

**Response to
Reviewers Comments
on the Draft Cleanup Study Report
for the Duwamish Diagonal CSO/SD**

Elliott Bay/Duwamish Restoration Program

**Prepared for the
Elliott Bay/Duwamish Restoration Program Panel
by the
King County Department of Natural Resources and Parks**

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April 2002

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Responses to Reviewer Comments

Draft 2001 Duwamish/Diagonal CSO/SD Cleanup Study Report

King County received comment letters from the following reviewers:

- Sierra Club
- National Oceanic and Atmospheric Administration (NOAA)
- Washington State Department of Ecology (Ecology)
- United States Environmental Protection Agency (EPA)
- Muckleshoot Indian Tribe (Muckleshoots)
- Duwamish River Cleanup Coalition (Duwamish Coalition)
- King County (KC) and
- City of Seattle (City).

Each comment letter was reviewed, individual comments were identified and each comment was assigned a **Comment ID** (a letter and number separated by a dash mark) and a **Category** (two capital letters).

The **Comment ID** was assigned by using (1) the identification letter for the entity submitting the comment and (2) the number of the comment submitted by the reviewer. For example, **S-1** stands for comment number 1 submitted by the Sierra Club.

Each comment was assigned to one of 14 general categories. A comment was assigned a **Category** by using the two-letter abbreviation for the category. For example, **SC** stands for Source Control. A comment receiving this category designation generally related to a Source Control issue.

The package titled **Individual Comments with Comment ID/Category** compiles the individual comments with respective **Comment ID** and **Category** designations.

The **Responses to Reviewer Comments** package follows. The second page of the package shows the key identifying reviewers submitting comments and the categories of comments. This page also indicates the number of comments received in each category. A response is provided for each of the 109 comments received and appears next to the ID number for the comment. In some cases, a brief explanation is given for the comment category.

Individual Comments with Comment ID/Category

Hackney, Priscilla

From: DMoore9456@aol.com
Sent: Monday, March 11, 2002 11:00 AM
To: priscilla.hackney@metrokc.gov
Cc: patsump@juno.com
Subject: Duwamish sediment remediation

Dear Priscilla

I believe it is good to do something like this sediment dredging /capping and closely monitor to see if it helps. Obviously if the dredging is not done right, it will simply spread the PCBs downstream. Rebuilding estuary habitat like has been attempted on a small scale at the Diagonal site and near Kellogg Island with more shallow water refuges will require some assurance that the sites are not grossly polluted with bioaccumulative persistent toxins.

I hope there are not a lot of PCBs from Boeing plants and other industry or DDT breakdown products from farms leaching into the river from upstream. Hopefully natural "capping" will happen as upriver sediments are cleaner and transported downstream. Dave Moore Sierra Club member

S-1; SO

S-2; DT

S-3; SC



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

Restoration Center Northwest
NMFS Northwest Regional Office F/NWO
7600 Sand Point Way, N.E.
Seattle Washington 98115-0070

28 February 2002

Ms. Priscilla Hackney
King County Wastewater Treatment Division
2001 South Jackson Street
Seattle WA 98104-3855

Dear Ms. Hackney:

N-1; SO

NOAA's Restoration Center Northwest has had an opportunity to review the Elliott Bay/Duwamish Restoration Program's Duwamish/Diagonal CSO/SD Cleanup Study Report and supports the Report's recommended Alternative 3 as the most practical alternative for furthering contaminated sediment remediation in the Duwamish River. We believe that the Report has adequately discussed the cleanup options and has properly evaluated the alternatives.

This Report has more clearly focused the need for the EB/DRP to maximize its opportunities to clean up contaminated sediments, as defined by the establishing 1991 Consent Decree and guiding 1994 Concept Document. The Report estimates a projected engineering cost of \$5.89M (Table 9.4) for Alternative 3 and describes an approximate Panel sediment remedial budget of \$8M (p. 9-18). The Panel has discussed how best to obligate funds remaining after the completion of the Diagonal/Duwamish CSO/SD cleanup but has not planned to reach any resolution until completion of this project.

This report highlights one significant worrisome highly concentrated and contaminated hot spot (to 5x the CSL) immediately south of the already selected boundary for the Alternative 3 project which was not included for cleanup due to various historical reasons. NOAA now proposes at least one further effort be made to ascertain if it would be possible to apply the same Alternative 3 approach to excavating and backfilling this hot spot (Fig. 5-1 for mercury, Fig. 5-3 for PCBs, Fig. 5-5 for bis(2-ethylhexy)phthalate and Fig 5-7 for butyl benzyl phthalate). In order to keep the cleanup costs within the approximate \$2M projected to remain if the Alternative 3 cost estimates hold, we would suggest that the hot spot cleanup consist of an approximate 200 foot by 200 foot square excavated to a maximum of 6 feet (two 3-foot lifts) and backfilled to grade depending on the existing contours. This hot spot remediation should be channelward of the Port of Seattle pier and may

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N-2; SE

need to follow a steep sideslope and shoaling area down and into the navigation channel (Fig. 2-4). The target should be centered on the PCBs footprint (Fig. 5-3) since these contaminants are our greatest worry of any of the Chemicals of Concern at this site to NOAA's trust resources, largely represented by salmonids and resident flat fishes.

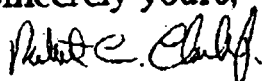
It might be neater to also remove a second hot spot immediately west of the northwest corner of the Alternative 3 boundary, if funding were available from EB/DRP. However, it appears doubtful that we will have adequate funds to conduct both hot spot cleanups and this second site has a lower immediate concern for our resources since the area is smaller, it is located in deeper water (for the benefit of outmigrate juvenile salmon that largely remain near the waterway surface), and it is in the navigation channel which suggests it might be cleaned up by another entity (i.e., U.S. Army Corps of Engineers maintenance dredging, Lower Duwamish NPL responsible parties) in the not-distant future.

We believe that sufficient information exists in King County and their consultants files to allow this additional evaluation to be conducted and costed out while still maintaining the already tight final planning and construction schedule proposed for this cleanup (Fall 2003). If successful, the cleanup of this hot spot would provide (1) considerable additional benefit to our resources on a sooner rather than later basis, (2) remove one additional very close potential site of recontamination, and (3) better justify the Panel's remaining sediment remediation budget.

We appreciate the opportunity to bring this request forth considering the late stage in this planning and design effort.

N-2; SE

Sincerely yours,



Robert C. Clark, Jr., Director
NOAA Restoration Center and Natural Resource Trustee

cc. EB/DRP Panel Members
NOAA RC/HQ, Russ Bellmer
EPA Superfund, Allison Hiltner
Ecology MTCA, Rick Huey

Comments on Draft Du/Di CSO/SD Cleanup Study Report

N-3; AP

--Appendices: Maybe delineate differently between Mass Balance Model Report appendices and Du/Di Report's appendices. It's a bit confusing since Appendices cover pages are the same, and at one point, it looks like the order goes, Appendix A, C, J – just because some are from the former report and some are from the latter report.

N-4; DG

–Page 2-9: seems outdated, too general, no mention of listed species. Needs updating.

–Section 2.5.3 Muckleshoot is spelled incorrectly a few times.

–page 2-3: the font size of the top page is bigger than the rest of the page

N-5; ED

–page 3-5: bottom of page, offshore should be one word

–page 3-10: typo on bottom of page – “eliminated” is spelled incorrectly (2nd usage in 2nd to last paragraph)

–page 4-5: near bottom of page, “near shore” should be one word (neashore)

–page 5-2: 3rd paragraph down, “down stream” should be changed to “downstream”

–page 5-3: last paragraph, “down stream” should be changed to “downstream”

–page 5-4: top paragraph “discharges” should be discharge (singular)

–page 5-8: 2nd paragraph, first usage, “down stream” should be changed to “downstream” also last paragraph, first sentence, same thing

–page 5-9: 3rd paragraph, “down steam” should be “stream” and one word

–page 5-12: should qualify “long time”, is it 20+ years, 20-40 years, 50+, 100 years?

–page 5-13: redundant, 2nd paragraph and last paragraph should be combined – they say the same things twice, especially about PCBs

–page 6-1: 4th paragraph, what is “leas”? Is this a typo? Can't tell what word it should be.

(lead)

–page 6-2, Section 6.1.1.3: Last sentence should be taken out, speculation

–page 7-9: 2nd to last paragraph, “vender” should be changed to “vendor”

–page 8-5: 2nd to last paragraph, last sentence, “off load” should be one word (offload)

–page 9-4: 3rd paragraph, first sentence “off loading” should be one word

–Appendix M: there is no section 3 in Chemistry Review from 4/6/95 – should it be there?

–page P-1: top half of page the margins are center-justified, the rest of the page and section is left-justified – do you want to change first part to match the rest?

N-6; AP

March 5, 2002

SUBJECT: Comments on Draft Duwamish/Diagonal CSO/SD Cleanup Study Report

FROM: Rick Huey, Ecology Lower Duwamish Waterway Site Project Manager

TO: Priscilla Hackney, King Co. Project Manager

Thank you for the opportunity to review this draft document. Ecology's Toxic Cleanup Program is supportive of achieving effective sediment cleanup and source control at the Duwamish/Diagonal CSO/SD.

E-1;
SO

One important task that Ecology is responsible for is the writing of a Cleanup Action Decision Memo for this project, that would make a determination about the adequacy of source control and the analysis and selection of the preferred sediment cleanup alternative. According to the schedule, this memo is expected from Ecology in mid-March.

However, the current Draft Cleanup Study Report does not adequately address source control for this project, and the sediment cleanup and recontamination modeling portion of this document will need further review by Ecology. This is especially true in light of a letter received from Robert Clark of NOAA, proposing on behalf of the EBD RP Panel that the contaminated hot spot to the south of the proposed sediment cleanup area be added to the project.

It is unlikely that these issues can be resolved, and the draft Cleanup Study Report revised in time for Ecology to provide a Cleanup Action Decision Memo on the current schedule. I propose that a meeting should be scheduled to discuss these issues. In order to coordinate effectively with the Lower Duwamish Waterway Site work, Allison Hiltner and other appropriate staff from EPA should be included in this meeting.

Ecology's initial comments on the draft Cleanup Study Report are attached.

E-2; SC

Section 3 General Comments

A critical part of the source control chapter is missing concerns the status of source control today? What are the plans for continuing source control between now and implementation of the proposed sediment cleanup? What are the long term plans for source control in these basins? What are the overall source control goals? What monitoring, by whom, is being done to see if the goals are being met? What are the contingency plans if computer modeling of recontamination is wrong or further monitoring identifies an unanticipated problem?

While the shoreline topography of this project is very different from the Norfolk CSO, a potential source of recontamination is the near shore sediments. To avoid recontamination, the near shore, beaches and adjacent banks should be sampled and characterized throughout the study area to identify or rule out any adjacent upland contamination that may exist.

E-3; DG

Section 3.2.1 Diagonal Storm Water and CSO Outfall

E-4; DG

The report states the status of the 6th Ave. Landfill is unknown. Please explain why the status is unknown or what further research conducted into its status.

The report gives a list of several different types of business operating in the drainage basin from a 1988 Tetra Tech report. This list should be revised to reflect current business operating in 2002. The report needs to present information on the City of Seattle's current work plans and contracts in place to clean the Diagonal Way line.

E-5; SC

Section 3.2.2 Duwamish CSO Outfall

A list of permitted industries is dated 1994. The listing should reflect the most current permitted dischargers.

An explanation of what improvements to the Duwamish CSO should be provided to explain why this system has not overflowed since 1989. Furthermore, the report needs to explain what the emergency conditions that would cause an event are and what is in place to minimize the discharge. A question that needs to be addressed is to what extent would an overflow event contaminate the proposed cap?

E-6; SC

Section 3.2.3 Diagonal Ave South Storm Drain

While this basin is relatively small and may contribute a small amount to the total contaminate loading of the area, there appears to a problem with chrome. The one station cited is from Tetra Tech 1988. The report needs to address whether or not chrome still a problem and what, if any source control has been implemented to reduce the exceeded chromium values.

E-7; SC

Section 3.2.4 Former City Treatment Plant Outfall

E-8; DG

The entire section seems to be a historical narrative of what has occurred. Missing is current data from any GW monitoring wells or soil boring that has occurred on the properties. Also missing is information about any remediation that may have occurred on the site, or any data the Port of Seattle may have on the property.

Section 3.2.6 Surface Water Run Off

E-9; DG

The report contends there is no information documenting contaminants in the surface water from Terminal 106 and 108. The current facility operator at T-106 does have surface drainage information, and may be willing to provide such information. There is also a Phase 1 environmental report on Terminal 106 that may document any potential subsurface contamination at T-106.

Regarding the 1996-97 water quality assessment samples that were taken up stream and downstream of the site, but not directly at these major drains. The risk assessment concluded there was no unacceptable risk attributed to chemical levels in the water. I am assuming that by sampling up and downstream and finding acceptable levels of water quality between the two sample points that there is no unacceptable water quality at the discharge points at the Diagonal/Duwamish outfalls. More details need to be provided on the sampling and associated risk assessment.

E-10; DG

Section 3.2.7 Groundwater

E-11; DG

The opening paragraph mentions several potential sources of groundwater contamination. There is no further information given. The report should be revised to include this information.

3.3.2 Structural Improvements

E-12; RM

The Diagonal CSO isn't completely controlled. It is estimated a discharge of 65 MGY is expected until structural changes are started in 2020. What is the recontamination potential from these discharges during the next 18 years?

Source control efforts are ongoing in the basins. Using SIC codes, 1000 businesses were identified as being potential contributors the Diagonal CSO/SD. Of those 1000, 700 have been eliminated. The remaining 300 have been or will be inspected. A synopsis of the success and the rate of inspections would be extremely helpful in this section.

Also, what about business in the area that may be contributors, but do not have a SIC code that made them an inspection target in the first place? Recent experience has shown that SIC classification is a very subjective system that has not been changed in 30 years to reflect changes within the business community.

E-13; SC

Sections 4, 5, 7

Comments pending.

Section 6

6.1.1.1 ... with Ecology as the lead . .

E-15; LR

6.1.1.1.1 second para. MTCA and SMS are applicable to this project regardless of the Superfund status of the Lower Duwamish Waterway.

E-16; LR

6.1.2.3.1) second para. This project is not proceeding under a formal MTCA Order, and Ecology is not responsible for ensuring compliance with the laws and regulation noted for this project. King County is the project proponent, and is responsible for these tasks.

E-17; LR

6.1.2.8 second para. This project is not proceeding under a formal MTCA Order, and it is not exempt from the procedural requirements of the Washington Hydraulic Code.

6.1.2.10.1 The fact that this project's contaminated sediments are listed on the state 303D List of Impaired Waterbodies, and may need to undergo a Total Maximum Daily Load/Clean Water Plan process should be discussed here.

E-18; LR

6.1.2.11 Does the fact that the Port of Seattle has a Port Management Agreement with WDNR for the waterway change the management authority for aquatic lands in the project area?

E-19; LR

Section 8

Comments pending.

Section 9

9.2.4/9.3.4/9.4.4

These sections are not accurate. All sections that discuss a sediment impact zone should be replaced with the following language: As the project proponent, King County may request that a sediment impact zone in compliance with WAC 173-204 be approved by Ecology. King County and Ecology will continue to discuss whether or not analysis of a sediment impact zone for this project is appropriate.

E-20; LR



March 7, 2002

Reply To
Attn Of: ECL-111

Priscilla Hackney
King County
Wastewater Treatment Division
201 South Jackson St., MS KSC-NR-0508
Seattle, WA 98104-3855

Re: EPA review of Draft Duwamish/Diagonal CSO/SD Cleanup Study Report

Dear Ms. Hackney:

Thank you for the opportunity to review the Elliot Bay/Duwamish Restoration Panel's (EB/DRP) draft Duwamish/Diagonal combined sewer overflow/storm drain (CSO/SD) Cleanup Study Report. EPA supports EB/DRP's plan to clean up sediments in front of the Duwamish/Diagonal Way storm drain and combined sewer overflow outfall. We further support NOAA's proposal in their February 28, 2002 letter to expand the cleanup to include the PCB hot spot area near the former Diagonal Avenue Treatment Plant.

You will see from our attached comments that there are a number of technical concerns that EPA believes need to be addressed before finalizing the cleanup plan and moving forward with the cleanup. Our most important concern is the need to make further source control measures and prevention of recontamination an integral part of the cleanup. EPA supports King County and EB/DRP's goal of starting the cleanup in 2003. EPA believes that if we begin to address the issues described in our comments immediately, they can be implemented without causing any major delays to the cleanup schedule. We look forward to working with you to address these concerns.

Feel free to call me at (206) 553-2140 to discuss sediment remediation issues or Kris Flint at (206) 553-8155 to discuss source control issues.

Sincerely,

Allison Hiltner
Superfund Site Manager

cc: Rick Huey, Ecology
Kris Flint, EPA

A-1; SO

A-2; SE

(A-3; SC)



Comments on Sediment Remediation

General Comments

A-4; SD

A-5; SE

1. In general, EPA supports the proposed cleanup plan. Although it does not address the entire contaminated area, EPA understands that EB/DRP's funds are limited. It makes sense to remove the most contamination possible with the available funds, and for this reason, EPA strongly supports NOAA's proposal to include the hot spot in front of the former Diagonal Ave. Treatment Plant outfall as part of the cleanup. EPA would like to see this report expanded to include cleanup of this area.

2. The discussion of recontamination is somewhat confusing. Two sources are identified that impact recontamination of cap. These sources include CSO/SD outfall discharges and adjacent sediment quality impacts from erosion or dredging activities. However, these issues are often separated in the text and recontamination issues associated with phthalates are not completely addressed.

A-6; RM

For example, the text in Section 5.4 focuses on PCBs, and does not discuss activities that are planned to minimize the phthalate recontamination. In addition, text in Sections 3 and 5 indicate that recontamination will occur for phthalates regardless of source control issues. However, p. 7-7 seems to indicate that remediation activities are expected to maintain cleanup goals for these compounds, and recontamination from adjacent sediment not an issue. Please clarify.

A-7; RM

A-8; RM

3. The report cites areas of refinement to improve recontamination modeling (eg. chemistry of discharges). Are there any plans for this type of activity? Although perhaps not necessary for the refinement of the WEST recontamination model, this additional information could also be helpful in assigning proportions of each phthalate source to optimize source control activities.

A-9; RM

4. Figure 7-5 indicates dredging of adjacent sediment is required within 2 years or cap recontamination would not recover to below the SQS within 10 years. EPA hopes this problem can be addressed by including the nearby PCB hot spot in the clean up plan. The final design should provide additional details of long-term cap monitoring incorporating any anticipated recontamination. If further analysis indicates that recontamination will likely occur, additional details on the anticipated corrective actions should also be incorporated into the final design.

A-10; LR

5. Based on input from Hiram Arden at the Corps of Engineers Navigational Channel Section, there are no current identified needs for dredging of the area adjacent to the site. However, the Corps is currently communicating with the Puget Sound Pilots to determine the current and future presence of navigational issues, which may lead to dredging in the navigation channel. Additional coordination will be required if dredging in this area is warranted. Please contact Hiram Arden at the Corps for further information.

A-11; FG

A-12; DT

6. Please show location of drains on cross section in Section 8. Would dredging undermine storm drain structures? In addition, the final design should also address potential

shoreline failures since sloughing has historically been observed at the site.

A-13; FG

7. Please revise cross sections in Section 8 to illustrate the sediment quality of material to be left in place following remedial actions.

A-14; LR

8. EPA agrees that institutional controls will be needed to protect the cap. The report does not indicate whether the Port of Seattle and other landowners have been contacted and have agreed to implement the institutional controls described in this report (e.g., restrictions on anchoring, dragging, digging, and pile driving in the capped area). What enforcement mechanism will be used to ensure these institutional controls will be honored? Legal assurances are needed from the landowner(s) that the cap will not be disturbed, or if it is disturbed through future development, the landowner would coordinate with EPA to ensure that contaminated materials are addressed in a protective manner. How will this be addressed?

Specific Comments

A-15; FG

9. It would be helpful for review purposes to have channel station locations on all maps.
10. Section 2.3. This section discusses a shoreline excavation and upland placement that was conducted in 1977. Was this material placed in the same settling ponds as the PCB contaminated sediments dredged from Slip 1?

A-16; DG

11. Figure 7-6 is missing from the report.

A-17; FG

A-18; AP

12. Appendix Q - The construction and post-construction monitoring plan is very general and lacks a rationale for the proposed sampling frequencies and locations. EPA would like to review a more detailed draft monitoring plan when it is available.

Comments on Source Control

General Comments:

A-19; SC

Based on the material presented in this report, EPA has some fundamental concerns regarding the source control component of the proposed early action cleanup for the Duwamish/Diagonal hot spot. First, we do not know that the data presented from various monitoring events are comparable in terms of field methods, analytical protocols and QC. It also appears that not all data of the data (i.e., whole water and sediments from stormwater flows) are considered in this evaluation. It is very difficult to perform an overall assessment of the effectiveness of stormwater source control effectiveness without developing an overall perspective (i.e., both water & sediment) of the discharge. Further, the most recent in-line stormwater sediment data presented is eight years out-of-date; it is unreasonable to assume that contributing sources to storm and the occasional sewer overflow have remained constant. More recent data (e.g., 2000-present) from any of the previously sampled stormwater sediment stations should be considered with this historical data, as well as any pertinent whole water data.

Second, this report includes a good deal information about historic source control for

A-20; SC

major sources. While the historical information is indeed important, current information is more important. It is unreasonable to assume that only major sources require control to reduce recontamination. It is important to realize that source control is never "done"; rather, source control is an iterative process that requires regulating agencies to be aware of sites with potential source control implications, regardless of size, in order to respond appropriately when control is needed. EPA recommends meeting with Ecology, KCDNR, City of Seattle, and Department of Transportation (WSDoT), soon to discuss the initial efforts of inventorying and organizing the knowledge pertaining to sources in this Study Area drainage. This will be a first step in developing an overall plan to addressing source control at this location.

Detailed comments and recommendations based on the information presented in this report and EPA's experience with storm water source control are provided below. Many of these comments contain questions that EPA believes must be answered before any determination can be made regarding whether source control is complete.

Specific Comments:

A-21; SC

1. Page 3-1 and -2, end of Section 3.1, Combined Sewer System Overview: Certain information about the interim goal of achieving overall reduction of 75% in CSO volume throughout the KCDNR jurisdiction is missing from this discussion. Missing information includes the following:

7

- Total KCDNR jurisdiction and volume at the time the agreement became effective and the percentage of that total represented by the Study Area drainage
- What levels of the targeted 75% reduction then became work for the City of Seattle (e.g., stormwater investigation, maintenance and control) and what levels remained as work for KCDNR
- The effect that controlling volume to the interim 75% will have on the pollutant loads to this drainage
- The current status of flow reduction in the basins draining to the Study Area (Status reports for '89 and '95 are mentioned, but this evaluation simply states that the City of Seattle completed its work in 1996.)

2. Page 3-2, Section 3.2.1, Diagonal Stormwater and CSO Outfall, 1st paragraph:

A-22; SC

- a) 1st thru 3rd sentences: It has been EPA's understanding that the area of physical drainage to the Lower Duwamish is not certain, mainly because the extent of Diagonal Way CSO is not known. We further understood that this drainage was somewhat larger than the City of Tacoma's 6,000 acres for Thea Foss. However, this section indicates the combined drainage of the Hanford and Diagonal drainage basins (SD/CSO) is only 1,583 acres. Please clarify the following:

- whether areal extent is known, mapped and certain.

- whether the 1,583 acres referenced here is the total extent of drainage to the proposed cleanup area, or
- if there is additional drainage and, if so, how much.

A23; SC

- b) 4th sentence: This sentence implies the Elliot Bay Action Program (Tetra Tech 1988) identified sources of any/all types of contamination; however, the appended report focuses primarily on source tracing for phthalates. Suggest revising sentence to read "... Potential sources of phthalate contamination to the ..."

A24; DG

- c) Former Sixth Avenue Landfill: This operation was apparently closed in 1955 and appears to have received various interesting materials. This report says status is unknown. Status of the landfill, including any groundwater or runoff monitoring, should be updated. Lacking confirmation that runoff and/or groundwater from this site are not a problem for stormwater or direct discharge to the LDW or tributaries, EPA cannot be certain that source control is complete or effective at this site.

A25; SC

- d) Janco-United: This was a difficult source to control, has control been maintained? Is control currently effective? When was the last industrial or multi-media compliance inspection performed and what were the results? Is there more recent source sampling? Does Janco-United still operate at this location (or elsewhere within the drainage)? Lacking answers to these questions, EPA cannot be certain that source control is complete at this site.

3. Page 3-2, Section 3.2.1, Diagonal Stormwater and CSO Outfall, 2nd paragraph:

A-26; ED

- a) When referencing an Appendix with several tables of data, please note which table is being discussed.

A-27; AP

- b) How do these data compare to AET and PSDDA levels? Much of the data in Table 3-1 of Appendix B is qualified somehow. Without the data report and QC, it is difficult to tell what "estimated" or the qualifier "Z" mean.

A-28; DG

- c) Many of the detection limits for U-flagged data exceed either the SMS or CSL. This is true for acenaphthene, fluorene, 2-methylnaphthalene, ideno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene, 1,2- and 1,4-dichlorobenzene, 1,2,4-trichlorobenzene, hexachlorobenzene, hexachlorobutadiene, 2-methylphenol, 2,4-dimethylphenol, pentachlorophenol, benzyl alcohol, and benzoic acid. In addition, data for phthalate compounds are similarly flagged, except that E-flagged data also seem to exceed either the SMS or CSL levels.

This raises the question of whether the different data sets are appropriate for comparison with the SMS and CSL. The data objective of detection limits low enough to truly compare data with SMS and CSL is now achievable. EPA recommends that more recent data based on lower detection limits be used to determine whether source control is effective on these stormwater lines.

4. Page 3-2, Section 3.2.1, Diagonal Stormwater and CSO Outfall, 3rd paragraph:

a) Where are data from 1988 and 1989? Are they discounted in this evaluation for some reason? A-29; DG

b) Although the 1994 data in Fig. 5 of Appendix G appear to be have fewer estimates and U- or Z-flags than the 1985 data in Table 3-1 of Appendix B, there is much less of it. Data for numerous semi-volatile chemicals are not presented, most of the LPAHs and phthalates (including BEP) are missing, which makes it difficult to compare data from the two years. A-30; SC

The text in this section is misleading because it says three out of four data for BEP (assuming these are 1985 data on Table 3-1, Appdx.B) exceed CSL and indirectly implies that the fourth datum for 1994 met CSL, while BEP does not appear to have been analyzed in the '94 sample. Misleading text should be corrected or clarified by directing attention to specific tables/figures/pages in the appropriate Appendix.

c) Given the age of presented data and other source control actions discussed throughout this chapter, the text needs to specify when oily discharge has been observed at the Diagonal SD outfall. Is this a chronic problem? Has any source-tracing been done? Is the boom effective? Were oil-contaminated stormwater solids in the 'delta' removed or are they acting as a source to sediments? The oily discharge and it's affect on the delta at the outfall are "recent" in comparison to which sampling dates? A-31; SC

5. Page 3-2, Section 3.2.2, Duwamish CSO Outfall:

a) How many acres are in the Duwamish CSO? How many are in the Duwamish SD? A-32; DB

b) Are there local limits for the pre-treatment permitted industries discharging to the sewer? What are they? Are the permitted industries in compliance or not? When was compliance last checked? Are BMPs, housekeeping practices and on-site stormwater collection/treatment being maintained? How current are business/commercial and industrial inspection and compliance records for these pre-treatment discharges? How current is the same information for the "minor discharge authorizations"? A real-time status report of source control should be presented and include the basic information above. If compliance/inspection information is older than 3-5 years, then an information gap exists and needs to be filled. A-33; SC

c) Does the Duwamish SD outfall have any baseflow? If so, are there any data relevant to effluent water quality? If there are no data for storm overflow in the CSO since 1989, then information regarding baseflow conditions becomes more important for understanding the current character of the SD and its possible A-34; SC

impact on LDW sediments.

6. Pages 3-3 to 3-4, Section 3.2.3, Diagonal Avenue South Stormdrain:

- A-35; ED
A-36; SC
- a) See comment 3, above, regarding data on Table 3-1, Appendix B.
 - b) The conclusion that, because Diagonal Ave. South SD is less than 1% the area of the Diagonal/Hanford drainage, total contaminant contributions from it will be minor, is unfounded. This discussion is missing comparison of pervious/impervious area, road/highway use, other land use, and other source-related comparisons with more well-characterized basins. For example, small drainage basins for downtown Tacoma (500 and 180 acres) contribute nearly as much problem chemical contamination to the Thea Foss/Wheeler-Osgood Waterway as much larger basins do (2,790 and 1,820 acres).

7. Page 3-4, Section 3.2.4, Former City Treatment Plant Outfall: This section documents the history of one site and should be expanded to address the following questions.

- A-37; DG
A-38; DG
A-39; DG
A-40; DG
- a) Was any 'post-cleanup' soil (i.e., upland and bank) or groundwater sampling performed after all of the filling, excavation, stockpiling, and paving were complete? If so, the more recent sampling results should be included here to inform conclusions about residual contamination at the site.
 - b) Are there areas of erosion or bank sloughing to the waterway? Are banks or areas behind bulkheads contaminated or not? If there is any chance that bank materials may be contaminated and they are serving as a source to the waterway, then sampling should be conducted.
 - c) Are there any groundwater discharges to the waterway in this area and might they be contaminated? Given the history of this site, it will be important to sample and analyze seeps and groundwater discharges in this area to prove or disprove groundwater as a contaminant pathway to the waterway sediments.

8. Page 3-5, Section 3.2.5, Other Potential Sources: This section indicates that only one spill (PCBs) has occurred since 1974 and then mentions that resuspension due to dredging and/or waterway dynamics may distribute spilled materials and contaminated sediments. Have all sources of spill documentation been checked? If not, they should be and spill locations should be mapped for comparison to observed contamination. Documenting past spills falls into the realm of historic source control information, but it is valuable because it gives a better view of what can be controlled and whether additional spill provisions may be needed for the Superfund sediments.

9. Page 3-5, Section 3.2.6, Surface Water Runoff:

- A-41; DG
- a) 1st paragraph: Information about sources is not current and should be updated. Drainage patterns at Terminal 106 and the Chiyoda/Chevron site will not be difficult to confirm and the information is important given that "... no information was found that documents contaminants in surface runoff from these

areas." If we do not know or cannot say whether contamination sources exist, then we must find out. Surface water sampling should be combined with work to confirm stormwater collection/drainage at these sites.

A-42; DG

- b) Also see comment 7, above, regarding groundwater as a possible contaminant pathway since contamination at these sites has been paved.

A-43; DG

- c) 2nd paragraph: All of the effluent discharges to the Study Area should be sampled and analyzed for toxic and nonconventional pollutants, including stormwater and CSO outfalls. The new data should be compared to State Water Quality Standards as well as any loading/recontamination models being used to evaluate the Study Area.

A-44; DG

- d) In addition to whole water data ("c" above), sediment samples grabbed from each of the stormwater and CSO systems contributing to the Study Area should be analyzed for the same suite of pollutants. This new data should be compared to SMS and CSL, other appropriate sediment values, and any loading/recontamination models being used to evaluate the Study Area.

A-45; DG

- 10. Page 3-6, Section 3.2.7, Groundwater: Throughout this section groundwater data are old and there are too many gaps to tell whether groundwater is a significant source of contamination to sediments. Further information, for example, sampling areas of groundwater discharge, is needed.

A-46; SC

- 11. Page 3-7, Section 3.3, Structural Improvements and Watershed Source Controls: These sections of text indicate that KCDNR and the City have taken some of the basic organizational steps of stormwater source control that is necessary for discharge to a Superfund sediment site. However, compared to EPA's recommendations for stormwater source control (provided to Ecology, the City and KCDNR in a February 11, 2002, meeting), this document needs additional information at a number of levels.

- a) Chemical data are either out-of-date or missing altogether. See previous comments re data.
- b) Conditions relative to sources needing control are not static throughout the Study Area drainage. Newer data is required in order to assess current discharge conditions to the Study Area, including effluent data for all outfalls (or as many as it is possible to sample) and in-line stormwater sediment data.
- c) The most recent citation for stormwater/CSO control through business and industrial inspections is dated 1996. This information should be updated because it is highly unlikely that sources and conditions have not changed since 1996.
- d) Responding to complaints is a very useful method of controlling pollution in stormwater; however, EPA assumes that there have been complaints since the City's 1996 report. Aside from the continuing oil problem on the Diagonal SD/CSO, are complaints successfully resolved? Has the rate of

complaint/response been constant since last report? Are education and compliance/technical assistance efforts effective? Are there recidivists that require enforcement action by the City? How is the City's stormwater code enforced to prevent pollution to stormwater?

- e) At the Ecology, City and KCDNR meeting on February 11, 2002, EPA provided information about the iterative process of stormwater/CSO source control. Based on EPA's experience in other areas, we expects it will be necessary for the City and KCDNR to fully characterize, inspect, and maintain all publically owned stormwater and combined sewer overflow lines and structures. The proposed stormwater/CSO cleaning should includes full inspection of all lines and structures up to the 'headwaters' of each basin and sub-basin. The pre-cleaning inspection is expected to result in a list of maintenance/repair and restoration/rehabilitation opportunities throughout the basins. Pre- and post-cleaning, or up- and down-stream, sampling may be warranted at some locations to demonstrate that in-line sediments are no longer serving as sources to larger, downstream structures and sampling points.

A-47; RM

12. Pages 3-8 through 3-10, Section 3.4, Recontamination Modeling Results: EPA did not provide a detailed review of the modeling reports appended to this report. Generally speaking, there appear to be a great many limitations imposed upon both models by a general lack of current data for effluent discharges and other sources to the waterway. This limitation likely affects model calibrations as well as the uncertainties associated with source loading terms and consequent goals for source control to manage recontamination of the sediment site.

A-48; SC

13. Page 3-11, Section 3.4.3, Factors Supporting Remediation: This section states that the first goal in performing recontamination analysis is to assess the feasibility of achieving enough source control to remove a problem chemical. If the information presented in this section is meant to address this goal, then the task is not complete and a great deal of work is still needed. Searching files, other documentation and literature does not, in this case, address the need to characterize and further control sources.



MUCKLESHOOT INDIAN TRIBE

39015 172nd Avenue S.E. • Auburn, Washington 98092-9763

Phone: (253) 939-3311 • Fax: (253) 939-5311



25 February 2002

Ms. Priscilla Hackney and Mr. Pat Romberg
King County Wastewater Treatment Division
201 South Jackson Street, M.S. KSC-NR-0508
Seattle, WA 98104-3855

Re: Comments on the Draft Duwamish/Diagonal CSO/SD Cleanup Study Report (December, 2001)

Dear Ms. Hackney and Mr. Romberg,

M-1; SD

The Muckleshoot Indian Tribe Fisheries Department has reviewed the above-referenced draft report regarding the Duwamish/Diagonal outfall sediment remediation project on the Duwamish River. As you know, the Duwamish River, including the area around the Duwamish/Diagonal outfalls, is within the Tribe's Usual and Accustomed Fishing Grounds. Therefore, the Tribe is very interested in seeing an appropriate and expedited cleanup in this area. Based on technical staff review of the draft Cleanup Study Report, the following comments are offered for your consideration.

M-2; LR

- The draft report mentioned that institutional controls would be implemented for any of the action alternatives discussed. Among the institutional controls mentioned are anchoring and anchor dragging. You should be aware that as part of Tribal fishing in the area, anchors are used to set nets. No institutional controls should be considered that adversely impact Tribal fishing in the area.

M-3; LR

- King County has mentioned a potential construction date of Winter 2003 for this project. It is important that the County coordinate closely with the Tribe to avoid construction-related impacts to Tribal fisheries in the area.

M-4; SE

- Whereas it appears that the Panel does not have the budget to complete the "Maximum Practicable Removal of Contaminants" Alternative (Alternative 4), there does seem to be a budget reserve potentially sufficient to address some recontamination risks. The Panel should consider potentially expanding the project to include some of the more contaminated sediments immediately upstream, in order to reduce the risk of recontamination.

MIT Comments on Diagonal/Duwamish
Draft Cleanup Study Report

Page 2
2/25/02

Thank you for the opportunity to comment on this draft report. The Tribe looks forward to working with you on further planning and implementation issues regarding this project. Please contact me at (253) 939-3311, extension 130, with any questions.

Sincerely,



Glen St. Amant
Senior Sediment Specialist

Duwamish River Cleanup Coalition

Community Coalition for Environmental Justice • Duwamish Tribe • Green-Duwamish Watershed Alliance • ECOSS
People for Puget Sound • Puget Soundkeeper Alliance • Washington Toxics Coalition • Waste Action Project

February 28, 2002

Ms. Priscilla Hackney
King County WTD
201 S. Jackson St. KSC-NR-0508
Seattle, WA 98104-3855

Dear Ms. Hackney:

Thank you for the opportunity to comment on the Draft Duwamish/Diagonal CSO/SD Cleanup Study Report. As part of an overall program to restore water and sediment quality and fish, wildlife and human habitats along the Duwamish River, we support the Elliott Bay/Duwamish Restoration Program's cleanup efforts. We are intimately involved with all aspects of Superfund planning for the river, and seek to ensure that the Panel's activities are compatible with a comprehensive, efficient and timely river cleanup that will deliver maximum environmental benefits. To this end, we offer the following comments:

Cap Depth

D-1; CD

The Panel's Preferred Alternative calls for dredging and the installment of a 3-foot thick cap over contaminated sediments, which will be left in place. Please provide citations to verify that a 3-foot cap in a frequently dredged and tidal river containing PCBs and other contaminants present in the Duwamish is sufficient to lock these contaminants in place. Have there been any instances of outmigration of contaminants in similar circumstances? Have there been instances where the dynamics of similar river systems may have disturbed the integrity of the cap? Are there any organisms that burrow to a depth of 3-feet or greater? These are critical questions that should be investigated and discussed in the document.

Cap Disturbance

D-2; LR

In addition to possibility of natural disturbances raised above, what assurances does the Panel have that industrial and human activities on the Duwamish will not disturb or compromise the integrity of the cap? The document states that recontamination is possible from sediments disturbed in dredging activity nearby. Is it also possible that the cap itself will be disturbed by dredging or other activities in the cleanup area? A sewer siphon runs through the site that has been in service for over 35 years? What is its scheduled replacement date? How will the siphon be serviced in the future without disturbing the cap and releasing contaminants?

D-3; CD

D-3 ; CD continued

Rerouting or, at a minimum, upgrading the existing siphon to reduce this risk should be included as part of the plan to ensure that the integrity of the site will not be breached in the future. A homeowner would not bury an old waste pipe in the concrete of a new foundation; similarly the Panel should ensure that required maintenance can be performed on the siphon before burying it in a cap that cannot be breached.

Cleanup of this site should include assurances that contaminated sediments directly above and adjacent to the siphon be completely remediated to allow future maintenance and replacement without risk of recontamination. It is not clear in the document whether this is feasible with a clamshell dredging approach. Alternative technologies for removing sediments may need to be investigated to accomplish this objective. We address the issue of alternative technologies in more detail in below.

D-4; SB

Project Area Boundaries

5-3, 5-4

It is not clear exactly how the Panel determined the boundaries of the area requiring cleanup. CSL exceedances occur over large areas upstream of the proposed cleanup boundary. It is also unclear whether the map in Figure 5-9 is based solely on surficial sediments or contaminated sediments at depth. It appears high surface levels of PCBs were not used as a criteria for selecting the area to be dredged, as two areas with concentrations of PCBs exceeding the CSL by 2-4 fold are excluded from the proposed dredging area, as shown in Figure 5-5. It is also clear from Figure 5-6 that significant areas with PCB contamination at depth will not be remediated by the proposed cleanup. The sample showing the highest level of PCB concentration to the north is in the river channel itself (DUD 044), and while station DR058 showed almost no surficial PCB contamination, there are apparently PCBs at concentrations above the AET at depth at this location, as shown by DUD25. More clarification of the data used to determine the site boundaries should be provided.

D-5; SB

Toxicity Testing Results

It appears that the boundaries of the cleanup area are based upon the results of seven toxicity samples that correlate to high phthalate levels. The QA Report should address the notable differences between samples DUD200-207 and all other sediment samples collected at the site. The results of the seven toxicity samples are equivocal at best, making their use in setting cleanup boundaries difficult to interpret. No samples from the core of the contaminated area show high levels of phthalates or toxicity. The only sample to show toxicity, and only in one test, was sample DUD204, which did not show phthalate levels much higher than the other samples. Considering that Sample DUD200 also had concentrations above the SMS for phthalates, it is not clear how the northern site boundary

was determined. To the south, it is unclear that the results from sample DUD204 are strong enough to define the boundary of the cleanup zone.

D-6; SB

High levels of 4-methylphenol were found in the five of the six samples collected in September of 1996. The only higher concentration was found in sample DUD207 (not a toxicity study sample) collected in July of 1996. The only sample not containing the 4-methylphenol was DUD206, which was behind the dock close to shore. All of the other samples contain similar amounts except for sample DUD207, which has over 3ppm-OC. There are no other samples from the study area that tested positive for this compound. In samples DUD200, 204, and 206, levels were over the SMS/CSL. This is curious since the samples occur over a wide area from the north to the south of the site. Could these have impacted the toxicity tests? AVS was not performed for these samples and could be an important component in mortality. Typically the other samples in the surface sediments in the area did not have elevated AVS or indications of ammonia toxicity, but this should be noted. The problems with sample DUD206 notwithstanding, the only sample that indicated any toxicity was sample DUD204, which had elevated levels of 4-methylphenol, along with phthalates. This makes it very difficult to use this data to determine the boundaries of the area selected for dredging.

PCB Recontamination

The Panel has estimated that recontamination above SQS will result within two years as a result of sediment transport from a nearby PCB hotspot not included in the Preferred Alternative cleanup plan. The Panel references the pending Superfund cleanup as a possible remedy for this neighboring hotspot.

D-7; SE

It is not reasonable to assume or rely on Superfund cleanup of the hotspot within two years of the CSO cleanup. Responsibility for potential recontamination sources lie solely with the Panel if the Panel chooses to conduct this cleanup. Any reliance on Superfund to cleanup potential recontamination sources would require written agreement with the Lower Duwamish Waterway Group or other responsible party to conduct and complete this cleanup before recontamination could occur. In the absence of this, the Panel needs to address this recontamination source in its own cleanup plan. If the estimated cost of the cleanup is accurate, and \$8 million remains in the Panel's settlement fund, then another Alternative that includes cleanup of the neighboring PCB hotspot could eliminate this source, greatly improve the effectiveness of the proposed cleanup, and remain within the Panel's available resources. Regardless, cleanup of the CSO site without cleanup of the adjacent recontamination source is unacceptable and shortsighted.

D-8; SE

In meetings and individual discussions, members of the Panel have argued that some cleanup is better than no cleanup – that the risk this site poses to fish warrants immediate action even if additional cleanup due to recontamination is required later. There has been no data presented to support this argument. If this site poses such a great risk to salmon or other Duwamish River fish and wildlife that an inefficient cleanup is warranted for its short-term benefits, then data and analysis to support this action should be provided and those risks should be clearly stated.

Phthalate Data

D-9; RM

Discussions with King County staff about the lack of recent data on phthalates in Appendix G resulted in a review of EcoChem's Evaluation of Source Control in the Norfolk CSO Drainage Basin, dated March 31st, 2000. This document provides additional evidence that phthalates from storm drains may be a significant source of contamination. The document does not provide much more information on possible BMPs to address the removal of phthalates from storm drains, unfortunately. The best available data comes from a vector waste solids characterization in the 1995 Herrera Environmental Consultants study (King County Maintenance Waste Disposal Project Characterization Study, Volume 1; Data Presentation, Analysis and Discussion). This study indicates that the TOC normalized values for phthalates ranged from 178mg/kg-OC in residential basins to over 250 and 241mg/kg-OC for commercial and industrial basins, respectively – all above the CSL. These values indicate that any sediments washed into the Duwamish from major storm events would result in sediment concentrations in the range of those observed off the Duwamish SD outfall. It is not clear in reviewing the WEST model whether such data was used to predict sediment concentrations.

D-10; DG

One of the major problems with data collection for phthalates is the potential for plastic contamination in samples, especially storm drain samples. It is not clear for any of the sample concentrations presented how the sediment or water concentrations were characterized. If there were pieces of plastic being extracted, values could be higher than what would be biologically available in toxicity tests. As there are no standard methods to address such issues, more investigation of other sites with phthalate contamination needs to be performed. A much more detailed literature survey is necessary since EcoChem did not find much information in the EPA Literature Search. The information in the Sendar 1993 report from the Thea Foss Waterway also did not indicate the characterization of the vector sediments and the values of 5 to 30 mg/kg did not indicate whether these concentrations were wet or dry weight, and no TOC values were given. Once converted, are these similar to the Herrera values? The results of the toxicity studies performed at the Thea Foss Waterway did

D-11; DG

D-11; DG continued

indicate some lack of toxicity in samples contaminated solely with phthalates. More investigation is necessary to address these questions before determining the site cleanup boundaries.

D-12; DG

Sampling of phthalates is obviously difficult due to blank contamination, as well as detection limits in water. The question of whether phthalates could be detected with lipid bags was not addressed in the document. Attempting to locate a tracer compound with similar structure and partitioning to reduce detection limits could be ideal for some sewer line studies to determine partitioning, detention time in the sewer system, and effectiveness of removal applying various technologies.

D-13; DG

Solutions to phthalate source control will require a better understanding of phthalate distribution in the storm drain. It is not clear whether there is a relationship between TOC and phthalates in CSO and storm drain effluents. Can the majority of phthalates be removed using detention basins, or is it bound on suspended material? Are the BMPs being developed for removing oil and grease from storm drains with filters able to help reduce phthalates?

D-14; DG

Investigations related to the Jansco Case in the early 1980s resulted in detection of di-N-butyl phthalate, which has not been detected in any significant concentrations in surface sediments. Was any attempt made to determine if any discontinued or controlled phthalates could be used as date markers in the sediments? Correlating depth to time could help provide an important indicator of the current loading – and sources – of phthalates.

D-15; RM

Phthalate Recontamination

The Panel cites modeling performed by KCDNR in 1997 that predicts recontamination of the site by phthalates near the outfalls. In meetings and individual discussions, Panel members have downplayed the potential for recontamination, largely because modeled predictions of recontamination of the Norfolk CSO proved too conservative: e.g., recontamination has not occurred. Recontamination experience at the Norfolk CSO is not a predictor of recontamination potential at the Duwamish/Diagonal CSO/SD. Not only do the two outfalls receive their flow from different basin areas and different source contributors, but a comparison of surface (e.g., recent) phthalate contamination shows enormously greater surface contamination by phthalates at the Duwamish/Diagonal site (EPA 1999).

D-16; DG

The Panel provides no data on phthalates in the Duwamish/Diagonal CSO/SD discharge since 1984. The top 15 cm of phthalate contamination at this site could have easily been deposited

entirely during this 18 year interim. 1982 source control efforts described in the document targeted entirely different phthalates than those now found in the surface sediment layer. It is clear that phthalate recontamination of this site is entirely possible, indeed likely, as the KCDNR modeling indicates. In fact, the modeling by WEST indicates that the discharge from the CSO/SD is the only source of phthalates to the sediments at the site. Appendix I suggests that the inputs used for the recontamination modeling are based upon flows of 121,000 cubic meters per year, or 32 MGY. Appendix H, however, shows more recent, corrected volumes of up to 290 MGY, or 1,096,000 cubic meters – a nine-fold increase (Table 3-1). These increased values could make the R% values in Table 3-1 increase above 100%, indicating that the only source of phthalates to the site is the CSO/SD.

D-17; RM

D-18; SC

Finally, the document should compare the cost of any source control or capital construction required to control recontamination sources against the cost of a second phase of site cleanup if and after phthalate recontamination occurs.

D-19; DT

Alternative Dredging Technologies

The Panel proposes to excavate contaminated sediments using a clamshell dredge. The potential for contaminated sediment release and transport is high using this technology. The Panel further predicts that future dredging of the neighboring PCB hotspot will result in a contamination spike at the Duwamish/Diagonal site for this same reason – nearby clamshell dredging will release contaminants to the previously remediated site. The same risk exists for any dredging of phthalate contaminated sediments in the vicinity.

Alternative dredging technologies, such as hydraulic dredging, do exist and are coming into more common use for excavating contaminated sediments, where release and transport is a concern. The Panel should review alternative technologies and determine their potential for application at this site. A 1997 report titled “Advances in Dredging Contaminated Sediment,” is available from Scenic Hudson, and other resources are available in the US and Canada. Currently in Washington State, hydraulic dredging is being investigated for use as part of the Bellingham Bay sediment remediation project.

D-20; OW

Conclusions/Recommendations

Much more information is needed about current phthalate discharges and sources of recontamination before a cleanup of this area can be properly designed. Source control from the CSO/SD appears to be a necessary component of any successful cleanup of sediments in this area. The source control efforts being designed and implemented by the City may not be sufficient to prevent recontamination. In addition to the activities described, it may also be

necessary to control phalates at the source to the storm drain, e.g., at individual businesses, and through the construction of detention and filtration basins within the storm drain. The document should compare the cost of any capital construction required against the cost of a second phase of site cleanup if and after phalate recontamination occurs. With regards to PCBs, the only responsible approach to the Duamish/Diagonal CSO/SD cleanup is to include the neighboring PCB hotspot – predicted to recontaminate the site within two years – in the final preferred alternative/cleanup plan. This could presumably be accomplished with a site-specific dredging and capping addition to the cleanup plan. Lastly, alternative dredging technologies need to be investigated to determine the feasibility of hydraulic or other sediment removal options that will minimize sediment suspension, shorten recovery time and minimize environmental damage at the cleanup site.

The Panel's current approach appears to be one of: "let's cross our fingers and hope this works," presumably driven by a desire to complete their mandate, preferably before Superfund activities take over the river. Given the expense of public funds on this project and the critical need for real and lasting water and sediment quality and habitat improvements in the Elliott Bay/Duamish basin, this is inadequate. Careful planning, comprehensive source control, cost-effective solutions, and long-term environmental benefits need to be top priorities for this and all future cleanup efforts on the Duamish River. It is not acceptable or reasonable to leave the consequences of cleanup shortcomings to other parties to remedy in the future. Unless the immediate and critical benefit to fish can be demonstrated for this project, the proposed project represents a shortsighted approach to environmental cleanup on the Duamish River. We hope to work with the Panel to address the critical questions above and design a project that can have meaningful and long term benefits for fish, wildlife and people in the Duamish River basin.

Thank you again for the opportunity to comment on the proposed cleanup. We look forward to continuing this discussion with the Panel and the public in the coming months.

Sincerely,

BJ Cummings
Community Coordinator

Romberg, Pat

From: Hackney, Priscilla
Sent: Friday, March 01, 2002 10:47 AM
To: Romberg, Pat
Subject: FW: Comments on Cleanup Study Document

These are from Wes.

PIH

From: Sprague, Wesley
Sent: Wednesday, February 27, 2002 12:08 PM
To: Hackney, Priscilla
Subject: Comments on Cleanup Study Document

Hi Priscilla,

I had a couple of comments on the Cleanup Study document. They concern the SEPA section, page 6-6, Section 6.1.2.5. My comments are in markup form below. Let me know if you have any questions.

Wes

6.1.2.5 State Environmental Policy Act, Chapter 43.21C RCW and Chapter 197-11 WAC

K-1; LR

The State Environmental Policy Act (SEPA), Chapter 43.21C RCW, sets forth the state's policy for protection and preservation of the natural environment. Chapter 197-11 WAC contains the state's rules to implement this act. Local jurisdictions must also implement the policies and procedures of SEPA. King County, the SEPA lead agency, will prepare and issue a SEPA environmental checklist and threshold determination for the Duwamish/Diagonal project in compliance with these procedures. ~~submit the response to the NEPA EA, (Section 6.1.1.3), for the Duwamish/Diagonal site. After a FONSI is issued, if applicable, the state lead will adopt the federal document.~~ This adoption is necessary prior to the issuance of most of the other state and local permits needed to conduct remedial activities at the Duwamish/Diagonal site. Ecology will review any King County's SEPA determination.

February 28, 2002

Ms. Priscilla Hackney
King County Wastewater Treatment Division
2001 South Jackson Street
Seattle, WA 98104-3855

PAGES 1-3 AS SHOWN
HERE ARE TREATED AS
1 COMMENT

C-1; RM

RE: Duwamish/Diagonal CSO/SD Cleanup Study Report

Dear Ms. Hackney:

Thank you for the opportunity to comment on the Cleanup Study Report. Our comment pertains to the description of the recontamination modeling contained in Section 7.3. We understand that the purpose of this simplified modeling effort was to take a worst case scenario to determine if the project site would recontaminate from sediment upstream. However, we believe that your assumptions are so conservative that you have overestimated the risk from recontamination.

Section 7.3.1.2 (p 7-7) states that PCB concentrations are predicted to recontaminate to a concentration above the SQS "if adjacent sediments are not also remediated a year after completion of the Duwamish/Diagonal cleanup action". In Appendix P, Natural Recovery/Recontamination Modeling, it states that the site will recontaminate within two years of the cleanup action (p. P-6). At the public meeting you presented new graphs that showed that for the area near the outfall there would be no recontamination above SQS, and in fact that the site would be cleaner if there were *no* remediation of the area to the south. These graphs are not included in the draft report. Needless to say, this is confusing.

We also want to reiterate some of the comments we made to the Draft Alternatives Evaluation Report that was published October 2001, since these have not been addressed, and they help describe why we think the assumptions of your model are overly conservative:

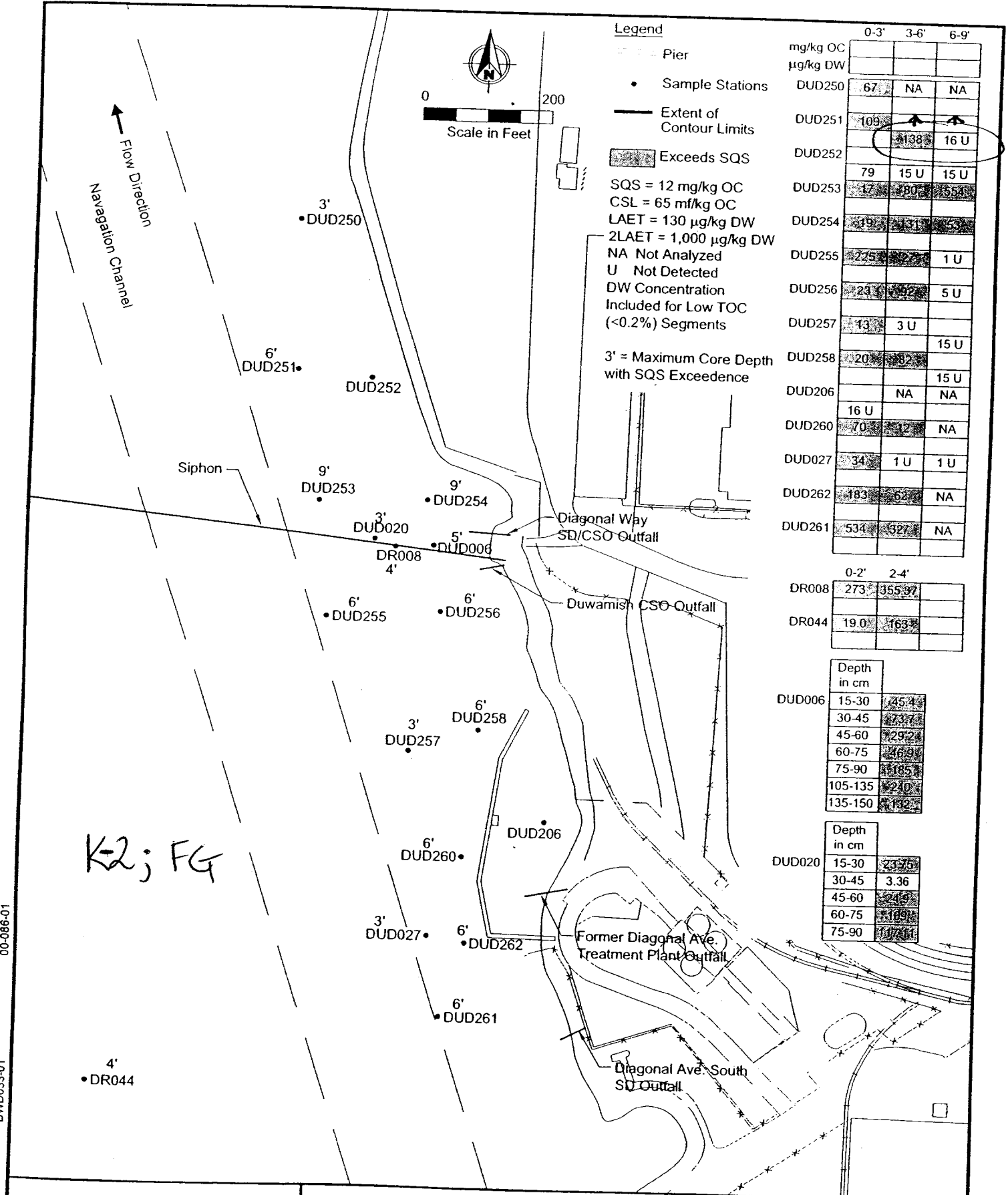
- Sediment Transport: The document summarizes information about the movement of sediment within the Duwamish waterway. Based on measured sediment elevations taken over time, the report concludes that the area is a site of net sediment accumulation, although the rates of accumulation are probably slowing. In addition, the report cites the work of GeoSea Consulting which suggests that sediment in the area is in

00-086-01

DWD033-01

1/17/02

K-2; FG



Legend

- Pier
- Sample Stations
- Extent of Contour Limits
- Exceeds SQS
- SQS = 12 mg/kg OC
- CSL = 65 mg/kg OC
- LAET = 130 µg/kg DW
- 2LAET = 1,000 µg/kg DW
- NA Not Analyzed
- U Not Detected
- DW Concentration Included for Low TOC (<0.2%) Segments
- 3' = Maximum Core Depth with SQS Exceedence

	0-3'	3-6'	6-9'
mg/kg OC			
µg/kg DW			
DUD250	67	NA	NA
DUD251	109	138	16 U
DUD252	79	15 U	15 U
DUD253	17	80	55
DUD254	19	131	
DUD255	225		1 U
DUD256	231	92	5 U
DUD257	13	3 U	
DUD258	20	82	
DUD206		NA	NA
DUD260	16 U		
DUD260	70	12	NA
DUD027	34	1 U	1 U
DUD262	183	62	NA
DUD261	534	327	NA

	0-2'	2-4'
DR008	273	355 37
DR044	19.0	163

Depth in cm	
15-30	45.4
30-45	73.7
45-60	29.2
60-75	46.9
75-90	185
105-135	240
135-150	132

Depth in cm	
15-30	23.7
30-45	3.36
45-60	24.9
60-75	189
75-90	174.1

EcoChem Team

Duwamish/Diagonal Sediment Remediation Project

Total PCBs in Subsurface Sediments

Figure 5-4

dynamic equilibrium, indicating that for every particle of sediment that settles in the area, one particle is removed. Finally, the report cites two studies (GeoSea Consulting, and Santos and Stoner) that the net transport of resuspended bed sediment is towards the south (e.g., upstream of the proposed remediation site). Given the picture of sediment transport, sediments at equilibrium, low sedimentation rates, and net movement of resuspended sediment upstream, how can the area of PCB contamination identified upstream create a sediment signal strong enough to recontaminate the proposed project? (p. 7-3)

- **Current Velocity:** The report cites that the maximum near-bottom water velocities are up to 60 cm/s. The authors cite that this current is too little to effect movement of a sand cap that could be placed over the remediated area. The report also cites that sediment in the vicinity of the Duwamish/Diagonal site is composed of a sand silt mix. Given this, it is highly unlikely that the observed near-bottom current velocities would resuspend the existing sediment. This is consistent with the observation that the area is a net deposition zone. Therefore it is unlikely that the sediments in this area would be mobilized sufficiently to recontaminate the remediation site.
- **Footprint of Contamination:** The report describes the upstream area of PCB contamination based on existing data. A review of the PCB sediment chemistry data for that area indicates that 33 surface sediment samples have been collected. Of these 12 have concentrations below the SQS, 18 above the SQS, but below the CSL, and only 3 above the CSL. The three above the CSL are clustered together and generally surrounded by stations have concentrations below or near the SQS. Even if the net sedimentation transport were downstream, how can the relatively small imprint of PCB-contaminated sediment account for the predicted increases.
- **Depth of Contamination Source:** There is no information provided in the report regarding the volume of sediment that could act as a source of PCB recontamination. What parameters were used in the model? Given the size of the elevated PCB concentrations upstream of the project area, what accounts for the volume of contaminated sediment that settles on the project area? Is the source term maintained as constant throughout the ten year post-remediation period? In other words, if the area is in dynamic equilibrium, then every sediment particle moving out of the PCB source area would be replaced with a particle from somewhere else. The near field surrounding area appears to be sediments having relatively low concentrations of PCBs. Would it not be plausible that the area, even if it is a source of PCBs, would become cleaner since each PCB-contaminated particle that is resuspended is replaced by a cleaner particle?

In summary we don't believe it is clear how the PCB area will recontaminate the proposed remediation project. Based on the conflicting information provided in the report, it does not seem that assured that the recontamination will occur, and especially that the source material for recontamination will be the upstream PCB site.

Sincerely,

Martha Burke
Seattle Public Utility

Responses to Reviewer Comments

Key for Reviewing Responses to Reviewer Comments

<u>Reviewer</u>	<u>Identification Letter</u>
Sierra Club	S
NOAA	N
Ecology	E
EPA	A
Muckleshoot Tribe	M
Duwamish River Cleanup Coalition	D
King County	K
City of Seattle	C

<u>Category</u>	<u>Abbreviation</u>	<u>Number Received</u>
Support Original Site	SO	6
Support Site Expansion	SE	7
Oppose Without Complete Source Control	OW	2
	Subtotal	15
Source Control	SC	23
Capping Design	CD	2
Dredging Technology	DT	4
Recontamination Modeling	RM	10
Data Gaps	DG	26
Site Boundary Selection	SB	4
Drainage Basin Size	DB	1
Laws and Regulations	LR	12
Appendix	AP	4
Figures	FG	5
Editorial	ED	3
	Subtotal	94
	Total	109

Support Original Site (SO) Comments in this category support the recommended Alternative 3--Capping with No Change in Existing Elevation to remediate sediments in front of the Duwamish/Diagonal CSO/SD outfalls. Sediment dredging, capping to return the site to existing water depths and bottom elevations and long-term monitoring of the 4.8-acre site are supported.

Support Site Expansion (SE) Comments in this category support expanding the original 4.8-acre site to include an upstream chemical hot spot. The primary interest for removal of the hot spot is that the 4.8-acre cleanup area would not be completely recontaminated with PCBs exceeding the SQS when the chemical hot spot is dredged in the future.

Oppose without Complete Source Control (OW) Comments in this category oppose a cleanup project at the study area until more information about current phthalate discharges and sources of recontamination is known. Comments in this category favor comprehensive source control for the Duwamish/Diagonal site and for all future cleanup efforts on the Duwamish River.

Responses to Reviewer Comments
Draft 2001 Duwamish/Diagonal CSO/SD Cleanup Study Report

<u>Comment ID; Category</u>	<u>Response/Resolution</u>
S-1; SO	List as Supporting
S-2; DT	There are BMPs to minimize spreading PCBs w/ clamshell. Anchor, please expand.
S-3; SC	Superfund will develop a source control (SC) program for the Lower Duwamish to protect sediment cleanup sites.
E-1; SO	List as Supporting
E-2; SC	A comprehensive description of the past, present and future SC activities is prepared and attached as part of the responsiveness summary (i.e., SC Summary to be written by KC).
E-3; DG	King County will work with Ecology to determine the shoreline sampling that is needed to satisfy this comment.
E-4; DG	Anchor please determine status of 6th Avenue landfill and revise text accordingly.
E-5; SC	Additional Diagonal SD/CSO information will be provided in the comprehensive description of the past, present and future SC activities prepared and attached as part of the responsiveness summary (i.e., SC Summary to be written by KC). The SC Summary will discuss all COCs that may be a SC issue. City input required.
E-6; SC	Additional Duwamish CSO information will be provided in the comprehensive description of the past, present and future SC activities prepared and attached as part of the responsiveness summary (i.e., SC Summary to be written by KC). The SC Summary will discuss all COCs that may be a SC issue.
E-7; SC	Chrome was not found to be elevated in the sediment samples taken in front of the Diagonal Ave. South SD; consequently, chrome is not considered to be a chemical of SC concern.
E-8; DG	Groundwater monitoring site data collected by the Port of Seattle in 1991 and 1992 is included in the report. See Section 3.2.7-Groundwater. These 14 samples are from the old treatment plant property after it had been filled. The samples show that little or no PCBs are present; consequently, groundwater is not expected to pose a risk to the cleanup site.
E-9; DG	Anchor please contact the Port to obtain surface drainage information on T-106 and the Phase I environmental report on T-106.

- E-10; DG King County will provide additional information on the water sampling and associated risk assessment performed for the Duwamish/Elliott Bay Water Quality Assessment. This will be included at the end of Section 3.2.6-Surface Water Runoff.
- E-11; DG Anchor will look into the Sweet, Edwards & Associates and Harper Owes report (1985) to determine if there is additional groundwater information available to ascertain if Ash Grove Cement, Seattle City Light Substation, ChemPro, Liquid Carbonic Corporation, and several refuse dumps, mounds and waste pits are sources of ground water contamination. This information will be included in Section 3.2.7-Groundwater.
- E-12; RM During the next 18 years before CSO reduction takes place at Diagonal, there should be little or no recontamination from all COCs except phthalates. For phthalates, the extent of recontamination to the cleanup area is uncertain because there are no off-the-shelf mathematical models that can accurately predict the future chemical footprint of recontamination. King County is working to develop a model that may be used to predict recontamination at various sites along the Duwamish River; this tool should be available within the next two years.
- E-13; SC A comprehensive description of the past, present and future SC activities is prepared and attached as part of the responsiveness summary (i.e., SC Summary to be written by KC). City input required.
- E-14; SC A comprehensive description of the past, present and future SC activities is prepared and attached as part of the responsiveness summary (i.e., SC Summary to be written by KC). City input required.
- E-15; LR Anchor, change second paragraph under 6.1.1.1 to read as follows: The Duwamish/Diagonal project was underway before the Lower Duwamish NPL listing and has proceeded under the SMS cleanup project process with Ecology as the lead regulatory agency. Ecology may be the lead regulatory agency of a sediment cleanup project located in the Lower Duwamish Superfund area, and Ecology may administer the project under SMS or MTCA. Now that the river has been listed, there is interest by EPA in ensuring that the Duwamish/Diagonal project is CERCLA-equivalent so that the site does not have to be revisited when EPA develops a final Superfund remedy for the entire Lower Duwamish.
- E-16; LR Anchor, change second paragraph under 6.1.2.3 to read as follows: As set forth in RCW 70.105D.090, qualifying cleanup actions under SMS or MTCA may be issued an exemption from the Shoreline Management Act requirements to obtain a substantial development permit. King County will submit a request to the City of Seattle for a substantial development permit exemption. Based on initial review of the prospective cleanup action described herein, it is not anticipated that remedial activities at the

Duwamish/Diagonal site will deviate from the goals of the Shoreline Master Program within the City of Seattle.

- E-17; LR Anchor, add the following sentence to the first paragraph under Section 6.1.2.8: King County will apply for the WDFW Hydraulic Project Approval (HPA). Delete in its entirety the second paragraph under Section 6.1.2.8.
- E-18; LR Anchor, add the following as the second paragraph under Section 6.1.2.10—Water Quality Standards for the Surface Waters of the State of Washington, Chapter 90.48 RCW and Chapter 171-201A WAC:
The Duwamish/Diagonal contaminated sediment area in the Duwamish River appears on the State's 303(d) list of impaired waterbodies for contamination due to benzoic acid, butylbenzyl phthalate, bis(2-ethylhexyl) phthalate, dibenz(a,h) anthracene, silver, zinc, benzo(ghi) perylene and mercury. King County will be working with the Department of Ecology to assure that the cleanup plans for the Duwamish/Diagonal project are consistent with the State's Sediment Management standards. The Department of Ecology is expected to develop a Total Maximum Daily Load (TMDL) for the sediment impaired areas in the Duwamish River and will be responsible for communicating TMDL needs associated with this sediment remediation project, and for pursuing source control measures with affected stormwater dischargers.
- E-19; LR Aquatics lands in this section of the river (from the south end of Harbor Island upstream to the turning basin) are managed by the Port of Seattle.
- E-20; LR Anchor, under Section 9.2.4-Long Term Effectiveness; page 9-3, delete in its entirety the third paragraph that talks about the sediment impact zone (SIZ). Replace it with the following language: As the project proponent, King County may request that a sediment impact zone (SIZ) in compliance with WAC 173-204 be approved by Ecology. King County and Ecology will continue to discuss whether or not analysis of an SIZ for this project is appropriate.
- Anchor, under Section 9.3.4-Long Term Effectiveness; page 9-6, delete in its entirety the third paragraph that talks about the sediment impact zone (SIZ). Replace it with the following language: As the project proponent, King County may request that a sediment impact zone (SIZ) in compliance with WAC 173-204 be approved by Ecology. King County and Ecology will continue to discuss whether or not analysis of an SIZ for this project is appropriate.
- Anchor, under Section 9.4.4-Long Term Effectiveness; page 9-9, delete in its entirety the third paragraph that talks about the sediment impact zone (SIZ). Replace it with the following language: As the project proponent, King County may request that a sediment impact zone (SIZ) in compliance with WAC 173-204 be approved by Ecology. King County and Ecology will continue to discuss whether or not analysis of an SIZ for this project is appropriate.
- N-1; SO List as Supporting

N-2; SE	List as Supporting Expanded Site
N-3; AP	Anchor, in Appendix I-WEST Consultants Recontamination Model, each of the three appendices, A, B and C, need to be identified that they are a part of Appendix I. Therefore, add behind each appendix letter the following: (part of Appendix I). For example, Appendix A (part of Appendix I)-List of Sediment Chemistry Results.
N-4; DG	King County will include write-up regarding threatened and candidate species in Section 2.5.2—Fish and Wildlife.
N-5; ED	Anchor, edit as shown on list of comments. Two items in particular, are: qualify “long time” (page 5-12) and delete last sentence of second paragraph of Section 6.1.1.3—National Environmental Policy Act 42USC,
N-6; AP	<p>In Appendix M, Section 3 is intentionally left out because the original report contained bioassay results that did not meet quality assurance. The page numbering is correct as it goes from 2-6 to Page 4-1.</p> <p>Anchor, in Appendix P, all of page P-1 should be left-justified.</p>
A-1; SO	List as Supporting
A-2; SE	List as Supporting Expanded Site
A-3; SC	A comprehensive description of the past, present and future SC activities is prepared and attached as part of the responsiveness summary (i.e., SC Summary to be written by KC). City input required.
A-4; SO	List as Supporting
A-5; SE	List as Supporting Expanded Site
A-6; RM	<p>King County agrees that phthalate and PCB modeling and results are separated in the report and need to be brought together.</p> <p>King County proposes to address this comment in two ways. First, additional discussion will be included in Chapters 5 and 7 (the PCB recontamination sections) to reiterate the phthalate modeling effort presented in Chapter 3.</p> <p>Anchor, in Section 5.4—Potential for Sediment Recontamination, add to the end of this section a couple of paragraphs that summarize the phthalate recontamination modeling results. Also, add a sentence that directs the reader to the PCB Natural Recovery and Recontamination Modeling in Section 7.3.</p> <p>Anchor, in Section 7.2.3—Recontamination, begin the section with a paragraph that discusses both types of recontamination 1) phthalate recontamination from the CSO/SD that was discussed in Chapter 3 and 2) PCB recontamination from nearby PCB contaminated sediment that was</p>

discussed in Chapter 5. Then explain that mathematical modeling was needed to better define PCB recontamination from and that is what will be discussed in Section 7.3—Natural Recovery and Recontamination Modeling.

Secondly, the SC Summary prepared by King County for the Responsiveness Addendum will also discuss both the phthalate and PCB modeling within one section.

A-7; RM

Anchor, Section 7.3.1.2—Natural Recovery/Recontamination Model Results needs to be expanded and corrected in its entirety because it is confusing and has errors. Likewise, Appendix P needs to be expanded and corrected. Give a thorough explanation of the two figures. Each figure should be discussed separately so that it is clear there are two distinct areas—off-shore and in-shore. For each figure, discuss each individual line that is given in the legend and what they show relative to the site. For example, natural recovery is shown as the no action line indicated by triangles; it starts at a concentration of 30 mg/kg OC and drops to a value of 27 mg/kg OC after 10 years. Then compare the set of graphs with respect to the cleanup timeframe (2 years vs. 5 years) to point out the different level of recontamination.

Anchor, summary bullets need to be rewritten to remove errors and misleading statements. For example, Bullet 2 sounds like implementation of upland SC will achieve cleanup standards for compounds such as bis(2)phthalate and thus, do not constitute a recontamination source expanded and corrected.

Anchor, revise Bullet 4 such that it will not downplay the “spike” and the need to remove the hot spot now. Bullet 4 should read as follows: When the upstream hot spot is remediated, the model indicates the surface sediment concentration of PCBs on the 4.8 acre cleanup site will increase by at least 20 mg/kg OC (for a total concentration of 35 or 40 mg/kg OC), far exceeding the SQS. After the spike, the model also indicates that it will take 10 years of natural recovery for the concentration to approach the SQS for PCBs. Natural recovery rates are faster after the hot spot cleanup than they are without the hot spot cleanup (the curve represented by squares is steeper than the curve represented by triangles).

Anchor, add Bullet 5. The model indicates that the only way the 4.8-acre cleanup site will remain below the SQS is to cleanup the hot spot and the 4.8-acre site at the same time. If the hot spot is removed first, there will be no recontamination of the site over time, as indicated by the curve represented by the “X”. Also, there will be no spike caused by cleaning up the hot spot in 2 to 5 years. As a result, the PCB concentration on the 4.8 –acre cleanup site will remain clean (0 mg/kg OC).

A-8; RM

No further model refinement will be provided under the Duwamish/Diagonal project. However, King County is working to develop a model that may be used to predict recontamination at various sites along the Duwamish River; this tool should be available within the next two years.

- A-9; RM The 4.8-acre cleanup site should not recontaminate with PCBs because the site has been expanded to include removal of the hot spot. The following bullet is being added to Section 7.3.1.2— Natural Recovery/Recontamination Model Results: The model indicates that the only way the 4.8-acre cleanup site will remain below the SQS is to cleanup the hot spot and the 4.8-acre site at the same time. If the hot spot is removed first, there will be no recontamination of the site over time, as indicated by the curve represented by the “X”. Also, there will be no spike caused by cleaning up the hot spot in 2 to 5 years. As a result, the PCB concentration on the 4.8 –acre cleanup site will remain clean (0 mg/kg OC).
- A-10; LR King County recognizes the need for coordination with the CORPS. There are two methods by which King County coordinates dredging and cleanup projects with the CORPS. There is the formal CORPS permit process that requires notification of proposed actions in the waterways; this process is currently underway for the Duwamish/Diagonal project. By King County notifying the CORPS of King County proposed actions, the CORPS, in turn, will notify King County of CORPS proposed actions. The second method is informal communications with the CORPS. For example, King County staff discussed the project with Hiram Arden during the fourth quarter of 2001; Duwamish/Diagonal project plans were favorable to the CORPS.
- A-11; FG Anchor, include the Diagonal SD outfall on cross section figures 8-2, 8-4 and 8-6.
- A-12; DT The dredging plan will specify a clamshell dredge bucket, and the dredge cuts will be specifically designed so that they will not collapse the outfall structures or the bank. The dredge cuts typically have 3H:1V slopes on the in-shore side to maintain bank stability.
- A-13; DG Anchor, produce four more figures similar to the current COC subsurface figures 5-2, 5-4, 5-6 and 5-8. The purpose of the new figures will be to respond to EPA’s question concerning the extent of sediment contamination remaining after removing 3 feet of contaminated sediment and providing a thick-layer cap. The new figures will show COC concentrations remaining after dredging (3 - 6- and 6 - 9-foot sections). See sample markup, Figure 5-4 for total PCBs. It is suggested that the new figures be included in Section 9.6—Preferred Alternative along with a paragraph that integrates the figures into the preferred alternative section.
- A-14; LR During the Port Approval process, King County will request that the Port provide written agreement to EPA and Ecology that the Port will adhere to all institutional controls established for the Duwamish/Diagonal site. King County will request that the Port of Seattle execute a restrictive covenant that is enforceable by both EPA and Ecology.
- A-15; FG In Chapter 5, the COC contour figures show the sampling station locations that are in the channel. However, the corresponding COC figures that provide the core data do not show sampling station locations in the channel because there

were no core samples taken in the channel. It would be confusing to add surface stations in the channel to the core figures that are meant to show only core data.

- A-16; DG Based on aerial photos from 1976 and 1977, it appears that the nearshore sediment dredged from the former treatment plant in 1977 was used to fill in the two settling ponds that were used to contain the PCB-contaminated material dredged in 1976 from Slip 1. In addition, the aerial photos show that the entire treatment plant was leveled in 1977, which indicates that the near shore sediments may have been used to fill in the entire treatment plant site.
- A-17; FG Anchor, revise Chapter 7 and Appendix P to include Figure 7-6—Natural Recovery Model Results Near the Outfalls.
- A-18; AP King County will revise the construction and post-construction monitoring plan to include the expanded site. The monitoring plan will be further refined during the permitting process, and EPA will be provided an opportunity to review the project specific monitoring plan.
- A-19; SC The City of Seattle collected Diagonal SD sediment samples during late 2001. This data will be the most current sediment data for evaluating potential sources of contamination and will replace the eight-year old data of 1994. When this data becomes available, it will be provided to EPA and Ecology for review.
- A-20; SC After meeting with EPA and Ecology, the decision was made to prepare a SC Summary document that will be included in the responsiveness summary. This summary document will include past, current and future SC activities for the Duwamish/Diagonal site. Future meetings will be held with EPA and Ecology to determine SC needs relative to the Duwamish/Diagonal project.
- A-21; SC A comprehensive description of the past, present and future SC activities is prepared and attached as part of the responsiveness summary (i.e., SC Summary to be written by KC). City input is required.
- A-22; SC The Diagonal SD receives flow from the Hanford drainage basin which is 1,573 acres and the Diagonal drainage basin which is 1,012 acres. The total acreage for these two basins is 2,585 acres, and this value should replace the value of 1,583 acres currently included in the report.
- A-23; SC Anchor, revise the 4th sentence to read as follows: Potential sources of phthalate contamination to the
- A-24; DG Anchor, determine the status of 6th Avenue landfill and revise text accordingly.
- A-25; SC Anchor, determine the status of Janco-United and revise text accordingly.
- A-26; ED Anchor, see Page 3-2; Section 3.2.1; second paragraph. The second sentence should read as follows: Two sediment samples were collected in the

Diagonal storm drainpipe; see Appendix B, Table 3-1—Diagonal Way and Diagonal Avenue South Storm Drain Samples Compared to Standards.

Anchor, change the third sentence should read as follows: The first sample was at manhole (Diag MH1)

A-27; AP

King County is comparing data to the State Sediment Management Standards (SMS) that were adopted in 1991 because this is the regulation governing sediment cleanup projects. The Sediment Quality Standard (SQS) value of the SMS is set up to be equal to the low AET value, and the Cleanup Screening Level (CSL) of the SMS is set up to be equal to the second lowest of the AET values. The PSDDA values are 10-percent of the high AET values.

The 1988 TetraTech data report defines the data qualifiers as follows:

- E = The reported concentration is an estimate. The estimated qualifier was assigned for a variety of reasons including exceedance of control limits for precision, accuracy and holding times.
- Z = This qualifier was assigned if the labeled internal standard recovery reported by the laboratory was less than 10 percent.

A-28; DG

The City of Seattle collected Diagonal SD sediment samples during late 2001. This data will be the most current sediment data for evaluating potential sources of contamination. The detection limits for the 2001 samples will be lower than the detection limits for the 1985 Elliott Bay Action Program data.

A-29; DG

King County was told that the City collected data in 1988 and 1989, but King County chose to use only data collected by the City in 1994 because it was the most recent data when King County performed the data analysis in 1994.

A-30; SC

Anchor, see Page 3-3; third paragraph of Section 3.2.1. Change the fourth sentence to read as follows:

Concentrations of bis (2-ethylhexyl) phthalate exceed the CSL dry weight criteria value of 1.9 mg/kg (1,900 ug/kg) in two of the four samples, and the other two samples exceed the SQS dry weight value of 1.3 mg/kg (1,300 ug/kg).

Bis (2-ethylhexyl) phthalate was analyzed in each of the four 1994 pipe samples. However, in the future, King County will use the results of the 2001 pipe samples collected by the City.

King County will revise the table alongside Figure 5 in Appendix G to include the SQS and CSL dry weight values.

Anchor, see Page 3-3; third paragraph of Section 3.2.1. Change the second to the last sentence to read as follows:

The oil sheen is considered to be recent because it was first reported as a problem in 1997 and continues to be intermittent.

Anchor, see Page 3-3; third paragraph of Section 3.2.1. Change the last sentence to read as follows:

The City DWU has attempted unsuccessfully to trace this oil discharge back to its source (see Appendix D; page titled Summary of the City's investigation of oil sheen at the Diagonal Outfall—Feb. 7, 1997).

- A-31; SC Anchor, continue the third paragraph of Section 3.2.1 by adding the following: The oil sheen has been reported several times during the period between 1998 through 2001. The City continued to locate the source of the oil sheen, but was unsuccessful. The City installed an oil containment boom off the end of the Diagonal SD discharge structure. In addition to the oil containment boom, the City installed an oil absorption boom. No effort has been made to remove the oily sediment from in front of the Diagonal SD outfall; however, this area will be included as part of the proposed Duwamish/Diagonal Cleanup project.
- King County will ask the City about the effectiveness of the booms (Since the booms were installed, has the City received any complaints about the appearance of oil sheen downstream of the Diagonal SD?). This information will be included in the SC Summary.
- A-32; DB There are 2205 acres in the Duwamish CSO (see GIS spreadsheet and drainage basin map). There is no Duwamish SD.
- The Duwamish CSO outfall is a buried pipe located on the east side of the river. This outfall is the emergency relief point for the Siphon and the Duwamish PS. The Duwamish CSO does not overflow regularly like most true CSO discharge points. The last time this CSO overflowed was more than 11 years ago in 1989 (the cause was not looked up).
- A-33; SC The SC Summary will provide information about King County's pre-treatment program.
- A-34; SC It is important to understand that the Duwamish CSO is an emergency overflow location that only discharges CSO wastewater (combined stormwater and sewage). This outfall has no separate stormwater connection that could discharge separated stormwater or baseflow (groundwater). Because the Duwamish CSO has not overflowed since 1989, it does not constitute a significant source of contamination to the Duwamish/Diagonal Cleanup project or the Duwamish River.
- A-35; ED Anchor, see Page 3-3; Section 3.2.3; first paragraph. The fourth sentence should read as follows: The data for this historic sample were normalized for total organic carbon and compared to Washington Sediment Quality Standards; see Appendix B, Table 3-1—Diagonal Way and Diagonal Avenue South Storm Drain Samples Compared to Standards.
- A-36; SC Anchor, see Page 3-4; Section 3.2.3; first paragraph. Replace the last sentence with the following:

The total contaminant contribution from the Diagonal Avenue South outfall is expected to be minor for the following reasons:

- 1) The Diagonal Avenue South drainage basin is less than 0.5-percent (12 acres/2585 acres) of the size of the Diagonal/Hanford drainage basins.
- 2) The sediment samples off of the Diagonal Avenue South outfall do not exceed the SMS standards for most chemicals, except phthalates.
- 3) Part of the 12-acre basin formerly occupied by LaFarge Cement manufacturers is now vacant, and property to the north of this vacant area has been converted by the Port of Seattle to a container storage facility.
- 4) In an effort to minimize pollutant discharges to the storm system, the City of Seattle is scheduled to perform additional business inspections in all drainage areas tributary to the Duwamish/Diagonal site.

A-37; DG	King County does not have any post-closure sediment data for the Former City Treatment Plant. However, there is groundwater data presented in Section 3.2.7—Groundwater.
A-38; DG	The majority of the bank of the Former Treatment Plant property is armored with large rip-rap and other small rock designed to prevent bank erosion. One area behind the E-shaped pier has exposed mud and sand. One sample was collected from this area and showed chemical concentrations much less than the SMS standards. Based on this one sample, it appears sloughing of these sediments will not be a source of contamination to the Duwamish/Diagonal cleanup area. This prediction is further supported by nearshore chemistry data that contains values below the SQS, except phthalates.
A-39; DG	Groundwater monitoring site data collected by the Port of Seattle in 1991 and 1992 is included in the report. See Section 3.2.7-Groundwater. These 14 samples are from the old treatment plant property after it had been filled. The samples show that little or no PCBs are present; consequently, groundwater is not expected to pose a risk to the cleanup site. Based on the Port's data, King County does not think it is necessary to sample and analyze seeps and groundwater discharges.
A-40; DG	All sources of spill documentation have been investigated. The 1974 PCB spill at Slip 1 was dredged in 1974 and again in 1976. In addition, dredging in 1977 at the Chiyoda property to relocate the shoreline and dredging in 1994 by the CORPS to remove the shoal are the only documented projects since the Slip 1 spill dredging activities.
A-41; DG	King County will contact the Port of Seattle to obtain any information on surface water quality to determine if surface water contamination sources exist at T-106 and T-108. King County will provide this information to EPA.
A-42; DG	King County will contact the Port of Seattle to obtain any information on groundwater quality to determine if groundwater contamination sources exist at T-106 and T-108. King County will provide this information to EPA.

- A-43; DG In 1995, King County collected 10 storm water samples at two tributaries of the Diagonal SD; this sampling effort took over one year to accomplish. Three samples were taken at South Hinds and 8th Avenue South, and seven samples were taken at South Horton and 13th Street South. This data is included in Appendix H—METRO Recontamination Modeling Report. This data may be compared to State Water Quality Standards. However, this data was collected to provide input parameters for the King County sediment recontamination modeling effort. King County may collect additional stormwater samples to support future modeling work, but the extent of sampling needs to be determined based on input from King County statisticians and recontamination modeling consultant. Even though the 1995 data is seven years old, King County is not ready to commit a major sampling effort until there is more input from those developing the model.
- The Duwamish Water Quality Assessment focused on CSO discharges into the Duwamish River and developed models to evaluate the predicted concentrations of pollutants to the river. Based on study results, there is not an issue with water quality exceedances for CSO discharges entering the Duwamish River.
- A-44; DG The City of Seattle collected Diagonal SD sediment samples during late 2001. This data will be the most current sediment data for evaluating potential sources of contamination. When this data becomes available, it will be provided to EPA and Ecology for review.
- A-45; DG King County will work with EPA to determine the groundwater sampling that is needed to satisfy this comment.
- A-46; SC Comment 11 pertains to storm water and CSO discharges to a Superfund sediment site. The Department of Ecology is developing an overall SC plan for the lower Duwamish River as part of the Superfund process. Through King County's involvement in the Superfund process, King County will be coordinate with Ecology and EPA to satisfy comments regarding these issues.
- A-47; RM King County agrees that the model is limited in its usefulness, and there are uncertainties associated with the input parameters. Consequently, King County is working with a contractor to develop a model that may be used to predict recontamination at various sites along the Duwamish River; this tool should be available within the next two years.
- A-48; SC King County has agreed to provide Ecology and EPA a comprehensive SC Summary document to better describe all of the past, present and future SC activities for discharges to the study area. This document will be included as part of the responsiveness summary that will be attached to the final Duwamish/Diagonal CSO/SD Cleanup Study Report. The responsiveness summary will be provided to the regulatory agencies in advance of completing the Cleanup Study Report.
- M-1; SO List as Supporting

M-2; LR	King County will ensure that any institutional controls established will not adversely impact Tribal fishing in the cleanup area.
M-3; LR	King County will coordinate with the Tribes independently and through the permitting process in an effort to avoid adverse construction-related impacts to Tribal fisheries in the area.
M-4; SE	List as Supporting Expanded Site
D-1; CD	The Consultant has stated that all caps placed at the site will be designed to comply with EPA and USACE guidance so that they will be stable. Anchor please provide citations to verify that a 3-foot cap in a frequently dredged and tidal river containing PCBs and other contaminants present in the Duwamish is sufficient to lock these contaminants in place. In general, Anchor, please respond to the specific questions of this comment heading of Cap Depth .
D-2; LR	During the Port Approval process, King County will request that the Port provide written agreement to EPA and Ecology that the Port will adhere to all institutional controls established for the Duwamish/Diagonal site. These institutional controls will include provisions for no disturbance of the cap, including no dredging activities. King County will request that the Port of Seattle execute a restrictive covenant that is enforceable by both EPA and Ecology.
D-3; CD	<p>During evaluation of the alternatives, the potential for future maintenance and repair of the siphon was discussed with King County Operations and Facilities staff. Staff had the following concerns that did not support removing the additional contaminated sediments above and around the siphon:</p> <ul style="list-style-type: none"> • The closer one digs to the siphon, the greater the risk of damaging the siphon. • If the siphon needs to be replaced due to structural damage, cut and cover technology will not be employed. Directional tunneling would be the method used to place new piping under the Duwamish River. • If there was H₂S damage to the siphon, a liner could be inserted into the pipes of the siphon without disturbing the cap. • King County has not had to repair or even clean out the siphon in its 34 years of operation. • King County does not anticipate needing to repair the siphon in the future. • The total siphon length is about 800 feet. Five hundred feet of the siphon will not be under the proposed cap and could be accessed without disturbing the cap. • The siphon is constructed of two pipes, so if one pipe failed, the second could continue to operate until a replacement is implemented. <p>The objective is to remove a minimum of three feet of contaminated sediment from above the siphon and the entire cleanup area. The remaining contaminated sediment will be isolated by a 3-foot thick cap. King County does not anticipate any future maintenance and repairs to the siphon that will disturb the sediment cap.</p>

D-4; SB

The draft Cleanup Study Report proposed a cleanup area of about 4.8 acres and did not address an upstream chemical hot spot offshore from the former treatment plant. Comments received as part of the public participation process recommended that the upstream hot spot be included as part of the project to avoid potential future PCB recontamination to the 4.8-acre area. A document is being prepared that describes the expanded cleanup area, including the upstream hot spot. This document will be included as part of the Cleanup Study Report Responsiveness Summary. The two cleanup areas have been designated as Area A (4.8 acres) and Area B (upstream hot spot). A brief discussion of the boundaries for the two areas is given here to respond to the comments under **Project Area Boundaries**.

Cleanup Area A is a rectangular shape about 750 feet long (upstream/downstream) with an average width of about 260 feet (inshore/offshore) and covers an area of about 4.8 acres. The inshore boundary is the rip rap shoreline, but the first row of dredge cuts is set back from the shore to avoid collapsing the bank. The upstream and downstream boundaries were established based on bioassay stations that showed no toxicity (Stations DUD201, DUD202 and DUD203) or only low level toxicity (Station DUD 204). The offshore boundary is the east channel line where the water depth is minus 30 feet (MLLW). The offshore boundary of Area A does not extend into the channel because the chemical levels at the east channel line are equal to or lower than the chemical levels present at the bioassay stations used to define the upstream and downstream boundary.

Cleanup Area B has a rectangular shape of about 475 feet long (upstream/downstream) with an average width of about 160 feet (inshore/offshore) and covers an area of about 1.8 acres. The boundary for Area B was established to remove all sediment above the CSL value for PCBs (Stations DUD012, DUD026, DUD027, DUD260, DUD261 and DUD 262) plus a large amount of surrounding sediment that exceeds the SQS for PCBs. The inshore boundary does not extend to the shoreline because there are surface samples with PCB values below the SQS located on the inshore side of the existing loading pier constructed of cluster pilings. The inshore boundary of Area B was set at the offshore side of the loading pier where water depth is about minus 15 feet (MLLW). The upstream boundary was set at a point past core Station DUD261 because this station exceeded the CSL for PCBs to a depth of 6 feet.

The downstream boundary of Area B was extended to meet the upstream boundary of Area A. The downstream part of Area B contains some sediments that are not above the CSL but these sediments are above the SQS. These stations above the SQS (DUD024, DUD025 and DUD035) were included in the downstream part of Area B because these station locations would be subject to future cleanup actions. Dredging these stations at a later date (not as part of Duwamish/Diagonal project) would create significant recontamination to the finished cleanup projects at Area A and the upstream part of Area B. It is likely that PCB levels at these stations above the SQS will

increase when the highest PCB sediments are dredged at the upstream end of Area B. Therefore, it will be advantageous to remove PCBs at all of the stations identified in Area B, now, to minimize the PCB residual that is left on the site.

The downstream PCB hot spot at Stations DUD044 and DR058 does not have the same immediate priority for the EBD RP Panel as does the upstream hot spot (Area B). Some of the Panel's reasons for giving the downstream PCB hot spot lower priority are the following:

- With the limited data, it appears that the downstream hot spot may be smaller in area relative to the upstream hot spot.
- The downstream hot spot is located in deeper water, and therefore, does not pose great risk to outmigrating juvenile salmon that largely remain near the waterway surface.
- The downstream hot spot is also located in the navigation channel which suggests that it might be cleaned up by another entity at some point in the future.

D-5; SB

See boundary discussion in D-4, preceding response above regarding project boundary determination.

The Panel decided not to place bioassay stations in the areas with highest phthalate concentration because it was anticipated that these samples would show toxicity, and the sampling would add unnecessary costs to the project. Consequently, the four bioassay stations closest to the Duwamish/Diagonal CSO and SD were Stations DUD201 and DUD202 (to the north) and Stations DUD203 and DUD204 (to the south). Results of these bioassay tests showed that Stations DUD202 and DUD 205 exceeded the CSL value for bis(2-ethylhexyl)phthalate, but neither station showed toxicity for the three SMS toxicity tests. Station DUD204 also exceeded the CSL value for bis(2-ethylhexyl)phthalate but failed only one bioassay test indicating that it would exceed the SQS based on bioassay testing. These bioassay results show that the Duwamish/Diagonal sediment samples that exceed the numeric CSL value for bis(2-ethylhexyl)phthalate should be designated as below the SQS criteria based on biological testing.

D-6; SB

In reviewing the chemistry data, King County confirmed that 4-methyl phenol was not present in the 1994 and 1995 sediment samples, but was present in the 1996 samples. The bioassay stations were run on the 1996 samples that contained 4-methyl phenol. It does not appear that 4-methyl phenol affected the bioassay results because there was no toxicity shown at stations DUD200, DUD201, DUD202, DUD203 and DUD205 which indicates that the 4-methyl phenol did not cause toxicity.

D-7; SE

List as Supporting Expanded Site

D-8; SE

List as Supporting Expanded Site. Comments received as part of the public participation process recommended that the upstream hot spot be included as part of the project to avoid potential future PCB recontamination to the 4.8-

acre area. A document is being prepared that describes the expanded cleanup area, including the upstream hot spot.

- D-9; RM The mass balance model performed by West Consultants used the CSO and SD concentrations to estimate annual loading values; no sediment data from catch basins was used for comparison or for evaluating loadings. Future modeling work conducted by King County may consider catch basin sediment data for determining the loading from storm drains.
- D-10; DG The sediment sample collection and analysis procedures are described in Chapter 4—Data Collection and Results--of the Cleanup Study Report. Care was taken to minimize any phthalate contamination due to collection equipment and analytical processing. However, no effort was made to determine if plastic particles were in the sediment samples collected for analysis. Collection methods for water samples also used clean techniques to minimize contamination of storm water samples.
- D-11; DG The toxicity of phthalates needs more study to determine the actual level at which phthalate toxicity occurs. However, for the Duwamish/Diagonal project, the EBDP Panel has decided that they do not need to determine the highest level of phthalates that will not show toxicity. Instead, the Panel has decided to define the site boundary at chemical levels that are above the CSL (one times the CSL), but are shown to be below the SQS based on biological testing.
- D-12; DG Lipid bags cannot be used to collect samples for phthalate analysis because the bags consist of plastic which contains phthalates. King County uses some tracer compounds, such as caffeine, in identifying CSO discharges and is always on the lookout for tracers to assist in identification of chemical sources.
- D-13; DG King County agrees that solutions to phthalate source control will require a better understanding of phthalate distribution in the storm drain. Future SC studies may be undertaken by the City of Seattle to answer the questions about phthalate distribution and removal.
- D-14; DG King County has not made any attempts to use phthalate date markers in the sediments. The core samples collected during the Duwamish/Diagonal study are mostly 3-foot composites which do not provide the detail for evaluating time series.
- D-15; RM For the Duwamish/Diagonal site, King County performed recontamination modeling in 1997, and West Consultants performed recontamination modeling in 1999; both models predicted recontamination due to phthalates. However, the rate of recontamination is not predicted by these models. King County has observed that the rate of phthalate recontamination at the Norfolk site is not as great as the Norfolk modeling predicted; thus, King County is simply stating that the rate of phthalate recontamination at Duwamish/Diagonal may not be as rapid as modeling might predict. The size of the two basins are obviously quite different with the Norfolk separated storm water equal to about 43 MGY,

while the Diagonal separated storm water volume is much greater at 1,230 MGY. The resultant loading of phthalates from the Diagonal SD is therefore much larger than at the Norfolk outfall.

D-16; DG The Panel has data more recent than the 1984 data. Figure 5 in Appendix G—Bis(2-ethylhexyl)phthalate Source Control Report--provides chemistry data for four sediment samples, collected in 1994, from the Diagonal SD. In Appendix H—METRO Recontamination Modeling Report--the table titled Storm Water Samples provides the chemistry data for ten storm water samples collected in 1995 from two storm drains (Horton and Hinds) tributary to the Diagonal SD.

D-17; RM Prior to the completion of King County's Hanford Tunnel CSO reduction project in 1987, the CSO volume discharging out of Diagonal SD was estimated at 290 – 300 MGY. The separation project was thought to totally eliminate King County's CSO input to the Diagonal SD; however, recent information has revealed that there is still about 20-percent of the King County CSO volume (65 MGY) remaining. The King County CSO modeling has estimated a value of 32 MGY as the current CSO volume, which is the value that West Consultants used in the modeling calculations. Because of the uncertainty in the King County CSO model predictions, it was recommended that the volume be doubled, and the value of 65 MGY is the volume reported in the Cleanup Study Report in Chapter 3; Section 3.3.2.

The Duwamish/Diagonal sediment samples taken in 1994 were taken seven years after the CSO reduction project was implemented at Diagonal. Therefore, King County has not used the higher historic flow rate of 290 – 300 MGY, instead West chose to use the 32 MGY for loading calculations. West then points out on page 9 of his report, "The SD discharge is approximately 40 times greater than the CSO discharge [on an annual basis], but the concentrations of chemicals of concern [Table 2-2] are relatively similar. Therefore, in this load-reduction analysis, we assumed that the entire CSO discharge could be dropped from the evaluation. The analysis then focused on the reduction required in the SD discharge."

D-18; SC King County currently does not know if there are low technology solutions for removing the particulates containing phthalates. The suggestion of using filter fabric in catch basins may have some possibilities for removing particulates from SDs, but this method would need to be evaluated to determine its feasibility. If there are no low technology solutions for removing phthalates from storm water, then the alternative is treatment involving large facilities and associated high capital and operating costs. One example is the current Denny Way CSO Volume Reduction project which has a total capital cost of over \$140 million. Denny Way is a CSO discharging about 500 MGY into Elliott Bay at Myrtle Edwards Park. The CSO reduction project involves construction of a one-mile long 14-foot diameter tunnel to store CSO water so that there is only one untreated CSO event per year.

The storm water volume at Diagonal is 1,230 MGY which is more than two times the CSO volume at Denny Way, and therefore, would require an even larger treatment facility and costs greater than \$140 million for Denny Way. The cost for the Duwamish/Diagonal Cleanup project is estimated at \$7 million (\$1 million already spent on planning and \$6 million to complete). With the expanded project, including the upstream hot spot, the total cost is estimated to be \$9 million (\$1 million already spent on planning and \$8 million to complete). The Duwamish/Diagonal Cleanup project is only 6-percent of the Denny Way project.

D-19; DT

The issue of alternative dredging technologies has been discussed, particularly, the application of hydraulic dredging for removal of contaminated sediment. Some are proponents of hydraulic dredging because they think that hydraulic dredging will eliminate resuspension and loss of contaminated sediment to the water column. However, after careful review of this technology, King County's Consultant, Anchor Environmental, LLC, has determined that hydraulic dredging not appropriate for the Duwamish/Diagonal project for the following reasons:

- For the expanded Duwamish/Diagonal project, the estimated sediment volume to be dredged is approximately 60,000 cubic yards. One of the fastest hydraulic dredging projects (Marathon Battery, NY) reported 8 months to remove 58,900 cubic meters (Water Environment & Technology, 1998). The dredging window for the Duwamish/Diagonal project is a maximum of five months (November – March), which is too short of a timeframe to complete the project during one dredging window. Mechanical dredging has a higher production rate, and the project should be completed in about two months.
- Hydraulic dredging produces a large volume of contaminated sediment and water (slurry), which must be directed to settling ponds that require available land to establish. There is not enough land available for large settling ponds within the vicinity of the Duwamish/Diagonal project site.
- Hydraulic cutter-heads become frequently jammed with debris, stopping dredging operations which require the cutter-head to be raised and debris removed. When the dredge is shut down, all of the slurry in the pipeline to the disposal pond will be released back onto the dredge site. This releases a large amount of contaminated sediment particulates into the water column which may be spread up and down the river.

There are some sealed clamshell dredge buckets on the market (cable-arm buckets), however, these buckets are not capable of digging consolidated sediments which are present at the Duwamish/Diagonal site. To minimize sediment resuspension when using the standard clam-shell bucket, the contractor is required to follow various best management practices (BMPs). The cycle rate is slowed down (relative to maintenance dredging cycle rates) so that the bucket is raised at a slower rate through the water column. To minimize the number of bucket cycles, the contractor is encouraged to obtain a full bucket of sediment during each cycle. The contractor is not allowed to stockpile sediments under water before bringing the bucket to the surface for sediment placement on the barge.

D-20; OW	List as Opposing the Project Without Source Control of Phthalates. King County and the Panel recognize that phthalate SC is an important issue to eliminate recontamination of the Duwamish/Diagonal Sediment Cleanup project. However, it is also recognized that it is a very big task that cannot be completed within a short timeframe. Consequently, numerous individuals have expressed an interest in conducting a project to remove PCBs despite the potential for phthalate recontamination. In order for the project to move ahead, a SC Plan will be worked out with the City of Seattle to focus on reducing phthalate input to the Diagonal SD.
D-21; SC	See Response D-18; SC above.
D-22; SB	The cleanup project has been expanded to include the upstream hot spot. See Response D-4; SB above.
D-23; DT	See Response D-19; DT above.
D-24; OW	List as Opposing the Project Without Source Control of Phthalates
D-25; SE	List as Supporting Expanded Project
K-1; LR	<p>Anchor, see Page 6-6; Section 6.1.2.5. Change the fourth sentence to read as follows:</p> <p>King County, the SEPA lead agency, will prepare and issue a SEPA environmental checklist and threshold determination for the Duwamish/Diagonal project in compliance with these procedures.</p> <p>Finish the paragraph to read as follows:</p> <p>This is necessary prior to the issuance of state and local permits needed to conduct remedial activities at the Duwamish/Diagonal site. Ecology will review King County's SEPA determination.</p>
K-2; FG	On Figure 5-4 and in the table to the right, the data for sample DUD251 needs to be moved into the correct row (i.e., the data is mg/kg OC). There may be some others that need to be moved as well.
C-1; RM	<p>Figure 7-6—Natural Recovery Model Results Near the Outfalls--was mistakenly omitted from the draft Cleanup Study Report, but it will be included in Section 7.3.1.2--Natural Recovery/Recontamination Model Results--of the final Cleanup Study Report. Section 7.3.1.2 will be revised to include a thorough discussion of the figures and modeling results.</p> <p>The recontamination model may greatly over-estimate PCB recontamination due to prop-wash and river current because conservative assumptions were used in this model. The model predictions were intended to represent the worst-case condition, which means that the actual recontamination levels may be less than shown in the figures. It is not necessary to refine the predicted PCB recontamination due to propeller wash and river current because the</p>

decision to expand the cleanup area can easily be justified based on the predicted PCB recontamination due to dredging the hot spot in the future.

Duwamish PS CSO

Basins contributing and areas (from GIS)

Date: 3/20/02

By: BC

Basin #	Area (Acres)	Location	
289	58.6	West Side	
287	57.2	West Side	
560	119	West Side	
298	26.6	West Side	
290	169.8	West Side	
291	253	West Side	
292	101.5	West Side	
284	231	Harbor Island	
285	152.6	Harbor Island	
242	234.3	East Side	
243	167	East Side	
244	249.9	East Side	West side I-5
244	120.1	East Side	East side I-5
623(part)	52.3	East Side	I-5 freeway
607	83.8	East Side	SPU reservoir
283	55.5	East Side South of Brandon	
269	72.4	East Side South of Brandon	
Sum	2205		

