used to “provide closure” [4-12]. However, the suggestion that inputs from the Green/Duwamish River are static or unchangeable is misleading and inaccurate. It is not infeasible to reduce upriver pollution sources. In fact, many of the technologies and strategies that would be required to do so are exactly the same ones as those already being used with success within the LDW’s 32 square mile lateral drainage area; methods used range from business inspections to source tracing to stormwater filtration and treatment.

Concentrations of contaminants of concern (COCs) are lower in upriver flows than in the discharge from lateral drainage pipes, but the overall mass, or loading, is expected to be greater due to the sheer volume of sediment entering the LDW from upriver. Given that the Draft FS estimates a future riverwide sediment “equilibrium” of 40–50 ppb PCBs, exceeding natural background conditions by 20-fold and due largely to upriver loading (assuming lateral source control has been relatively successful), it is in fact essential that upriver pollution sources be controlled. Failing to do so would cause unacceptably high and ongoing cancer and non-cancer risks to tribal and subsistence-level seafood consumers and would violate Washington State law.

MTCA recognizes that some sites, particularly in urbanized areas, have elevated concentrations of some contaminants that are the result of localized human activities. MTCA explicitly requires that this elevated “area background” be addressed and included in the final cleanup plan for a site. Any cleanup action that neglects to address “area background” is only an “interim cleanup” under state law. The site must remain on the State’s contaminated sites list until a final cleanup to natural background is completed. The Draft FS acknowledges this on page 4-12, but fails to incorporate this legal requirement into its formulation of the cleanup alternatives. Instead, the authors suggest that using “Institutional Controls” (such as fishing advisories) “may allow a

decision for a final cleanup” under state law. There is no basis for this in MTCA, and it is extremely troubling that the authors, on behalf of the Lower Duwamish Waterway Group (LDWG), demonstrate their lack of intention to comply with the requirements of the law in repeated statements throughout the document.

The FS and final Cleanup Plan must fully comply with Washington State MTCA, including a description of measures necessary to conduct a cleanup of area background.

5. Institutional Controls

Institutional Controls Premature and Inadequate

The Draft FS section on Institutional Controls (ICs) is both premature and inadequate. First, it assumes the need for ICs prior to assessing the use of all the technology that is available prior to its implementation. Second, the IC efforts described in Appendix I are completely inadequate.

A. ICs proposed prematurely:

The Draft FS relies heavily on Institutional Controls (ICs) for all proposed alternatives. While we agree that ICs will be important in the short term, before and during cleanup activities, it is critically important to minimize ICs to the maximum extent technically feasible in the long term. The approach proposed in the draft FS fails to do this.

The failure of the proposed approach to minimize ICs is due largely to two technically feasible but neglected components of the proposed cleanup alternatives, which must be included in the final FS and implemented to the extent necessary to achieve a thorough and equitable cleanup:

1. Upriver source control

The draft FS states that achieving a better sediment cleanup is not feasible due to contaminant inputs from upriver. However, just as pollution source control efforts are being carried out in the 32 square mile constructed basin draining to the lower Duwamish, pollution source control efforts can, and if necessary must be, carried out for contaminants entering the lower Duwamish from upriver. There is no functional difference between efforts needed to control sources from the two areas and no logical or regulatory distinction between the types of sources above and below river mile five, where the source control effort currently stops. Indeed, just as municipalities and industries within the lateral drainage basin are being identified as potentially responsible parties (PRPs) if they are suspected of releasing contaminants to the site, so must upriver contributors be identified, including riverside industries and upriver municipalities. It is legally and economically inequitable to require downriver contributors to carry the full liability and

responsibility for cleanup of the site while upriver contributors are ignored. Equally important, neglecting to identify and bring upriver contributors under control undermines the site cleanup effort and will result in a less effective and productive cleanup, diminishing the return on both public and private parties' effort and investment. The division and current approach is both nonsensical and inequitable, and will result in unnecessary and ongoing threats to the environment and public health, especially in vulnerable communities.

2. Municipal stormwater treatment

The draft FS discusses the extent of source control and cleanup that is technically feasible, yet completely neglects any discussion of stormwater treatment. Cleanup to the "maximum extent feasible" must include consideration of both industrial and municipal stormwater treatment – a proven pollution control technology in widespread use in Seattle and elsewhere. Just as EPA has recently ordered Boeing to install stormwater treatment to control PCBs in runoff to Slip 4 from Boeing Field, so must EPA and Ecology include stormwater treatment for other industrial and municipal sources draining to the Duwamish, if and where necessary to achieve cleanup levels and prevent recontamination.

Institutional Controls must be used as a last resort and to the minimum extent possible. The draft FS proposes using ICs before comprehensive source control measures have been taken. This approach is unacceptable, violates tribal treaty rights and environmental justice principles, and threatens human health.

Additional measures and cleanup alternatives that employ all available cleanup and source control technologies before instituting institutional controls must be presented in the final FS and be included in EPA's Proposed Cleanup Plan for the lower Duwamish River.

B. Proposed ICs are inadequate:

The draft FS and Appendix I grossly underestimate the efforts and costs required for an effective and equitable Institutional Control Program. At a minimum, the FS Institutional Controls section needs to be revised to reflect EPA's site manager guidance on ICs (*Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups, 2000*). The document states:

...how important it is for site managers to evaluate ICs as thoroughly as the other remedy components in the Feasibility Study (FS)... when looking for the best ICs to address site-specific circumstances. Adding ICs on as an afterthought without carefully thinking about their objectives, how the ICs fit into the overall remedy, and whether the ICs can be realistically implemented in a reliable and enforceable manner, could jeopardize the effectiveness of the entire remedy.

Institutional controls need to be explicitly built into each alternative so that the public recognizes the costs and efforts. It is also important to recognize that ICs will not be the same under each alternative.

Some of the key messages from the EPA guidance are; (1) if the cleanup does not result in unrestricted use and unlimited exposure at a site, an IC is likely appropriate, (2) understand the life-cycles strengths, weaknesses and costs for implementation, monitoring and enforcement before choosing an IC; (3) coordinate early with all state and local governments that have responsibilities for the ICs; (4) evaluate ICs as rigorously as you would any other remedial alternative; (5) layer and/or place ICs in a series to increase their reliability; (6) when writing decision documents, make sure that the objective(s) of the ICs are clear; (7) get assurances (in writing) from entities that will be responsible for implementing, monitoring and enforcing ICs; and (8) remember that since all ICs have weaknesses, the role of the decision maker is to select the best ICs to protect human health and the environment.

Even when all feasible cleanup and source control efforts have been employed, we recognize that some residual risks for the highest seafood consumers will remain, at least until the global atmospheric deposition of contaminants such as PCBs declines and source control is complete. The IC Program will need to operate in three different time frames; the type, extent and cost of ICs will be different in each and should be calculated with respect to each cleanup alternative.

1. Near-term ICs: what we need to do *now* that protects exposed EJ populations;
2. Remediation ICs: evidence exists that concentrations will be higher in the sediments, water column and seafood tissue during remediation, requiring additional ICs to be in effect;¹
3. Post-remediation ICs: depending on the alternative, ICs may have to last in perpetuity. The FS must acknowledge and estimate costs for the ICs on this basis, and a trust fund needs to be established for states and other agencies for reporting and monitoring requirements, and other costs associated with the long-term maintenance of ICs.

The draft FS fails to provide much detail on the ICs that need to be implemented, even though it relies heavily on such ICs in its proposed cleanup alternatives. Most troubling is the lack of detail or rigor described for ICs to protect tribal and subsistence fish consumers and those populations who may buy seafood caught by community members. The draft FS suggests that education and behavior change are the key elements of an IC program. This suggests a troubling lack of understanding, concern, and cultural competence regarding the subsistence and

¹ While there is evidence of increased risk during remediation from other site, the draft FS fails to address measures that can be taken to reduce these risks, including proper selection of technology and equipment, operator training and experience, containment of suspended sediments and other Best Management Practices.

cultural significance of seafood consumption to Duwamish River fishing communities (see comments submitted by the International District Housing Alliance/Project WILD and others). Behavior change by the affected community should be understood as an unacceptable long-term solution to the threats posed by contaminated fish, as it has potentially serious implications for community and family stability and health. The majority of Duwamish River seafood consumers are low-income and/or homeless fishermen and their families, tribal members (many from Tribes with treaty rights to harvest fish and seafood from the river), and Asian/Pacific Islander immigrant communities for whom fishing and seafood harvesting is deeply rooted in cultural traditions that are important both to subsistence and to family and community cohesion. Many fishermen fall into more than one of these categories, e.g., low-income/immigrant fishing families. Evidence is available in the scientific literature on how this type of undesired “behavior change” has increased health inequities in these populations, including increases in obesity, diabetes, depression, and more.² Some populations are making the choice to fish either because of a lack of financial resources or a desire to continue cultural traditions to fish from the river. Many of the people commonly observed fishing from the river are children and/or adults harvesting fish for consumption by their families, including children and women of childbearing age. In short, nearly all people who regularly harvest and consume seafood from the Duwamish River are vulnerable populations representing Environmental Justice communities that bear a disproportionate share of the health risks posed by the site.

ICs required to serve this community are extensive and must ensure that the measures taken are both reasonably effective and adequately and equitably replace the seafood resource and associated cultural traditions that have been made unsafe for consumption by the affected communities, and for the shortest term possible. Necessary measures include multi-lingual, culturally-competent programs providing:

- a. Establishment of a collaborative of multiple institutions (PHSKC, DOH, community representatives, University of Washington) to administer an IC program;
- b. Education about fish contamination and health risks designed to reach multiple communities who fish or buy fish in culturally-appropriate and easily accessible locations (schools, community centers, churches, etc) and formats;
- c. Tools designed to educate and empower affected populations to take actions to improve the health of the impacted seafood resources on the individual, community and societal level;
- d. Services that effectively and equitably provide access to alternative/replacement seafood resources, potentially including transportation to healthy fishing locations, delivery of healthy seafood, vouchers for fish/seafood at local markets, etc. It is not enough to provide information about what is

² E.g.: Fish Consumption and Environmental Justice: A report developed from the National Environmental Justice Advisory Council Meeting of December 3–6, 2001, revised November 2002; Cooperative Agreement with U.S. EPA on Comparative Dietary Risk, Toxicology Excellence for Risk Assessment [Chapter 5: Socio-cultural Considerations of Fish Consumption], August 1999.

not healthy – alternatives that are healthy and that require culturally-important behavior changes to the minimum extent possible must be provided without requiring additional expenditures or burdens on impacted community members.

- e. Training all community health clinics of the dangers of eating contaminated seafood, especially for children and women during pregnancy and breastfeeding;
- f. Culturally-appropriate community-based social marketing campaigns;
- g. Stakeholder focus group and surveys with EJ communities to determine needs. Each community will be different and will require a different type of outreach effort;
- h. Evaluation program, including yearly evaluations in all communities to reassess and respond to changing needs over time;
- i. Culturally-appropriate revisions to signage about advisories;
- j. Job creation so that communities are outreach experts (train the trainer programs).

The FS needs to fully account for the costs of ICs and use such measures only to the extent absolutely necessary. A discussion of ICs must be added to the FS that includes:

- *Incorporation of ICs into each alternative, with all associated assumptions and costs;*
- *Addressing EPA's site manager guidance on ICs;*
- *Discussion of a comprehensive short-term, remediation, and long-term IC program.*

6. Cleanup Technologies Selection

The Draft FS describes three main categories of sediment cleanup technologies: removal (dredging), containment (capping), and two variations of natural recovery (enhanced and monitored). For the removal option, disposal in the waterway and at upland landfills are presented as options, along with treating contaminated sediments prior to or in lieu of disposal.

Removal/Dredging

Both federal (EPA) and state (Washington) regulations require that cleanup actions (a) protect human health and the environment and (b) favor permanent remedies for cleaning up contaminated sediments. The draft FS correctly identifies removal remedies as rating highest for long-term effectiveness and permanence, because contaminated sediments are entirely removed from the site, eliminating the potential for their future release into the environment.

At the Duwamish site, the potential for future disturbances of contaminants remaining on site is exceptionally high, both because of the dynamic nature of the site – scouring from natural events (e.g, floods) and intensive human uses (e.g., ship scour) – and because the lower Duwamish River sits above an active seismic fault.

In addition, fewer restrictive controls and less maintenance will be required with greater volumes of contaminated sediments removed. In addition to reducing risks, contaminated sediment removal also reduces costs associated with more monitoring, maintenance and institutional controls.

EPA should select an alternative that emphasizes removal to the greatest extent feasible, in order to increase certainty, ensure permanence, and minimize risks, and reduce ongoing costs that will be required over the long term and perhaps in perpetuity.

Containment/Capping

The draft FS states that capping is a known and effective technology for the containment of contaminated sediments. However, the Duwamish estuary is an active seismic zone, increasing the risk of disturbance and re-release of contaminated sediments buried under remedial caps.

A highly developed commercial-industrial corridor, extending from the City of Kent to the Elliott Bay/Harbor Island marine terminal facilities, is founded on the young Holocene deposits of the Duwamish River valley. The deposits of this Holocene delta have been shaped not only by relative sea-level rise but also by episodic volcanism and seismicity..... A geotechnical investigation of these river-mouth deposits indicates high initial liquefaction susceptibility during earthquakes, and possibly the potential for unlimited-strain disintegrative flow failure of the delta front.... Earthquake-induced failure of the Duwamish delta front is a significant threat.... extensive soil liquefaction and ground failure of native deltaic deposits are likely during moderate to large earthquake events. Under expected levels of seismic loading, the analysis of deltaic material of the Duwamish river indicates a high potential for liquefaction for the delta under likely earthquake scenarios for the City of Seattle.³

In the context of the lower Duwamish, capping does not rate as certain as it might otherwise due to placement over an active fault zone. Advanced seismic engineering will be required of any caps placed to contain contaminated sediments at the site, increasing the costs of capping above the norm (as a result, costs may be underestimated in the FS). Even with containment, the potential remains for contaminated sediments to be disturbed by seismic activity – observations of liquification of soils and breaching of upland containments in the Duwamish basin were observed immediately following the Nisqually earthquake, which was more distant and

³ Seismic stability of the Duwamish River Delta, Seattle, Washington. U.S. Geological Service, Department of the Interior, 2007.

deeper than the fault underlying the Duwamish River.⁴ The Institutional Controls, such as restrictions on shipping activity and maintenance dredging, that would be required in capped areas of the Duwamish could also pose burdens and limitations on current and future transportation and industrial activity. While reasonable in areas where removal of contaminated soils poses excessive risks or costs, capping should be considered a secondary remedy to removal and should be reserved for circumstances where removal is infeasible or impracticable.

The proposed Cleanup Plan should employ capping as the second highest preferred remedy, in order to provide the engineering required to resist disturbance to the greatest extent possible; any capping should include carbon-amended or other reactive material in order to reduce the toxicity and mobility of remaining contaminants.

“Natural Recovery”

Natural recovery is highly uncertain, relying on modeling and a fairly static river condition for the predictions of sedimentation that would gradually cover contaminated sediments with (relatively) clean sediment from upriver to be realized. In addition, the potential impermanence of the remedy, which relies on slowly burying contaminated sediments under deposited layers of cleaner material with no structural engineering to protect the underlying layers from disruptions, needs to be carefully considered. While capping constructs a thick, engineered, clean barrier designed to resist disruptions from ship scour and earthquakes, natural recovery offers a thinner layer of separation, only somewhat cleaner material (the FS predicts that the upriver sediments deposited through natural recovery will be too contaminated to be health protective), and no engineered resistance to disturbances. Natural recovery is, very simply, a highly risky approach to attempting to protect the environment and health of the people who live, fish, work and play on the river.

The FS states that contingency plans will be in place if natural recovery fails to reduce risks in a reasonable time frame, but the environmental and financial risks of relying on a method that may result in contaminants being re-exposed at some unknown time in the future isn't adequately assessed. The uncertainty in cleanup success and risk reduction using natural recovery is matched by a cloud of uncertainty hanging over tax- and ratepayers, as well as businesses, that must pay the cost of cleanup. It is difficult if not impossible for the responsible parties to plan for the necessary expenditures when considering alternatives with such a high level of uncertainty – how do local governments and business owners plan for long-term costs when it will not be known for years, or even decades, if we are done cleaning up and therefore done paying? While alternatives that use active measures to clean up the river are more expensive in the short term, the benefits of removing both the

⁴ Cindy Updegrave, University of Washington, personal communication.

uncertainty of future financial liability and reducing the long-term monitoring, maintenance and institutional control costs that accompany natural recovery are significant and not adequately discussed in the document.

Enhanced natural recovery, in which a thin layer of clean material is deposited in areas where natural recovery will be used in order to ‘kick start’ the process, should be required for any areas being considered for natural recovery at all. Enhanced natural recovery should also include the application of activated carbon in the “enhanced” layer, to assist in the degradation of PCBs. In addition, there should be no areas of the river which are excluded from monitoring – in other words, if an alternative is selected that does not include some portion of sediments above natural background in the cleanup plan, these areas as well as those that are included, should be considered as monitored natural recovery areas. The current alternatives fail to do this – over 140 acres are left out of the cleanup alternatives despite elevated concentrations of contaminants and with no provision for monitoring these areas.

The proposed Cleanup Plan should use natural recovery to the minimal extent possible, and then only as “enhanced” natural recovery with carbon-activation to assist with the degradation of contaminants and monitoring of all areas with remaining contaminants above natural background levels.

Disposal

During the review of the draft Candidate Technologies Memo in 2005, contaminated sediment disposal in the waterway (Contained Aquatic Disposal, or CAD) was eliminated as unacceptable to the community. It is surprising to see this disposal option re-introduced here, and it should be removed from consideration in the final FS. Both the short-term (dispersal of contaminants) and long term (potential for disruption or migration of contaminants) risks of a CAD are unacceptable, and the public largely supports removal of contaminants from the Duwamish Site to the extent feasible, not consolidation of contaminated sediment in a CAD in the river. EPA is aware that an overwhelming majority of river stakeholders find in-water disposal options too risky and unacceptable, as demonstrated by the public’s response to King County’s proposal to dispose of contaminated sediments in a CAD in Commencement Bay (not even in proximity to this community).

The decision to exclude a CAD option from the candidate technologies for this site was correct; in-water disposal should not be included in this FS.

Sediment Treatment

The FS does not adequately consider sediment treatment options in its evaluation of cleanup alternatives. “Treatment” is considered in Alternative 5, but is only included to give token consideration to this option. The treatment technology included is not in fact true “treatment” in that it does not reduce the volume or toxicity of contaminants, thus reducing its ranking in the assessment. Instead the included technology simply separates contaminants from sediments, potentially removing the contaminants from the sediments sufficiently to allow the “washed” sediments to be disposed of or reused at lower cost. This may have cost benefits and as a result marginally increases the assessment ranking of the treatment alternative in the analysis of alternatives in Section 9. However, the Draft FS needs to include a true treatment alternative that actually reduces the volume or toxicity of the contaminants. DRCC/TAG has previously submitted comments identifying potential candidate technologies for sediment treatment, such as BioGenesis, based on their demonstrated efficacy at other sites.

EPA should include a true treatment option that reduces the volume and/or toxicity of site contaminants in the final FS.

7. Alternatives Assessment

Both federal (EPA) and state (Ecology) guidelines require that cleanup actions protect human health and the environment. None of the proposed cleanup alternatives meet this threshold requirement without the extensive use of institutional controls. We address this issue further in the next section of these comments.

EPA and Ecology guidance also favor permanent remedies wherever possible. The FS correctly identifies removal of contaminated material as best meeting this goal, because it “physically removes the contaminated sediment from the LDW thereby eliminating any residual risk to the LDW from that material” [10-7]. Capping is identified as having a “slightly higher” potential for re-exposure of contaminated sediments, and natural recovery as having the greatest potential for exposure, “because these technologies are not engineered to ensure isolation of buried contaminated sediments” [10-7]. Given the high value the public places on certainty and permanence these are paramount considerations in selecting a cleanup alternative for the Duwamish River.

Other guidance used to assess the alternatives are treated in more subjective or prejudicial ways in the FS. Unsupported assumptions are made about how much dredging can be simultaneously conducted on the river, for example (the FS assumes two dredgers as the maximum possible during any one time period), affecting the length of time estimated to meet RAOs. Less attention is given to the amount of time each alternative will take to lower contaminant concentrations in the river. The FS also assumes that disturbances of contaminated sediment during dredging cannot be managed sufficiently to prevent an increase in fish tissue concentrations, but does not discuss the measures that can be taken to minimize such short-term impacts (ranging from proper

dredge selection and operator training to silt curtains and coffer dams, none of which are discussed). The FS also makes some preliminary cost estimates that are included in the assessment, but likely underestimates the cost of adequate long-term Institutional Controls and excludes costs that are consequences of leaving residual contamination in the river. In addition, an annual, as well as total, cost estimate should be included in the FS. Most notably, the FS assumes that Tribal and Community Acceptance cannot be assessed until EPA selects a preferred cleanup plan, but given the long and highly engaged tribal and public involvement at this site to date, this is not so; the Tribes and the community have already commented on many aspects of the cleanup alternatives and some preliminary assessment can be included in the FS, as it is for the other parameters.

The assessment of alternatives presented in the draft FS is prejudicial and based on unsupported assumptions. The final FS needs to conduct an independent, unbiased assessment.

8. Full Range of Alternatives Needed

The 12 proposed alternatives are not sufficiently representative of the full range of options available for cleaning up the lower Duwamish River. While Alternative 1 – Early Action Area cleanups only – represents the minimum end of the cleanup range, there is no comparable maximum end of the range presented. Alternatives 6C and 6R actively manage 299 acres of contaminated sediment, but do not address the remaining 142 acres of sediment contaminated above the natural background (2 ppb PCBs) cleanup level, resulting in additional health risks to tribal and subsistence seafood consumers. In addition, EPA and Ecology require that cleanup actions protect human health and the environment. None of the proposed cleanup alternatives meet this threshold requirement without the extensive use of institutional controls. Indeed, none even evaluates a maximum feasible cleanup option – one that includes upriver as well as lateral source control in order to achieve natural background, EPA’s stated cleanup level for the site.

An alternative that cleans up contaminated sediments at the LDW Site to the maximum extent feasible and requires the use of institutional controls to the minimum extent possible needs to be included in the final FS. DRCC/TAG proposes the inclusion of an “Alternative 7” in EPA’s final FS, as follows:

Alternative 7 would follow the approach of the rest of the FS by evaluating a “C” and “R” series of the alternative. Alternative 7 would apply an RAL that will result in a riverwide average PCB concentration of 2 ug/kg dw (ppb), or natural background, using the Maximum Incremental Reduction approach described in Section 6 of the Draft FS to determine the numerical RAL. Alternative 7C would apply a combination of technologies, ranging from monitored and enhanced natural recovery to capping and dredging, while Alternative 7R would remove contaminated sediments wherever feasible (i.e., except on unstable slopes or

under permanent structures that block removal) and use engineered capping and/or ENR over all remaining contamination. Finally, Alternative 7 would require that all ongoing sources with the potential to recontaminate the Site over natural background conditions be included in the source control portion of the Cleanup Plan, regardless of whether the sources are located lateral to or upriver of the Site (DRCC/TAG recommends that this be an integral component, or at minimum an option, of all of the alternatives). Municipal stormwater treatment must also be explicitly recognized as a feasible and applicable source control technology, if needed. Under all alternatives, monitoring would be required to confirm the efficacy of ongoing source control efforts.

Include Alternative 7 (C&R) in FS:

- *Design clean up and set RAL to achieve average concentration equal to natural background;*
- *Implement comprehensive lateral and upriver source control program, including treatment if necessary.*

9. Environmental Justice Analysis

Environmental Justice (EJ) is defined by both the EPA and the Department of Ecology as:

The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

Although it is implicitly acknowledged that EJ communities reside next to and use resources from the Lower Duwamish Waterway, the FS fails to mention that EJ populations are disproportionately affected by the contamination from the Duwamish River and they will be the ones to bear the brunt of what is not cleaned up under any selected alternative. The document fails to address how EJ concerns will be addressed. This is contrary to: 1) the 1994 EJ Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income populations; 2) EPA's EJ plan 2014; and 3) the Department of Ecology's accountability to EJ, all of which are discussed in more detail below:

EJ Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income populations (1994).

The FS fails to implement EJ Executive Order 12898 in three ways:

1. Executive Order 12898: Public Participation

The EJ Executive Order, Sec. 5-5 (a). Public Participation and Access to Information states:

The public may submit recommendations to Federal agencies relating to the incorporation of environmental justice principles into Federal agency programs or policies.

DRCC/TAG requests that EJ principles, including a discussion of affected EJ communities and an analysis of impacts under each alternative, be incorporated into this FS, EPA's Proposed Cleanup Plan and the ROD for the LDW Superfund Site.

2. Executive Order 12898: Cumulative exposures

With regard to the Executive Order, the EPA has the responsibility to address EJ in several parts.

Specifically, under 3-3 (b):

Environmental human health analyses, whenever practicable and appropriate, shall identify multiple and cumulative exposures.

With regard to multiple and cumulative exposure, the current risk assessment and therefore the expression of risk reduction in the FS alternatives fails to regard the most current science on how low-income, minority populations are more vulnerable to toxics as a result of social, economic and other non-chemical stressors. The science on this vulnerability is no longer in dispute. It was explicitly discussed in *the 2003 Framework for Cumulative Risk Assessment* and yet we see no acknowledgement of this type of risk analysis in the RI or FS. An excellent foundation for cumulative health science can be found in *CA EPA Cumulative Impacts: Building a Scientific Foundation (Aug 19, 2010)*. Additional science has been presented at the recent *Science of Disproportionate Impacts Analysis Symposium (March 17-19, 2010)*.

This issue of multiple and cumulative exposures is important in both the expression of cancer and non-cancer risk for this FS. For cancer risk, it is entirely possible that the cumulative vulnerabilities in EJ communities may mean that the "acceptable" 10^{-4} cancer risk target that the EPA has typically used in other RODs cannot be reached. In addition, non-cancer risks at the site will remain above 1 for *all* alternatives. There is no explicit mention of this in the Executive Summary, though it should be a critical consideration in selecting an alternative. Non-cancer risks to EJ populations combined with cumulative exposures to non-chemical stressors may increase the Hazard Index well above 10 for all EJ populations. Considering that the main risk driver is PCBs and the most significant PCB non-cancer effects are developmental, this failure to address non-cancer risks could have significant impacts on women of childbearing age who consume contaminated seafood from the Duwamish River.

Evidence that cumulative impacts are higher in the Duwamish Corridor (where EJ communities reside) than elsewhere in Seattle can be found in the *Washington State Department of Health's Duwamish Valley Regional Modeling and Risk Assessment*. Cumulative exposures to multiple contaminants (air, water, soil, fish consumption, etc) in the Duwamish Valley Corridor combined with non-chemical stressors (poverty,

unemployment, unsafe housing, higher dropout rates, etc) demonstrate the importance of conducting an EJ analysis that will help the agencies and affected communities select the best alternative.

While we recognize that all alternatives result in a significant reduction of both the cancer and non-cancer risks, we request an explicit assessment and acknowledgement of cumulative health vulnerabilities in the FS. This EJ assessment will also help inform the type and extent of institutional controls that need to be developed as well as decisions that might be made about commitments to future source control efforts, both laterally along the Superfund Site as well as upriver.

3. Executive Order 12898: Agency Responsibility

EJ Executive Order, Sec. 6-6. General Provisions.

6-601. Responsibility for Agency Implementation. The head of each Federal agency shall be responsible for ensuring compliance with this order.

EPA is responsible for complying with Executive Order 12898 with respect to the FS.

Plan EJ 2014

EJ Plan 2014 is a four-year plan being implemented to “help EPA move forward to develop a stronger relationship with communities and increase the agency’s effort to improve the environmental conditions and public health in overburdened communities.” Specifically relevant to the LDW Superfund Site, Plan EJ 2014 includes three initiatives under development:

- Incorporating EJ in Rulemaking
- Considering EJ concerns in EPA’s permitting process
- Accelerating Compliance and Enforcement Initiatives.

1. Plan EJ 2014 will be in effect by the time remediation starts

Although the final plan will not be finalized until February 2014, EJ 2014 should be considered in both the FS and the ROD since it will be complete and in effect before remediation of LDW Superfund Site begins.

2. Plan EJ 2014 and permitting

Plan EJ 2014 makes clear that EPA needs to pay more attention to EJ concerns with regard to permitting – specifically, the Clean Water Act, Clean Air Act, and the Resource Recovery and Conservation Act. It discusses the need for close cooperation between the Agency’s program and regional offices, states, and community stakeholders to strengthen permitting programs. This is of particular importance since the

Duwamish corridor is a highly industrial area with multiple permits being administered by Ecology (see below for a more complete discussion) with EPA oversight and authority.

3. Plan EJ 2014 and enforcement initiatives

The Office of Enforcement and Compliance Assurance (OECA) and the Regions are taking steps to:

(a) consider EJ concerns in selecting national priorities for enforcement and compliance assurance attention,

(b) target specific compliance strategies and enforcement actions to address problems that affect overburdened communities, and

(c) seek remedies in enforcement actions that benefit overburdened communities affected by the non-compliance.

For example, OECA selected National Enforcement Initiatives for 2011-2013 that include taking action against sewer overflows..... These types of facilities and pollution problems tend to have a disproportionate impact on minority, low-income, and indigenous communities.

The issue of sewer/storm water flows and the additional burden they place on EJ communities is of particular relevance to this LDW Superfund Site and is discussed in more detail below.

Department of Ecology accountability for Environmental Justice

Ecology is also accountable for following Executive Order 12898 since it conducts federal programs under EPA authority and through the Environmental Performance Partnership Agreement (PPA July, 2009-June 30, 2011). The PPA describes EPA funded activities carried out by Ecology that address water quality, hazardous waste, and air programs. Chapter 4 of the PPA is entitled *Environmental Justice* and is an introductory chapter preceding the program-specific chapters of the agreement. It states:

Whether it is implementing programs to issue air operating permits or water discharge permits, facilitating cleanup of contaminated sites, or pursuing enforcement actions, both partners are committed to eliminating disproportionate impacts in communities with possible EJ concerns.

Later in the chapter, each agency agrees to conduct EJ assessments to:

- Identify vulnerable communities
- Prioritize agency work with these communities
- Measure progress towards environmental justice
- Track improvements in Washington State

Ecology and EPA have signed the PPA agreement making them accountable for EJ issues, including those in the Lower Duwamish Waterway Superfund Site. Because of Ecology's responsibility for administering the CAA, CWA, and RCRA activities in this PPA agreement, the FS alternatives need to include consideration of these permitting processes.

An EJ analysis needs to be conducted for the LDW FS and Cleanup Plan, including the following components:

- 1. Identify vulnerable communities affected by the Superfund Site.*
- 2. Conduct a Cumulative Impacts Assessment*
- 3. Assess how EJ populations will fare under each alternative.*
- 4. Assess how ICs both during and after remediation will affect EJ communities.*

10. Community Acceptance

DRCC/TAG's Advisory Board is comprised of the ten organizations that form EPA's Community Advisory Group for the Duwamish River Superfund Site: the Community Coalition for Environmental Justice, the Duwamish Tribe, Georgetown Community Council, IM-A-PAL Foundation, People for Puget Sound, Puget Soundkeeper Alliance, the South Park Neighborhood Association, Washington Toxics Coalition and Waste Action Project. Several of these organizations have submitted their own comments on the Draft FS to EPA. In addition to extensive consultations with members of its Advisory Board, DRCC/TAG has also solicited feedback on the cleanup alternatives from the public at large, including many individuals from the communities most affected by cleanup decisions at the site. Methods used to solicit input included the Duwamish Valley Vision Project, Community Alternatives Workshops, surveys ranking the priority of assessment categories and technology choices, "Loteria" style surveys of important river uses, and conducting an outreach project to Asian and Pacific Islander fishermen on the river in partnership with the International District Housing Alliance/Project WILD. This section summarizes the input obtained through each of these feedback and evaluation tools.

- *The Duwamish Valley Vision*

DRCC/TAG conducted a broad-based Duwamish Valley Vision Project in 2008-09, in order to define and articulate the community's goals and vision for the future of the Duwamish River Valley – an area extending from the West Seattle ridge to Beacon Hill and south from Elliott Bay through the industrial and residential neighborhoods of South Seattle, as well as portions of the City of Tukwila and unincorporated King County. The results of the project, compiling the input of over 500 stakeholders in four languages, are published in the Duwamish Valley Vision Report (2009), available online at:

<http://www.duwamishcleanup.org/uploads/Duwamish%20Valley%20Vision%20Report%202009.pdf>

The “Vision Project” was conducted in order to give DRCC/TAG and the valley’s other stakeholders a road map for the future of the river and its surrounding areas, and to serve as a guide for reviewing the proposed alternatives for clean up of the Duwamish River Superfund Site.

The Duwamish Valley Vision Project is intended as a guiding tool – a “compass” for planning the future of the Duwamish Valley to best serve its diverse constituents, including those whose voices are often not heard in traditional planning processes – its immigrant and non-English speaking residents, workers, fishermen, youth, elderly, and transient and homeless communities – as well as its native born residents, businesses and environmental stakeholders. It is intended as a comprehensive, inclusive and balanced community vision that reflects the input and voices of all of the Duwamish Valley’s constituents and stakeholders. [DRCC 2009]

DRCC/TAG reviewed the proposed alternatives in the Draft FS in this context – do the alternatives support, complement, challenge, or undermine the community’s future vision for the Duwamish River Valley?

Several aspects of the Duwamish Valley Vision are directly related to the river cleanup. Community amenities, such as waterfront parks, hand boat launches, and fishing access are identified as priorities for local residents and recreational visitors. Controlling ongoing pollution sources, including industrial releases, combined sewer overflows, and stormwater are identified as high priorities by nearly all of the visioning participants. Protecting the health of fishermen is also of paramount importance to Duwamish River stakeholders, as is securing a cleanup that is “done once, and done right” – stakeholders placed a premium on ensuring a river cleanup that would not have to be repeated again in the future, either because it stopped short of the goal, or due to recontamination from ongoing sources of pollution. These broad principles and priorities provide a baseline for assessing the proposed alternatives in the Draft FS.

Cleanup alternatives that rate highest in terms of permanence, certainty, and removal best meet the priorities identified through the Vision Project. Further, the most health protective alternatives that require the least institutional controls rate higher, and alternatives that integrate source control to maximize effectiveness and minimize recontamination enjoy greater community acceptance and support.

- *Community Alternatives Workshops*

DRCC/TAG hosted a series of three Community Workshops in which local residents and other stakeholders identified obstacles that are likely to hamper efforts at a river cleanup that achieves the community’s future vision for the river (see above), as well as strategies for overcoming those obstacles. A total of XX people participated in the three workshops, which were held in West Seattle, South Park and Georgetown during November 2010.

The two obstacles to a comprehensive and health-protective cleanup that were most frequently identified by workshop participants are (1) controlling ongoing pollution, and (2) cost. The workshops generated strategies for overcoming these obstacles, including:

Source Control

- Low impact development strategies
- Public transportation improvements
- Stormwater treatment technologies
- Enforcement of existing regulations
- “Pollution taxes”

Cost

- “Pollution taxes” and fees to help fund cleanup
- Widen scope of potentially responsible parties to include upriver contributors
- Conduct cost-benefit analysis that captures benefits of clean resource and externalized costs

The workshop participants conveyed (1) support for more aggressive public commitment to pollution source control efforts, and (2) a willingness to pay a higher price for a more thorough cleanup of the Duwamish River.

- *Surveys*

DRCC/TAG distributed the survey in Attachment 1 at 17 meetings and venues from November to December 2010 and collected a total of 199 completed surveys (195 completed responses to survey question #2).⁵ This tool directly assessed the public’s prioritization of the alternatives parameters and technologies discussed in the Draft FS. The responses were tallied and the overall results of the two survey questions are summarized below, listed from the highest ranking response to the lowest (the lower the point total, the higher the ranking):

Survey Question #1:

What factors are most important to you in the cleanup? Please rank in order of importance (1 = highest, 7 = lowest)

1 = Protection of human health [399]

2 = Protection of the environment [446.5]

⁵ The surveys were distributed and collected at the following meetings: Sustainable Queen Anne (10/25/10), Greater Duwamish & Southeast District Councils (10/27/10), Duwamish Tribal Council (11/2/10), Southwest District Council (11/3/10), North Highline Unincorporated Area Community Council (11/4/10), DRCC/TAG Community Alternatives Workshops (11/7/10, 11/9/10 & 11/15/10), South Park Neighborhood Association (11/9/10), Corinthian Yacht Club (11/15/10), Georgetown Community Council (11/15/10), Delridge District Council (11/17/10), Seattle Neighborhoods Federation Meeting (11/18/10), REI Puget Sound Advocates Lecture Series (12/1/10), EPA Feasibility Study Public Meetings (12/7/10 & 12/9/10). Individual meeting survey results are available.

- 3 = Certainty (Will it work?) [611.5]
- 4 = Permanence (Will it last?) [634.5]
- 5 = Minimize short term impacts [1064]
- 6 = Speed (How long will it take?) [1065]
- 7 = Cost [1115]

Protection of human health ranked slightly higher than protection of the environment, highlighting the important the public places on success in reducing health risks due to Duwamish River contamination. Certainty and permanence ranked highest among the cleanup alternatives parameters described in the Draft FS (rank 3 and 4), which is consistent with the community’s desire for a cleanup that is “done one and done right,” as articulated in the Duwamish Valley Vision Report. The public wants a Cleanup Plan that offers minimal unknowns and little risk of failure. The remaining cleanup alternatives parameters in the Draft FS come in closely ranked relative to each other, but far behind certainty and permanence (see tallied rank totals, in [brackets]): minimize short term impacts and speed are nearly tied for 5th and 6th, and cost comes in last at 7th.

Based on community acceptance, remedies that provide the most protection of human health as well as the environment should be given the highest preference, and the most certain and permanent remedies should be implemented to the maximum degree feasible. The survey results suggest that the public is willing to tolerate some disturbances and is willing to expend the time and money required to carry out a cleanup that offers the best guarantee of success. Given that the success of this cleanup relies heavily on public support, these indicators of community acceptance should be given significant weight in the selection of a cleanup alternative.

Survey Question #2:

Please rank your preferred strategies for cleaning up the Duwamish, in order of preference (1 = highest; 5 = lowest)

- 1 = Pollution source control [363]
- 2 = Dredging/Removal [411.5]
- 3 = Capping/Containment [571]
- 4 = Natural Recovery [726.5]
- 5 = Fishing Advisories and other river use restrictions [811]

Each of the cleanup technologies above are discussed in the Draft FS, but pollution source control is treated as a separate method of reducing contamination and is not well integrated into the cleanup alternatives, as discussed in an earlier section of these comments. When considered as one of the cleanup technologies available, it ranks first among survey respondents, emphasizing the importance the public places on controlling ongoing sources of pollution to the river and preventing recontamination of the river after cleanup. Dredging/removal of

contaminants from the river ranked second among the technology preferences, reflecting the public's preference for certain and permanent remedies. The Draft FS correctly assigns the highest certainty and permanence scores to removal technologies; the survey results show the highest community acceptance is for these technologies as well. Capping/containment follows removal in the list of ranked preferences. Natural recovery is not a preferred cleanup technology, ranking far behind capping and a little higher than fishing advisories, which come in last among the public's preferred technologies, demonstrating little support or tolerance for restricting the public's use of the river.

Based on community acceptance, pollution sources should be controlled and removal of contaminants should be implemented to the maximum extent feasible, followed by capping where removal is not possible. Natural recovery and fishing advisories/ institutional controls should be used only to the degree absolutely necessary after other remedies have been exhausted.

- “Loterias”

DRCC/TAG developed a graphic “loteria” style survey of important river uses, which was distributed largely at community events with significant attendance or participation by non-English speaking community members and other underrepresented members of the affected community, including neighborhood food banks and EPA's Spanish/English bilingual FS Public Meeting on December 7, 2010 (see Attachment 2). Respondents were asked to circle the three things on the “loteria” card that are most important to them about cleaning up the river. A total of 83 completed “loterias” were collected. The number of responses for each were tallied and the results are summarized below, listed in order of the number of respondents who circling the selection (in [brackets]):

- [41] Healthy Duwamish River for organisms that live along or in the river
- [34] Kids and dogs playing on the beach along the Duwamish River
- [29] Job and employment opportunities in the community
- [27] Swimming in the Duwamish River
- [26] Picnic spaces along the Duwamish River
- [26] Eating fish from the Duwamish River
- [24] No new pollution into the Duwamish River
- [23] Fishing in the Duwamish River
- [15] Eating crab or shellfish from the Duwamish River

18% of respondents (nearly 1 in 5) said that eating crab or shellfish from the river is important, and 31% (nearly 1 in 3) said that eating fish from the river is important. Given that nearly 85% of respondents are food bank clients, their responses highlight the importance of the river as a current or potential food source for many low-income members of the community. 35% of respondents said that job and employment opportunities linked to

the river cleanup are important, highlighting the need to develop a program to ensure that cleanup-related jobs are made available to local residents. It is also interesting to note that nearly half of respondents listed a healthy river as one of the most important choices, demonstrating a strong environmental interest and ethic within the pool of “loteria” respondents. The “direct contact” activities (swimming, picnicking and playing along the river) were selected by between 33% and 41% of respondents.

A cleanup alternative that protects all uses of the river to the maximum extent feasible, including direct contact and seafood consumption, is needed and strongly supported by the community. Local jobs creation is also valued by the community and needs to be integrated into the overall approach and planning for cleanup.

- *Outreach to Asian and Pacific Islander Fishermen*

DRCC/TAG partnered with the International District Housing Alliance/Project WILD youth program to conduct interviews with Duwamish River fishermen in order to better understand and communicate the reasons that people harvest fish from the river and the implications for the cleanup alternatives. Participants in Project WILD are Asian and Pacific Islander (API) youth, ages 13–18, who speak a variety of API languages, including Mandarin and Cantonese (Chinese), Vietnamese, Tagalog (Filipino) and Khmer (Cambodian). The youth conducted a site visit to the river on October 27, 2010 and using the interview questions in Appendix 3, attached, the youth interviewed fishermen at the Spokane Street Bridge on November 24, 2010. Using what they learned from the fishermen about their fishing practices and reasons for fishing, the Project WILD youth developed a video presented as their formal public comments at EPA’s Public Meeting on December 9 and available online at <http://www.youtube.com/watch?v=iKH6wgRcutk>.

In the course of their site visits and interviews, the youth learned that Duwamish River fishermen harvest a variety of seafood – including seafood included in the Department of Health’s (DOH) ‘No Consumption’ Advisory; share their harvest with family and community members – including children; and that some harvest and consume fish from the river daily. During the initial site visit, DRCC/TAG staff also talked with several fishermen at the Spokane Street Bridge, including a father and daughter, age 9, who harvest and consume perch from the river daily. Key findings of the project include the important cultural and family role fishing plays for many in the API community, and the common practice of harvesting and consuming species of fish included in DOH’s ‘No Consumption’ advisory and harvesting and consuming a variety of fish species, including salmon, more frequently than advised by DOH.

*Food security and cultural practices are important factors influencing people's decision to harvest and consume seafood from the Duwamish River. The presence of EJ communities fishing in the Duwamish compel all involved parties to conduct a cleanup that **best** protects the health of Duwamish River fishermen.*

The Draft FS states that community acceptance cannot be gauged until after the public hearings on EPA's proposed cleanup plan, scheduled for 2013. The recent EPA/Ecology Public Meetings, comments on the draft cleanup alternatives submitted verbally and in writing, and the DRCC/TAG community feedback tools described above provide ample indication of community acceptance of many of the cleanup choices that face us on the Duwamish River, and should be carefully considered as EPA completes the FS and develops its proposed Cleanup Plan for the LDW Site.

11. Health Risk Assessment neglects non-cancer risks

The draft FS is not transparent about non-cancer risks and their residual health effects. Most assessment of the alternatives focuses on cancer risk reduction, but does not adequately address non-cancer risks. Particularly in Environmental Justice communities, non-cancer risks are often more significant than cancer risks because they pose more immediate health effects. This is particularly important with PCBs in contaminated fish consumed by pregnant and breastfeeding women and children because they are known to cause reproductive and development effects in both populations. The non-cancer health risks under most of the proposed alternatives remain unacceptably high.

The FS must include a full assessment of non-cancer risks as well as cancer risks under each alternative and provide a synopsis of this information in the FS Executive Summary.

12. Recontamination Analysis insufficient

The Recontamination Analysis in Appendix J uses SQS as the threshold for determining recontamination has occurred. This threshold is completely unacceptable. The primary driver for cleanup levels in the Duwamish is human health, not protection of the benthic community which is the basis for the SQS standard. Since a fully health protective cleanup for high seafood consumers would require concentrations below natural background, the Cleanup Level is set at natural background. Any exceedance of the natural background Cleanup Level or concentration constituting an approved and complete cleanup after it has been attained must be the basis for evaluating whether recontamination has occurred.

Recontamination must be defined as an exceedance of the approved Cleanup Level for the Duwamish River.

13. Miscellaneous

Table ES-1 and others throughout the document: Correct the “natural background” value for Total PCBs to 1.5 or 2 ug/kg dw; the correct concentrations appear in the document in Section 4.3.4.2.

DRCC/TAG thanks EPA for the opportunity to comment on this LDWG draft of the Lower Duwamish Waterway Feasibility Study. We look forward to further discussions of the FS alternatives, and offer our assistance in any additional analyses or investigations required to complete work on the agency’s final FS.

Sincerely,

James Rasmussen

James Rasmussen

Coordinator

BJ Cummings

BJ Cummings

Policy Advisor

Lee Dorigan

Lee Dorigan

Board President