



RESPONSIVENESS SUMMARY

**WHATCOM WATERWAY SITE
Bellingham, Washington**

*Draft Supplemental Remedial Investigation/Feasibility Study and
Draft Supplemental Environmental Impact Statement*

July 2007

ISSUED BY:

WASHINGTON STATE DEPARTMENT OF ECOLOGY

TOXICS CLEANUP PROGRAM

1. Introduction

On October 10, 2006 the draft Supplemental Remedial Investigation/Feasibility Study (RI/FS) and draft Supplemental Environmental Impact Statement (DSEIS) for the Whatcom Waterway site (Site) in Bellingham were issued for a 69-day public comment period. Public involvement activities related to this public comment period included:

- Distribution of a fact sheet describing the Site and the documents through a mailing to over 650 people, including neighboring businesses and other interested parties;
- Publication of three paid display ads in *The Bellingham Herald*, dated October 8, 2006, November 16, 2006, and November 30, 2006;
- Publication of notice in the Washington State Site Register, dated October 3, 2006;
- Two public meetings held on October 26, 2006 and December 7, 2006;
- A public hearing held on December 11, 2006;
- Posting of the documents on the Ecology web site; and
- Providing copies of the documents through information repositories at Ecology's Bellingham Field Office and Northwest Regional Office, and the Bellingham Public Library – Downtown Branch.

A total of 162 persons, organizations, and businesses submitted written and/or verbal comments on the RI/FS and DSEIS. The commenters are listed in Table 1-1. Comment letters and excerpts from the public hearing transcript are organized according to commenter in Appendix A. The full public hearing transcript is attached as Appendix B. Updates to select RI/FS figures and tables are attached as Appendix C.

Section 2 of this document provides background information on the Site and Site cleanup activities, Section 3 describes next steps. Sections 4 through 6 organize the comments received (and Ecology's responses) by topic:

- RI Comments and Responses: Section 4
- FS Comments and Responses: Section 5
- DSEIS Comments and Responses: Section 6

In Sections 4 through 6 where similar comments were provided by multiple commenters the comments are grouped together and the commenters identified by number (from Table 1-1). To review a comment in its original form, refer to Appendix A.

Table 1-1. COMMENTERS

1. Almaskaar, Roger	40. Divitt, Matia
2. Ambrose, Peter	41. Dodd, Doug
3. Anderson, Ken	42. D'Onofrio, Ethan
4. Anderson, Richard	43. D'Onofrio, John
5. AquaBlok	44. Duncan, Clint
6. Associated General Contractors	45. Durand, Dawn
7. Badgett, Frances	46. Dyson, George
8. Baker, Gary	47. Ebenal General Inc.
9. Beall, Roni	48. Ekhart, Lance
10. Bean, Patty	49. Ernest, Don
11. Beddill, Marian	50. Evans, Murphy
12. Bellingham Bay Foundation	51. Fairbanks, Chris
13. Bellingham/Whatcom Chamber of Commerce	52. Feld, Arlene
14. Bensen, Marvin	53. Ferris, Ryan
15. Blethen, John	54. Fizzano, Perry
16. Boland, Loraine	55. Foster, Kevin
17. Botwin, Anne	56. Fredrikson, Keith
18. Brenthaven	57. Friedman, Mitch
19. Bright, Doug	58. Fugelstad, Carol
20. Britton, Tom	59. Georgia-Pacific
21. Brock, Garry	60. Goodman, John
22. Brock, Sandra	61. Gotchy, Celestine
23. Brunhaver, Kurt	62. Gotchy, Thomas
24. Carlburg, Doug	63. Gregory-Raffel, L Zapote
25. Carper, Floyd	64. Hammond, Garth
26. Carter, Laura	65. Hass, Susan
27. Charlton, Fred and Kirsti	66. Hayes, Hamilton
28. Citron, Todd	67. Heron, Riley
29. City of Bellingham	68. Herring, Eileen
30. Clasby, Deanna	69. Hertz
31. Clossey, Debra	70. Hirst, Eric
32. Clossey, Timothy	71. Hutchins, Rebecca
33. Cool, Seth	72. Ingram, Charles
34. Coons, Joseph	73. Irving, Steve
35. Cournoyer, Kevin	74. James, Paul
36. Courtis, David	75. Johnson, Tip
37. Crozier, Sharon	76. Jones, Scott
38. David, Dan	77. Jorgensen, Donald
39. Dean, Rod	78. Karlburg, Doug
	79. Kehoe, Bob

Table 1-1. COMMENTERS (continued)

80. Kemplin, Keith	124. Rhodes, Richard
81. Kilanowski, Elizabeth	125. Richards, Skip
82. Kimmich, Mike	126. Riek, Bob
83. Langei, Jim	127. Riek, Marsha
84. Linder, Jacob	128. Rosati, Marissa
85. Lookman, Diane	129. Rubash, Bert
86. Lowe, Robert	130. Seestrom, John
87. Lummi Nation	131. Servais, John
88. Mackay, Michael	132. Shapiro, Alex
89. Maliszewski, Charles	133. Shaughnessy, Jon
90. Malone, Tom	134. Shaw, Deborah
91. Mansker, Anna	135. Shellenberger, Matthew
92. McAuley, Michael	136. Short, Michael
93. McCune, Mike	137. Smith, Gerald
94. McDiarmid, M	138. Spencer, Julia
95. McGowan, Kirk	139. Streib, Darol
96. McKee, Phyllis	140. Tavelli, Terry
97. Meyer, Jeanette	141. Teesdale, Mary
98. Milstead, James	142. Thane, Niki
99. Moore & Company	143. Thomas, Craig
100. Nagel, Toni	144. Thompson, Bud
101. Naismith, Anne	145. Thompson, Rick
102. Niedermeyer, Thomas	146. Trautman, Kevin
103. NW Marine Systems LLC	147. Van Dyken, Roger
104. Olsen, Thomas	148. Vanderwyst, Max
105. Parker, Stan	149. Victoria San Juan Cruises
106. Paskus, Matt	150. Washington Dept. of Fish & Wildlife
107. Paxton, Tim	151. Washington Dept. of Natural Resources
108. Pemble, Constance & James	152. Webber, Bert
109. Pemble, Rodd	153. Weeks, Jennifer
110. People for Puget Sound	154. Weiner, Emily
111. Pike, Dan	155. Weiss, Jack
112. Polaris Leadership Solutions, Inc.	156. Wenning, Ralph
113. Port of Bellingham	157. Western Washington University
114. Post, David	158. Whatcom County Health Dept.
115. Poynter, Keith	159. Wilcox, Ken
116. Pratum, Tom	160. Wild, Scott
117. Puget Sound Action Team	161. Williams, Marilyn
118. Raasch, John	162. Williams, Richard & Fran
119. Radtke, B W	
120. Rangel, Mary Anne	
121. Reisman, Barbara	
122. RESources	
123. Rex, RJ	

2. Background

The Site includes lands that have been impacted by contaminants historically released from industrial waterfront activities, including mercury discharges from the former Georgia Pacific (GP) chlor-alkali plant. The chlor-alkali plant was constructed by GP in 1965 to produce chlorine and sodium hydroxide for use in bleaching and pulping wood fiber. The chlor-alkali plant discharged mercury-containing wastewater into the Log Pond (an industrially-constructed pond open to the Whatcom Waterway) between 1965 and 1971. Between 1971 and 1979 pretreatment measures were installed to reduce mercury discharges. Chlor-alkali plant wastewater discharges to the Log Pond were discontinued in 1979 following construction of the Aerated Stabilization Basin (ASB). The ASB was constructed by GP for management of pulp and tissue mill wastewaters in compliance with the Clean Water Act. The outfall from the ASB continues to be owned by GP and wastewater and sediment quality in the outfall area are monitored under the National Pollutant Discharge Elimination System (NPDES) permit program.

Initial environmental investigations of the Site identified mercury in sediment at concentrations that exceeded MTCA standards (Chapter 173-340 Washington Administrative Code [WAC]) and Sediment Management Standards (SMS; Chapter 173-204 WAC). These are the state standards that govern the cleanup of contaminated sediment sites. The MTCA regulations specify criteria for the evaluation and conduct of a cleanup action. The SMS regulations dictate the standards for cleanup.

The key MTCA and SMS decision-making document for Site cleanup actions is the RI/FS. The RI/FS for the Whatcom Waterway Site was initiated in 1996 by GP under the terms of an Agreed Order with Ecology. The RI/FS included detailed sampling and analysis in 1996 and 1998. These sampling events formed the basis for development of an RI/FS Report which was completed in 2000 following public notice and opportunity to comment.

In parallel with the RI/FS, the Bellingham Bay Comprehensive Strategy Draft EIS (DEIS) was prepared and issued for public review. The DEIS was both a project-specific DEIS, evaluating a range of cleanup alternatives for the Site, and a programmatic DEIS, evaluating the Bellingham Bay Comprehensive Strategy. The Comprehensive Strategy was developed by an interagency consortium known as the Bellingham Bay Demonstration Pilot (Pilot). The Pilot brought together a partnership of agencies, tribes, local government and businesses known collectively as the Pilot Work Group, to develop a cooperative approach to expedite source control, sediment cleanup and associated habitat restoration in Bellingham Bay. The Comprehensive Strategy was issued by Ecology as a Final EIS (FEIS) in October 2000. The 2000 RI/FS and FEIS documents would have formed the basis for Ecology's selection of a final cleanup action for the Site under existing land uses. However, following completion of the 2000 documents significant land use changes made it necessary to complete a supplemental FS and Draft Supplemental EIS for the Site.

During 1999 and 2000, GP closed its chlor-alkali plant, its pulp mill and its chemical plant, dramatically reducing water treatment needs. With the reduced treatment needs, the contamination issues within the ASB could be addressed as part of the cleanup of the Site. To address this new portion of the Site, a new remedial alternative was evaluated in 2002 through a Draft Supplemental FS and a Draft Supplemental EIS. The new remedial alternative proposed using a portion of the ASB as a near shore fill disposal facility for disposal of contaminated materials removed from areas of the Site outside the ASB and from other contaminated sediment sites in Bellingham Bay. The proposal included maintenance of a downsized wastewater treatment facility constructed within the footprint of the existing ASB.

Following completion of the 2002 Draft Supplemental FS, additional Site data were collected by GP during 2002, 2003 and 2004 under the terms of new and existing Agreed Orders with Ecology. The data collection included sediment testing of areas of the Site outside the ASB as well as testing of the ASB sludges and berm materials.

In late 2000 and early 2001 GP implemented an interim action to clean up sediment contamination in the Log Pond area of the Site. The work was performed under the terms of an Agreed Order with Ecology. The Log Pond project beneficially reused 43,000 cubic yards of clean dredging materials to cap contaminated sediments in the Log Pond, and to improve habitat substrate and elevations for use by aquatic organisms. The habitat restoration component of the project was voluntarily implemented by GP in accordance with the Bellingham Bay Comprehensive Strategy.

In January of 2005, the Port of Bellingham (Port) acquired 137 acres of waterfront property from GP including property within the Site. As a result the existing Agreed Orders between Ecology and GP for completion of an RI/FS and for the Log Pond Interim Remedial Action were amended to add the Port as a signatory.

When the original 2000 RI/FS was approved by Ecology land use in and around the Site was designated and used for industrial purposes, therefore the remedial alternatives under consideration reflected those uses. However, property ownership and Port land use plans have changed. The City of Bellingham and the Port are moving towards mixed-use zoning designations for upland areas adjacent to the Site. In addition, the Port has passed a resolution supporting the deauthorization of the federal channel in the inner portion of the Whatcom Waterway, to provide for multi-purpose uses of this area, and has proposed to develop the ASB portion of the Site for aquatic uses.

A new Supplemental RI/FS was completed for public review on October 10, 2006. The document integrates previous Site investigations and studies and provides a comprehensive evaluation of Site conditions and cleanup options under current and anticipated land uses. Ecology also issued a Draft Supplemental EIS (DSEIS) consistent with the State Environmental Policy Act (SEPA) and with the programmatic elements of the Pilot Comprehensive Strategy. The DSEIS evaluates the potential environmental impacts associated with the RI/FS remedial alternatives and potential mitigation measures that could be used to address these impacts.

3. Next Steps

As indicated in Ecology's responses in Sections 4 and 5 of this document, a number of comments have influenced Ecology's development of a draft Cleanup Action Plan (DCAP) for the Site as well as future remedial design considerations. However, the comments do not result in significant changes to the RI/FS and the document is now considered final.

Using information presented in the final RI/FS and DSEIS, and in consideration of the public comments received, Ecology has completed a DCAP that describes the actions proposed for the cleanup of contamination at the Site. The DCAP, and a draft Public Participation Plan (DPPP), are being issued for public comment as exhibits to a draft Consent Decree, which proposes to settle the liability of the parties agreeing to implement the cleanup. After consideration of public comments received, Ecology plans to issue a final SEIS, a final CAP and a final PPP, and then enter into a final Consent Decree in order to implement the CAP. The CAP and PPP will be exhibits to the final Consent Decree which will be entered in Whatcom County Superior Court. The cleanup will then move forward into design, permitting and construction.

4. RI Comments and Responses

4.1 General Concerns Regarding Mercury

Comment: Many commenters expressed general concern regarding potential health effects of mercury, given its status as a persistent bioaccumulative compound, the potential for mercury to form methylmercury compounds, and the potential health effects of mercury and methylmercury compounds as documented in studies in animals and humans in the scientific literature.

(Refer to Commenters #12, 28, 63, 88, 98, 110 & 122)

Response: Ecology shares the commenters' concerns about mercury in the environment, especially in light of the stated risks that mercury poses to human health and the environment. The State of Washington has promulgated cleanup standards in order to protect both human health and the environment. These cleanup standards apply equally to future and current protection of human health and the environment. The cleanup of Whatcom Waterway is one of Ecology's highest priorities.

4.2 Application of SMS Cleanup Standards

Comment: Multiple commenters expressed confusion or requested clarification over how the SMS cleanup standards for sediments were used in conjunction with the BSL to ensure protectiveness to human health and the environment. Some commenters believed that samples containing exceedances of the BSL could "test out" through bioassays. Other commenters requested clarification of what standard (SQS, MCUL or BSL) was to be met with the sediment cleanup. Other commenters argued against using bioassay testing at all, and that numeric chemical criteria should instead be used.

(Refer to Commenters #28, 46, 87, 88, 89, 108, 109, 122, 142, 153 & 158)

Response: As described in Section 4 of the RI Report, the MTCA Cleanup Regulation and the SMS provide the standards and remedy selection criteria to ensure the Site cleanup protects both human health and the environment. Human health protection is achieved primarily by limiting the potential for bioaccumulation of mercury in seafood. The site-specific BSL was developed for this purpose. The BSL is applied as a "ceiling" value for sediment mercury levels at the Site. There is no ability to "test out" using bioassays when the BSL is exceeded. In other words, if the BSL is exceeded, the area of sediments associated with that exceedance must be remediated. For the protection of benthic organisms, the SMS regulations establish a two-tiered regulatory program. The numeric SQS and MCUL chemical standards represent the first tier of this program. If sediments exceed these criteria, bioassays can be used to confirm

whether or not the benthic organisms are protected in the sample. These protocols are defined in the SMS to directly measure benthic effects, over-riding indirect chemical testing methods. These protocols have been shown to be protective at cleanups throughout Puget Sound.

Comment: A number of comments addressed how SMS cleanup standards were applied to subsurface sediments. Some commenters implied that SMS cleanup standards should be applied directly to subsurface sediments.

(Refer to Commenters #28, 35, 122, 142, 153 & 158)

Response: The SMS stipulate that cleanup standards apply to the sediment biologically active zone (12 cm for the Whatcom Waterway Site), and also to subsurface sediments that are likely to be re-exposed and thus recontaminate the biologically active zone. SMS cleanup standards do not apply directly to subsurface contaminated sediments that are safely buried at depth and are unlikely to be re-exposed.

Comment: Other commenters indicated concurrence with the cleanup standards as applied at the Site, or expressed general support for the use of toxicity testing as part of the evaluation of compliance with cleanup levels.

(Refer to Commenters #51, 104, & 158)

Response: Comments noted. The cleanup standards contained in the SMS have been formally recognized by EPA as applicable criteria under the Clean Water Act, and bioassays are an integral part of these regulations.

Comment: One commenter argued that the lack of a strong correlation between mercury concentrations near the numeric SMS sediment cleanup standards and toxicity results in bioassays created excessive uncertainty regarding the protectiveness of cleanup.

(Refer to Commenter #122)

Response: Bioassays integrate a variety of potential toxic effects, including effects of chemicals that may be present but are not tested, bioavailability of contaminants, synergistic effects between chemicals, and other effects. The numeric criteria are intended to be conservative, and toxicity is frequently not observed until higher chemical concentrations are present. Correlations between the concentrations of a single chemical (i.e., mercury) and observed toxicity are often complex, because of other influences (e.g., varying phenolic compound concentrations for a given mercury concentration, oxidation of methylmercury). Ecology intends to continue the use of both chemical and biological testing as part of Site long-term monitoring to ensure compliance with cleanup standards.

4.3 BSL Issues

Comment: A number of commenters expressed concern about the use of the site-specific BSL as a cleanup requirement, stating generally that a more stringent cleanup standard is necessary to protect human health and the environment.

(Refer to Commenters #7, 12, 28, 44, 88, 89, 109, 116, 142)

Response: As discussed in Section 4.3 of the RI Report, the BSL addresses human health protection from bioaccumulation of mercury. SMS cleanup standards, including application of chemical and biological testing, ensure protection of benthic organisms living in the sediment. The BSL was developed based on standard risk-assessment processes and provides a valid estimate of the area-wide sediment concentrations that are protective of seafood consumption by high consuming populations. It was developed using conservative (i.e., highly protective) assumptions. Additionally, Ecology has applied this area-wide value in a more stringent manner, applying this value as a “ceiling” to specific areas of the Site on a point-by-point basis, even if these areas do not significantly affect the area-wide concentration of mercury. Ecology considers this application of the BSL to provide a significant and conservative level of protectiveness to human health.

Comment: The Whatcom County Health Department stated confidence that the BSL was developed using appropriate methods, and that as applied by Ecology at the Site will be protective.

(Refer to Commenter #158)

Response: As discussed in the previous comment response, Ecology concurs that the BSL was developed using appropriate methods and as applied ensures protection of human health from mercury bioaccumulation risks.

Comment: Several commenters stated concern that a risk assessment was not performed at the Site, and that potential uncertainties associated with the BSL were not identified or presented adequately using an uncertainty analysis. Some commenters requested that Ecology require production of a separate risk assessment or additional studies as part of the cleanup process.

(Refer to Commenters #7, 12, 35, 110, 116)

Response: The BSL was developed as part of the 2000 RI/FS, using risk assessment methodology consistent with Ecology and EPA guidance. An uncertainty analysis was included in that document, and is summarized in the 2006 Supplemental RI/FS. The 2000 RI/FS and the BSL information contained within it were issued for public review and comment. The BSL was developed using appropriate methods and as applied by Ecology ensures protection of

human health from mercury bioaccumulation risks. Based on these considerations, no new analyses or studies are warranted.

Comment: Several commenters raised concerns that the mercury toxicity information used to derive the BSL addresses only short-term exposures to adults and does not address more sensitive receptors including pregnant women, children or individuals with a sensitivity to mercury toxicity. Other commenters expressed concern that the toxicity assumptions do not take into account the risks of long-term exposures.

(Refer to Commenters #7, 28)

Response: The key toxicity value (i.e., reference dose) developed for mercury is based on human and animal studies that assess both acute and chronic exposures to mercury, including fetal exposure, and measurements of sublethal effects such as impaired neurological development in children. The values used for the BSL development are consistent with those used by EPA and other regulatory agencies for human health risk assessment. The development of these values incorporates a substantial safety factor to address potential data uncertainties and ensure protection of sensitive individuals.

Comment: Several commenters raised concerns that the BSL development did not address tribal seafood consumption rates, that the fish consumption rates used were lower than federal risk assessment guidance, that these rates did not reflect seafood consumption rates for children, or that the rates otherwise under-estimate seafood consumption rates.

(Refer to Commenters #7, 12, 28, 35, 87, 88, 89, 109, 110, 116, 122, 153)

Response: Seafood consumption rates used in the development of the BSL were based on a targeted fish consumption study of tribal seafood consumption rates for the Tulalip and Squaxin tribes. That study remains one of the key regional studies for seafood consumption rates in native- American populations. The resulting measurements of consumption rates were higher (on a weight-normalized basis) in adults than in children. The higher (more protective) of the two values was used in the BSL development process. The fish consumption rates used in the BSL development included the 90th percentile rates from the study. EPA risk assessment guidance typically uses the 95th percentile for seafood consumption rates when the studies are not specific to high-consuming populations. This is done in order to ensure that the resultant values are reflective of high-consuming populations such as tribal seafood consumers. However, when the studies are targeted at high-consuming populations, the use of the 95th percentile is not appropriate, and the 95% UCL or the 90th percentile is more commonly used. The 90th percentile value (the higher of these two values in the Tulalip/Squaxin study) was appropriately used for development of the BSL. The fish consumption values used in the study are more stringent than those used in the development of federal and state water quality regulations, and their use

results in a target fish tissue concentration (approximately 0.18 mg/kg) that is lower and more protective than federally recommended values developed by the FDA (1.0 mg/kg) and EPA (0.30 mg/kg). Ecology considers the derivation of the fish consumption rates and their application to the final BSL development process to be appropriate.

Comment: A number of commenters discussed the fish tissue data and the linear regression analyses that were performed to assess the relationship between sediment mercury levels and tissue mercury levels. Commenters articulated concerns with the adequacy of the tissue data, the manner in which the data were assembled for the regression analyses, and the type of line fitted to the regression data. A number of commenters stated that the regression analysis was invalid because it uses total mercury levels in sediment and tissue, whereas methylmercury is the predominant mercury fraction of concern for bioaccumulation in aquatic organisms.

(Refer to Commenters #12, 44, 46, 87, 89, 122, 129)

Response: Sediment and tissue data used for the BSL development included paired data, with the most important data set being the Dungeness Crab tissue data collected from Bellingham Bay. The analysis included studies performed by academic researchers and regulatory agencies including Ecology. The data were analyzed using standard linear regression techniques. Average values from each of the multiple studies were plotted, and the linear regression was performed using a best fit line. The regression outputs were then used to assess sediment concentrations that would be protective of human receptors. The regression analysis produced a strong correlation between sediment and tissue mercury levels in crab, and is considered by Ecology to be suitable for use in BSL development. Because the analysis was performed using paired endpoints (i.e., sediment total mercury and tissue total mercury) and because all tissue mercury was assumed to represent methylmercury for purposes of BSL development, the resultant BSL is considered by Ecology to be protective.

Comment: One commenter questioned whether site-specific bioaccumulation testing had been performed at the Whatcom Waterway site.

(Refer to Commenter #122)

Response: As discussed in the RI/FS, bioaccumulation testing was performed on sediments from the Whatcom Waterway site. The data are contained in Appendix E of the RI Report. Testing was performed using *N. virens* and *M. nasuta*. Results did not demonstrate any significant difference between test samples (mercury concentration 1.8 mg/kg) and controls or reference samples.

4.4 Seafood Quality

Comment: A number of commenters expressed general concern about seafood quality in Bellingham Bay, or expressed a desire to be able to consume seafood from Bellingham Bay. The Whatcom County Health Department stated that existing levels of mercury in fish and shellfish tissue have not warranted the issuance of a shellfish consumption advisory for Bellingham Bay.

(Refer to Commenters #27, 71, 141 & 142 & 158)

Response: As described in the RI/FS, concentrations of mercury in fish and shellfish in Bellingham Bay are below State, Federal and County thresholds of potential concern; and, have been declining.

Comment: RESources included in their comments a table summarizing recent sampling of crabs collected from the Whatcom Waterway Site. The reported tissue mercury concentrations ranged from 0.06 to 0.09 mg/kg wet weight.

(Refer to Commenter #122)

Response: The reported tissue mercury concentrations measured by RESources are well below EPA recommended safe seafood levels (0.30 mg/kg wet weight) and are well below the safe tissue level defined by Ecology as part of the BSL development (approximately 0.18 mg/kg). The measurements show a continued decline in tissue mercury concentrations consistent with natural recovery observations and the expected beneficial effects of Log Pond capping and sediment source control efforts.

Comment: Multiple commenters stated concerns specifically related to the potential for mercury at the Whatcom Waterway site to affect salmon in Bellingham Bay.

(Refer to Commenters #61, 62, 87 & 122)

Response: Concentrations of mercury in salmon from Bellingham Bay and the Nooksack River have been shown to contain mercury levels not significantly different from salmon collected in areas free of anthropogenic mercury impacts (e.g., Alaska salmon). There is no evidence that salmon, or mammals that consume salmon (i.e., Orca whales) have been adversely affected by Site mercury contamination. Cleanup of the Whatcom Waterway site will further reduce the potential for impacts to salmon to occur.

4.5 Vertical Distribution of Contaminated Sediments in Whatcom Waterway Channel

Comment: Several commenters stated a belief that the contaminated sediments were shallower than the federal channel dimensions, and that removal volumes for contaminated sediments from the Whatcom Waterway federal channel would be significantly less than those associated with the navigation dredging of the federal channel.

(Refer to Commenters # 7, 10, 12, 35, 36, 49, 50, 71, 110 & 120)

Response: The 1960s federal channel had a designed project depth of -18 ft MLLW (from the Roeder Avenue Bridge to approximately 750 ft out) and -30 feet MLLW (for the rest of the length of the designated channel). Maintenance of the channel under a navigation context would typically involve dredging the channel to these depths, plus additional over-dredging. As shown in Figure 3-7 of the RI Report, subsurface core testing has established that in most areas of the Whatcom Waterway, the depth of contaminated sediments is greater than the federal channel plus a significant over-dredge allowance. This is consistent with historical information regarding the depths of historical waterway dredging activity. The definition of dredge “prisms” required to remove contaminated materials from the Waterway areas and provide sufficient human health and environmental protection will be refined during remedial design and permitting, including additional subsurface core sampling in dredge removal areas.

4.6 Natural Recovery Issues

Comment: Several commenters stated that the performance of natural recovery had not been demonstrated at the Whatcom Waterway Site, or stated general opposition to the concept of natural recovery. One commenter stated concern about specific sample points where repeated sampling had not been performed during the 2002 PRDE studies, or where concentration reductions were different from the average rate of mercury reduction. One commenter requested additional monitoring prior to any consideration of natural recovery.

(Refer to Commenters #12, 46, 57, 110, 116, 122)

Response: As described in Section 6 of the RI Report, natural recovery has been assessed, quantified, and then re-verified. The 2002 sampling event provided an opportunity to monitor concentration trends in comparison to the 1996 sampling event. While not every sample from the original RI/FS sampling event was resampled in 2002, the overall pattern observed in most areas of the Site was a significant reduction in mercury concentrations. These data were analyzed along with physical data to assess potential sediment stability and recovery potential. Core sampling data and comparisons of surface and subsurface sampling data within the Inner Whatcom Waterway supplement the thin-sectioned natural recovery cores and demonstrate that cleaner sediments have progressively deposited in the Inner Whatcom Waterway, as well as in outer portions of the Site. The preferred alternatives identified in the RI/FS do not propose natural recovery as a remedial technology to address areas of the Site that exceed surface sediment cleanup standards. However, monitored natural recovery is proposed as a remedial technology for areas of the Site outside the Waterway that currently comply with surface sediment cleanup standards. Monitored natural recovery is thus not being proposed in these areas so that standards can be met; instead, it is

being proposed as an added measure of protection to ensure the continued compliance with cleanup standards. The area requiring monitored natural recovery will be refined during remedial design.

Comment: One commenter used a sediment loading and mass balance approach to estimate potential natural recovery rates, and argued that there was a discrepancy between these calculated rates and those measured directly using natural recovery cores as described in Section 6 of the RI Report. Two commenters stated that more work was needed to define a sediment budget for the Site and assess the performance of natural recovery consistent with a sediment mass balance approach.

(Refer to Commenters #110, 129)

Response: Natural recovery studies conducted as part of the RI/FS appropriately relied on direct measurements of natural recovery rates using sediment cores and proven sediment dating methods. These methods provide a more reliable site-specific measurement of recovery rates than broad mass balance arguments applied throughout Bellingham Bay without direct confirming empirical measurements. Completion of a sediment budget in support of the mass balance arguments would not alter the direct measurements available for the Site. Ecology considers the natural recovery evaluation conducted as part of the RI/FS to be appropriate and sufficient to document the natural recovery processes at work in Bellingham Bay. Please note that the preferred alternatives identified in the RI/FS do not propose natural recovery as a remedial technology to address areas of the Site that exceed surface sediment cleanup standards (see above comment and response).

Comment: One commenter requested that graphics be provided showing the variability in sedimentation patterns within the waterway to supplement available information from sediment natural recovery cores and dating studies.

(Refer to Commenter #150)

Response: The sediment cross sections (e.g., Figure 3-7) from the RI Report provide a graphical summary of differential sedimentation rates within the Whatcom Waterway. Sediment quality differences are color-coded in the data summaries. Given the discrete dating interval for mercury releases at the site, the thickness of the mercury-containing sediment layer provides an estimation of the sedimentation occurring between the 1960s and the date of sample collection. The thickness of this contaminated sediment layer increases generally from the Outer Waterway (2-3 feet accumulation) toward the Inner Waterway (3-10 feet), indicating that sedimentation rates in the Inner Waterway are generally higher than that in the Outer Waterway.

4.7 Mercury Solubility & Water Quality

Comment: Several commenters expressed concern regarding the impacts of naturally recovered sediments or capped sediments on water quality.

(Refer to Commenters #17, 61, 62, 116 & 122)

Response: Water quality testing was included in the RI/FS process, including both sampling of Bellingham Bay, as well as monitoring of pore-water in capped areas of the Log Pond. Results of testing have demonstrated that water quality in both areas complies with surface water criteria. Subsurface core sampling has been performed in capped areas of the Log Pond and there has been no evidence of upward migration of mercury through the cap layers. The limited area of cap recontamination that has occurred in the southwest corner of the Log Pond is fully explained by erosion of impacted sediments from areas adjacent to the cap, and will be addressed by the final cleanup. The RI/FS and cap monitoring observations are consistent with scientific research that indicates that in marine sediments, most mercury forms relatively insoluble complexes with hydrogen sulfide, minimizing the quantity of mercury that can enter the water column. Water quality data for the Site indicate that capping and natural recovery can safely control water quality impacts and mercury mobility.

4.8 Studies of Mercury Methylation

Comment: Multiple commenters stated that the factors affecting the methylation of inorganic mercury are too poorly understood to support a cleanup decision at the Site, particularly one not involving complete removal of mercury from the waterway.

(Refer to Commenters #12, 28, 44, 46, 75 & 88)

Response: Most mercury-impacted sediments within the Whatcom Waterway Site consist of buried sediments located in depositional, deep-water areas. In stable marine sediments, methylation occurs primarily in the top portions of the sediment column, within the bioactive zone. Methylation in deeper sediment horizons is constrained by geochemical properties (e.g., hydrogen sulfide chemistry) of the sediments. In contrast, where impacted sediments are routinely disturbed, methylation of mercury can occur in the freshly exposed sediments. Controlling the concentration of methylmercury in the bioactive zone and in sediment horizons that are frequently disturbed minimizes the potential for mercury methylation to occur. Given the tendency of methylmercury to bioaccumulate in seafood, tissue monitoring provides a direct endpoint by which the success of mercury control efforts can be measured. Intermediate measurements of microbiologically-mediated methylation processes within the sediment are less helpful in monitoring the overall system and the effectiveness of mercury control efforts. The tissue monitoring data for the Whatcom Waterway site have shown decreases in tissue mercury concentrations as surface sediment mercury concentrations have declined through natural recovery and capping of the Log Pond. Additional detailed research into the mechanisms of methylation is not

required prior to selecting and/or implementing cleanup alternatives at the Site. Tissue mercury monitoring will be a required element of the Compliance Monitoring and Contingency Response Plan prepared for public review as part of the remedial design phase of the cleanup.

4.9 Source Control & Timing of Cleanup

Comment: A number of commenters stated that they were concerned about the potential for soils and/or groundwater within the upland chlor-alkali plant site to recontaminate sediments in the Whatcom Waterway. Some commenters stated that sediment cleanup should be delayed until upland cleanup sites located near the Whatcom Waterway are completely remediated.

(Refer to Commenters #7, 12, 35, 117 & 122)

Response: The RI/FS describes the source control evaluations that have been conducted at the adjacent Chlor-Alkali Plant site and Central Waterfront site. While final cleanup of these upland sites has not been completed, the sites have been studied as part of on-going RI/FS activities. Groundwater evaluations have been performed at both sites indicating that the sites do not present ongoing recontamination concerns for the Whatcom Waterway sediments. Monitoring within the Log Pond has demonstrated that groundwater sources of contamination to the Log Pond are sufficiently controlled to prevent surface water quality impacts or sediment recontamination. Tissue monitoring for crabs within and near the Log Pond has demonstrated that seafood mercury levels are low and are declining. Since there is no evidence that these other sites are adversely impacting the Whatcom Waterway Site there is no reason to delay cleanup. The cleanup of the Central Waterfront site, however, will be coordinated with the cleanup of this Site since contaminated surface sediments comprising part of the Central Waterfront site overlay contaminated subsurface sediments at this Site in one area of the Waterway.

Comment: Other commenters expressed concern that stormwater could recontaminate sediments within the Whatcom Waterway following cleanup. Several commenters cited examples of sediment recontamination that have occurred due to stormwater discharges at other sites. One commenter requested monitoring at potential stormwater discharge locations after completion of cleanup.

(Refer to Commenters #7, 12, 35, 117 & 122)

Response: At some sediment cleanup sites around Puget Sound, stormwater has been a significant or predominant source of sediment contamination, particularly at heavily industrialized sites such as the Duwamish Waterway and portions of Tacoma's Commencement Bay. Examples of recontamination of sediment cleanup sites have occurred where the ongoing source of stormwater contamination was not sufficiently controlled prior to implementation of the

cleanup action. Bellingham Bay is less industrialized than these sites, and the primary pollution problems have been caused by historical point-source discharges rather than non-point source pollution from stormwater. Information reviewed, collected and compiled during the RI/FS indicates that stormwater is not a significant source of recontamination to Site sediments. Therefore Ecology considers it appropriate to move forward with cleanup of the Site and to require monitoring of sediment near significant stormwater discharge locations as part of Site long-term monitoring.

4.10 Requests for Additional Data Collection

Comment: Several commenters argued generally that there were gaps in the understanding of site conditions and that additional data collection should be performed. Some commenters stated that the existing data were adequate for completion of an RI/FS. But other commenters stated that additional data are required before the RI/FS can be concluded.

(Refer to Commenters #12, 15, 36, 46, 50, 78, 88, 109, 116, 122 & 131)

Response: Data collection is performed at different steps in the site investigation and cleanup process. The data collection efforts must be appropriate to each step, with different data required for site hazard assessments, RI/FS's, remedial design, construction and long-term monitoring. The existing data are sufficient to characterize site conditions and the nature and extent of contamination consistent with an RI/FS level of detail. Additional data will be collected during remedial design, with the scope of that data collection appropriate to the Site cleanup action ultimately selected by Ecology for the Site.

Comment: A number of commenters argued specifically that the collection of additional sediment core samples was required to develop estimates of removal volumes for contaminated sediment areas within the Whatcom Waterway or to delineate "hot spots" within the Waterway.

(Refer to Commenters #12, 36, 46, 50, 78, 122 & 131)

Response: The existing subsurface data for sediments are sufficient to estimate areas and volumes of impacted sediment, assess approximate depths required for sediment removal scenarios, assess cleanup requirements for sediment capping alternatives, and to assess sediment quality for evaluating disposal options. During remedial design, the collection of additional sediment coring data from planned dredging areas is appropriate to develop refined dredge "prisms" and associated design documents. Additional surface and subsurface data will be collected to refine the boundaries of capping and natural recovery areas. However, Ecology considers the existing data to be adequate for the current purpose of completing an RI/FS and selecting a remedy for the Site.

Comment: One commenter specifically requested the collection of more Log Pond monitoring data prior to implementation of Log Pond cap upgrades, or the collection of more subsurface data within the capped Log Pond to better characterize sediments beneath the sediment cap.

(Refer to Commenter #122)

Response: The Log Pond was capped in 2001 in accordance with an Interim Action Agreed Order with Ecology and under an associated Corps of Engineers permit. Required post-construction monitoring of subsurface sediments in 2001, 2002 and 2007 has shown that upward migration of mercury through the cap is not occurring, and collection of additional subsurface data is not warranted at this time. However, Ecology will consider these comments as part of developing future investigation plans for the remedial design phase of the cleanup. As discussed in Appendix I of the RI Report, some erosion has occurred along certain shoreline portions of the Log Pond cap. As part of the final cleanup of the Site, contingency actions will be taken to contain exposed contaminants and to prevent cap erosion.

Comment: Multiple commenters specifically requested the collection of additional sampling data in the natural recovery area at the head of the waterway.

(Refer to Commenters #15, 46, 110)

Response: Existing data sufficiently characterizes surface chemistry and biological conditions at the head of the waterway. However, monitored natural recovery areas identified in the final cleanup action for the Site, including the head of the Waterway, will be further evaluated during remedial design. Additional evaluations of the area at the head of the Waterway will include an assessment of sediment stability (i.e., assessment of low-tide/ high-flow conditions) as discussed in Section 5.5 of this Responsiveness Summary.

4.11 Discussion of Relative Contaminant Levels

Comment: Several commenters questioned the use of cumulative enrichment ratio as a measure of relative contaminant concentration, stating that the location of the contamination with respect to Bellingham Bay should also be taken into account when comparing different site areas.

(Refer to Commenters #12, 35 & 122)

Response: The cumulative enrichment ratio is an appropriate method for comparing relative contaminant concentrations. But it is correct that the potential environmental risks associated with contaminated sediments can vary substantially with location and depth of the sediment in question. The cumulative enrichment ratio is not used as the sole factor in assessing risk to human health

and the environment. In other words, the measure of relative contaminant concentrations is appropriately used in the RI/FS because it is employed *in conjunction with* other factors to assess contamination risk and cleanup alternatives. These other factors are addressed as part of the comparative evaluation of remedial alternatives in the RI/FS and in Ecology's development of the draft Cleanup Action Plan.

Comment: Another commenter criticized the use of general statements regarding average concentrations in discussing site conditions, and argued that only specific measurements of concentration are useful in communicating site conditions to the public.

(Refer to Commenter #36)

Response: The RI/FS presents both discrete measurements of sample concentrations (i.e., contaminant measurements made at specific sampling depths and intervals) and average concentrations within specific depth horizons (e.g., sediment quality within the bioactive zone, or sediment quality within shallow subsurface sediments). Both types of measurements are helpful in communicating site conditions, but each must be used in its appropriate context.

4.12 ASB Status and Applicable Cleanup Standards (Upland v. Aquatic)

Comment: Two commenters questioned whether the ASB should be considered "upland" and not "aquatic", and questioned which types of cleanup standards would apply to sediments and sludges contained within the ASB.

(Refer to Commenters #7 & 35)

Response: As discussed in the RI/FS, the applicability of cleanup standards to the ASB varies depending on the use of the structure. The ASB is an engineered structure that was constructed in Bellingham Bay under an Army Corps of Engineers permit and other state and local permits. It is currently used for industrial wastewater treatment, such that neither "upland" nor "aquatic" cleanup standards apply directly to the contents of the ASB at this time. However, if wastewater uses are terminated, the waters and sediments within the ASB would be regulated under MTCA as a surface water body. MTCA surface water cleanup standards would apply to the waters contained within the ASB, and SMS standards would apply to the bioactive zone of sludges and sediments contained within the ASB. It is therefore appropriate to evaluate sediment quality within the ASB against these "aquatic" criteria. These criteria also apply if the ASB is opened to Bellingham Bay. Application of upland soil cleanup standards to the ASB is only applicable to scenarios that permanently convert the ASB to filled upland. In these scenarios, both groundwater and soil cleanup standards would apply. Thus, both "aquatic" and "upland" cleanup standards can apply to the ASB, depending on future reuse conditions. The issue of whether "aquatic"

regulatory cleanup standards apply to the ASB is separate and distinct from questions of regulatory jurisdiction for land use permitting programs. These jurisdictional questions are more complex than simply “upland” or “aquatic”. For example, a structure that is considered “upland” under the Shoreline Management Act, can still be required by MTCA to be cleaned up to “aquatic” standards, because the two regulatory programs have different applicability and criteria.

4.13 Data QA/QC Comments

Comment: One commenter requested that Quality Assurance summaries be provided for all data collected during the RI/FS process, including both recently-collected and older data.

(Refer to Commenter #87)

Response: Chemical and biological data collected as part of the RI/FS were collected and analyzed consistent with Ecology-approved sampling & analysis plans. Data quality assurance reports were provided as part of original publications of the RI/FS data. Quality Assurance reports produced in previous editions of the RI/FS were not included in the supplemental documents, but are available at Ecology’s NW Regional Office.

4.14 Bioactive Zone Thickness

Comment: One commenter stated that the bioactive zone at the site should be set at 24 cm rather than 12 cm based on the maximum mixed-layer thickness measured in a natural recovery core.

(Refer to Commenter # 122)

Response: The median thickness of the mixed-layer was used to define a bioactive zone thickness for the site. The site-specific value of 12 cm is thicker than the value typically used throughout Puget Sound under SMS regulations (10 cm) and is appropriate for use.

4.15 Water Circulation

Comment: One commenter provided extensive comments supplementing information contained in the RI regarding water circulation patterns in Bellingham Bay. The commenter used revised water circulation estimates in a discussion of potential sediment deposition rates.

(Refer to Commenter # 129)

Response: The comments are noted by Ecology. However they do not have a direct bearing on the outcome of the RI/FS. Measurements of surface water quality performed during the RI/FS process have not documented exceedances of surface water criteria. Sediment deposition rates have been measured directly using sediment coring data, avoiding potential uncertainties associated using mass balance approaches. Additional water circulation studies are not required at this time as part of the RI/FS.

4.16 Radioactivity Measurements

Comment: Three commenters expressed concerns regarding measurements for radioactivity performed as part of past site investigations. One commenter raised concerns about laboratory reports and quality assurance samples related to the Cornwall Avenue Landfill site. The commenter requested that Ecology conduct radiological testing at the former GP properties based on the laboratory reports. Another commenter referenced the information provided by the first commenter regarding the Cornwall Avenue Landfill quality assurance samples. Additionally the second commenter referenced analyses performed on sediments for Cesium-137. A third commenter referenced general concerns about radioactivity, without citing a specific basis for those concerns.

(Refer to Commenters # 53, 106, 131)

Response: There is no evidence of releases of radioactive materials at or near the Whatcom Waterway Site. The Cornwall Avenue Landfill site is not the subject of the current RI/FS, but rather is a separate site. The laboratory reports referenced by the commenter were laboratory control samples and matrix spike/spike duplicate quality assurance samples. The sample results for the water samples in the report were non-detect for measured parameters, indicating that radioactivity levels were not elevated. Spike recovery results were within control limits indicating that the data quality was acceptable. The laboratory control sample results do not represent environmental media (i.e., soils, groundwater) but rather are separate control samples used by the laboratory to check instrument performance. Other samples tested as part of that study, but not cited by the commenter contained gross beta levels consistent with the potassium-40 activity naturally occurring in seawater. During 2004, the state Department of Health inspected the GP properties and found no evidence of radiological contamination. Cesium-137 is known to be present globally in marine sediments due to historic atmospheric nuclear testing performed between the 1950s and the 1970s. As described in Section 6 of the RI Report, cesium-137 profiles are used in natural recovery studies as dating tracers to estimate the time of sediment deposition. This isotope is used for these types of studies specifically because of its global distribution. The data are not indicative of a local release of radioactive materials.

4.17 Other Contaminants

Comment: Two commenters discussed past wastewater discharges of chromium, fluoride and ammonia documented in GP's Toxic Release Inventory reports. The commenters questioned whether the cleanup addresses potential impacts associated with historical releases of these compounds.

(Refer to Commenters #37 & 107)

Response: The Toxic Release Inventory is a federal database that documents permitted releases of certain chemicals from industrial operations. The information is readily available to the public on the internet. Potential impacts associated with historical releases of these compounds have been evaluated by both the Site RI/FS work and by monitoring performed under GP's NPDES wastewater discharge permit. The Site RI, and NPDES monitoring performed in 1999, included chemical and biological testing. The chemical testing program included measurements for chromium. No exceedances of screening levels were noted for that parameter. Biological testing provided a means of testing for effects from other potential sediment contaminants not included in the chemical testing program (e.g., ammonia, fluoride). The Site RI noted few exceedances of biological criteria, which will be addressed by the cleanup of the Site. The NPDES monitoring noted no exceedances of biological criteria.

4.18 Non-Sediment Mercury Issues

Comment: One commenter discussed historical use of mercury by the GP chlor-alkali plant, and speculated that mercury was discharged to the atmosphere during plant operations and/or was added to products manufactured at the plant.

(Refer to Commenter #75)

Response: The Site includes mercury contamination from historic releases of wastewater to the Whatcom Waterway. Investigations at this Site as well as neighboring cleanup sites (e.g. Central Waterfront, Chlor-Alkali Plant, Cornwall Avenue Landfill, R.G. Haley), have not indicated the existence of a contaminant air plume that has extended mercury contamination to a wider area. The MTCA cleanup regulation only addresses cleanup of hazardous waste that is released to the environment, and does not govern the manufacture or sale of useful products in commerce, even though they may be manufactured from or contain hazardous substances.

4.19 Specific Figure Comments

Comment: One commenter provided comments regarding Figure 5-10 of the RI Report. First the commenter requested that the figure include data from the Log Pond cap monitoring. Second, the commenter identified inconsistencies between Figure 5-10 plotted values and requested that the inconsistencies be rectified.

(Refer to Commenter #12)

Response: The Log Pond monitoring data are included in Appendix I of the RI Report, including results from multiple monitoring events. The results were not plotted on Figure 5-10, 5-11 or 5-13 because sampling intervals were different than those of the early RI/FS sampling work, and the data would not have been comparable due to these differences. The inconsistencies on Figure 5-10 have been corrected, and updates made to the Appendix G Tables, Table 5-3 and Figures 5-10 through 5-13. The updated materials are attached as Appendix C.

5. FS Comments and Responses

5.1 Commenter Remedy Preferences

In addition to providing specific technical comments related to the Feasibility Study, many commenters stated general or specific preferences regarding the alternatives or the types of technologies that they'd like to see applied to the cleanup of the Site.

Summary of Specific Preferences: Out of 162 commenters, 91 stated a preference for one or more specific remedial alternatives. Table 5-1 summarizes these stated remedy preferences. Of these commenters, 50 stated a preference for one or both of the RI/FS preferred alternatives (Alternatives 5 & 6). Most commenters identifying these alternatives stated a preference for both Alternatives in comparison to the other RI/FS alternatives. For those commenters (18) stating a preference between these two alternatives, all but one stated a preference for Alternative 6.

Table 5-1. Summary of Commenters with Specific Alternative Preferences

Alternative	No. of Commenters Stating Preference		Commenters Indicating Preference
	Subtotals	Totals	
Specific Alternative Preferences			
Alt 1		0	NA
Alt 2		0	NA
Alt 3		<u>9</u>	
<i>As Presented in RI/FS</i>	8		12*, 24, 35, 41*, 50*, 121, 125*, 139
<i>Modified Version</i>	1		15
Alt 4		1	156
Alt 5 or 6		<u>50</u>	
<i>Alternatives 5 and/or 6</i>	32		1, 2, 16, 20, 21, 22, 26, 34, 39, 45, 55, 59, 72, 77, 83, 90, 95, 102, 104, 117, 118, 126, 127, 130, 134, 140, 144, 145, 146, 149, 150, 151
<i>Alternative 6</i>	18		6, 8, 13, 18, 29, 31, 32, 47, 51, 96, 99, 103, 112, 113, 147, 152, 157, 158
Alt 7		<u>21</u>	
<i>As Presented in RI/FS</i>	11		4, 12*, 36, 41*, 49, 50*, 70, 125*, 135, 159, 160
<i>Modified Version</i>	10		10, 28, 46, 71, 74, 76, 88, 92, 94, 154
Alt 8		<u>9</u>	
<i>As Presented in RI/FS</i>	2		131, 153
<i>Modified Version</i>	7		56, 73, 110, 116, 122, 124, 142
Other Remedies		5	3, 19, 54, 75, 78
Total All		95	Includes four commenters expressing preference for more than one alternative (*)

Alternative 7 was identified as a preference of 21 commenters. Of these 21 commenters, 11 stated a preference for Alternative 7 as described in the RI/FS, and an additional 10 stated a preference for a modified version of Alternative 7. The proposed modifications differed, ranging from addition of thicker caps and sideslopes in the Waterway, to removal of the capped Log Pond sediments. Four commenters favoring Alternative 7 also identified Alternative 3 as a second remedy preference.

Alternatives 3 and 8 each were identified by 9 commenters. Of the 9 commenters identifying Alternative 3 as a preference, only one commenter requested changes to the alternative. Of the 9 commenters stating a preference for Alternative 8, most (7 of 9) indicated a desire for modifications of the alternative. Desired modifications of Alternative 8 ranged from addition of thicker caps and side-slopes in the Waterway, to removal of the capped Log Pond sediments.

No commenters identified Alternatives 1 or 2 as a remedy preference. Only one commenter identified Alternative 4 as a remedy preference.

Five commenters developed their own alternatives that were significantly different than those discussed in the feasibility study. These alternatives included dredging with two different types of confined disposal sites, one proposal for sediment desalination and thermal treatment, one proposal to dredge the waterway (extent not defined) and cap the ASB, and one proposal to use the ASB for sediment dewatering followed by upland disposal of the sediments.

Response: Taken as a whole, and in conjunction with the general preferences contained in other comments, the specific preferences summarized in Table 5-1 indicate that alternatives 1, 2, 3 and 4 have generally lower levels of community support than alternatives 5-8. The RI/FS preferred alternatives (Alternative 5 and 6) received generally favorable comments from a majority of commenters stating a specific remedy preference. Alternatives 7 and 8 were supported by commenters desiring a greater degree of contaminant removal from Bellingham Bay than conducted under the RI/FS preferred alternatives.

Of the five new alternatives presented by commenters, the two confined disposal alternatives are conceptually similar to Alternatives 2 or 3 which received low overall ranking in the alternatives evaluation and which received relatively few comments of support. The alternative described as dredging of the waterway and capping of the ASB is assumed to be similar to either Alternative 3 or 4, which are already evaluated in the RI/FS. The remaining two alternatives use technologies that are not considered commercially viable at this time based on the technology screening presented in the RI/FS and based on recent sediment cleanup technology evaluations summarized by EPA. Ecology does not consider it necessary to evaluate additional alternatives beyond those already evaluated in the RI/FS. It should be noted, however, that improvements and other technical modifications to the alternative ultimately selected by Ecology will be considered

based upon additional data collected and subsequent alternative refinement during the remedial design phase of the cleanup.

Summary of General Preferences: Out of 162 commenters, 24 provided no statement of preference for a remedial alternative or remedial technology (see Table 5-2). In some cases these commenters provided specific technical comments on one or more of the documents. In other cases, the commenters provided only general statements of support or concern for the cleanup, without identifying a preference for a technology or cleanup alternative.

A total of 47 commenters stated general preferences regarding cleanup technologies or remedial alternatives, but these were not described in sufficient detail to link to a specific RI/FS remedial alternative. Table 5-2 summarizes the general preferences stated by these commenters.

Table 5-2. Summary of Commenters Indicating General Preferences

Remedy Preferences	No. of Commenters Stating Preference	Commenters Indicating Preference
<i>Preference Not Stated or Not Clear</i>	24	5, 17, 25, 37, 44, 53, 57, 63, 65, 66, 69, 81, 84, 89, 101, 105, 106, 107, 111, 115, 129, 132, 137, 141
<i>Statement of General Remedy Preferences</i>	47	
Favors In-Place Management	2	79, 161
Opposes Capping	1	38
Favors Dredging & Upland Disposal	13	9, 30, 40, 52, 60, 61, 62, 82, 108, 119, 120, 133, 155
Favors Cleanout of ASB	2	86, 87
Favors "More" Removal	6	7, 11, 14, 42, 43, 58
Favors "Full" Removal	23	23, 27, 33, 48, 64, 67, 68, 80, 85, 91, 93, 97, 98, 100, 109, 114, 123, 128, 136, 138, 143, 148, 162

Of the 47 general preference comments, 2 commenters favored use of in-place sediment management (i.e., capping). In contrast, one commenter specifically objected to the use of capping, without providing further detail. The remaining commenters favored the use of some degree of dredging and upland disposal.

Of the 47 general preference comments, 13 favored the use of dredging and upland disposal, but did not specify locations or volumes for application of this technology. Two commenters favored cleanout of the ASB, without specifying a remedial technology or alternative for application to the balance of the site. Six commenters stated a desire for "more" removal, without any details regarding the extent or locations of this removal. These comments are generally interpreted as a desire for more removal than that performed under Alternatives 5 or 6 as described in the RI/FS. Similarly, 23 commenters

stated a preference for “full removal” of contaminated sediments, without providing details of the extent or locations of this removal.

Response: As with the specific remedy preferences, the general preferences indicate support for remedial approaches involving removal of the contaminated sediments from the bay, and reduced support for remedies relying primarily on in-place management of contaminated sediments.

5.2 General Capping Concerns

Comment: Several commenters stated general concerns about application of capping technologies for long-term remediation at the Site. Commenters acknowledged that capping has been performed at contaminated sediment sites, and that contractor experience, engineering estimating tools, capping models, and regulatory guidance documents are available. But commenters expressed concern regarding longer-term cap performance and desired a weighting of permanence as part of the evaluation of alternatives. Comments listed under this subsection were general in nature. Specific capping concerns or comments are listed under later subsections.

(Refer to Commenters #4, 12, 33, 37, 73, 75, 76, 88, 94, 105, 110, 111, 116, 136, 153, 154 & 155)

Response: Capping has been identified by EPA in its Assessment and Remediation of Contaminated Sediments (ARCS) program as a demonstrated remedial technology suitable for permanent cleanup of contaminated sediment sites, provided that the caps are engineered appropriately and are applied in suitable locations. These conclusions were reaffirmed with the publishing of EPA’s Contaminated Sediment Remediation Guidance for Hazardous Waste Sites in December of 2005 (<http://www.epa.gov/superfund/resources/sediment>). Application of capping has been proposed in the RI/FS preferred alternatives for certain areas of the Site where caps are appropriate. The thickness and type of capping material would vary with site-specific conditions and the chemical composition of underlying sediments. Monitoring of pore-water in the Log Pond cap has demonstrated that mercury is stable under capping conditions, even in nearshore areas containing capped subsurface sediment mercury. Caps have been used in Puget Sound for successful remediation of contaminated sediment sites since the 1990s. Detailed engineering evaluations will be conducted as part of remedial design and permitting to ensure that caps, if used as part of the cleanup action, are designed in a manner that ensures their long-term stability. Monitoring will be included to document long-term performance, and contingent actions will be implemented if caps do not perform as designed. Cap design, compliance monitoring and potential contingent actions will be subject to public review as part of a draft Engineering Design Report. Ecology believes that sufficient information is available to demonstrate the performance of capping as a viable remedial technology for use in the RI/FS. The MTCA alternatives evaluation process includes preferences for application of the most permanent remedial

alternatives and technologies. These MTCA preferences are described in the Feasibility Study and have been considered in Ecology's development of a DCAP for the Site.

Comment: Commenters from the Washington Department of Fish and Wildlife and the Whatcom County Health Department expressed support for capping technologies provided that they are applied appropriately at the site and ensure long-term isolation of the contaminants from the biologically active environment and natural resources in Bellingham Bay.

(Refer to Commenters #152, 158)

Response: Ecology concurs with these comments. Detailed engineering evaluations will be conducted as part of remedial design and permitting to ensure that caps, if part of the selected cleanup action, are designed in a manner that ensures their long-term stability. Monitoring will be included to document long-term performance, and contingency actions will be taken if the caps do not perform as designed. Compliance monitoring will directly measure the performance of the cap with respect to bioactive zone sediment quality and food chain mercury levels.

5.3 Wind & Wave Erosion

Comment: A number of commenters have expressed concerns that sediment caps applied at the Site may be eroded by wind-driven waves, and requested additional evaluation of wind and wave erosion effects. One commenter expressed concern that wave patterns cannot be predicted and that changes considered for the ASB cannot be evaluated prior to construction. Another commenter expressed concern that sediments at Starr Rock are shallow and vulnerable to wave erosion. Generally these comments about wave erosion were coupled with an argument against the use of capping at the Site as part of the final cleanup action.

(Refer to Commenters #56, 63, 81, 87, 109, 122, 142 & 162)

Response: Ecology concurs that additional evaluation of wind and wave erosion is required at the Site. As part of remedial design activities, Ecology will require additional wind and wave stability evaluations to be performed for cap and natural recovery areas. These evaluations will be performed using accepted design standards, detailed evaluation of site-specific conditions in different areas of the site, documented weather patterns and trends, and appropriate factors of safety. Sufficient engineering assessment was performed as part of the RI/FS to demonstrate proof of concept and define conceptual design assumptions for cost analysis at the RI/FS level of detail. Note that in the development of the draft Cleanup Action Plan for the Site, Ecology has incorporated some removal of contaminated sediments in shallow-water areas of sediment site unit 5B ("Shoulder" of the ASB) to achieve a cap surface elevation that minimizes wave energies affecting the cap. The effects of shoreline changes can be assessed using

computer wave models, and if necessary physical models. Water depths at Starr Rock are well below the intertidal and shallow subtidal elevations at which wave energy is most significant, but this area will be included in the design-level stability evaluations. Cap design will be subject to public review as part of a draft Engineering Design Report.

Comment: Several commenters expressed concern related to storm surges and their potential impact on the sediment cleanup remedy.

(Refer to Commenters #7, 81, 87, 122)

Response: Storm surges present as a higher-than-normal tide, caused by offshore storm activity. In Puget Sound, storm surges generally increase (rather than decrease) water depths during storm events. Storm surges are significant in the design of above-water structures such as jetties, breakwaters, and dikes; but pose less of a design limitation for submerged caps. Because erosional forces on sediment caps tend to decrease with increasing water depth, the storm surges tend to reduce effective erosional force on sediment caps (i.e., by increasing the water depth over submerged caps, and by reducing the portions of intertidal caps exposed to breaking waves). Analysis of storm surge effects on sediment stability will be included as part of the additional design evaluations.

5.4 Prop Wash & Navigation Disturbances

Comment: Several commenters have expressed concern that the performance of capping remedies will be affected by anthropogenic disturbances including prop wash from various types of vessels, anchor drag, potential vessel groundings, vessel wakes and fishing activities including placement and retrieval of crab pots. One commenter specifically questioned the depth of anchor drag effects cited in the RI/FS.

(Refer to Commenters #28, 51, 56, 63, 87, 109, 122 & 143)

Response: Ecology concurs that anthropogenic disturbances are a significant factor that must be considered in design of any capping remedy. The RI/FS included a preliminary analysis of these potential considerations. Depth of anchor drag varies depending on the types of vessels involved. The greatest effects are observed for large vessels (e.g., container ships, oil tankers) using general deep-water anchorages, and for large ocean-going barges that may drag anchor chains during waterway maneuvering. For the Site, applicable anchoring disturbances for the Inner Waterway and harbor areas are mainly those associated with small boats typical of mixed-use waterfront uses. These effects are typically greater than those associated with fishing gear deployment and retrieval. Conceptual designs presented in the RI/FS consider the use of cap armoring and the use of increased cap thicknesses in the Inner Waterway to address potential impacts associated with prop wash, vessel groundings and anchor-drag. The use of dredging in deep draft navigation areas near the shipping terminal is considered by Ecology to be a

priority to minimize potential impacts where these are anticipated to be greatest. In these deep-draft areas prop wash effects may be greater due to the presence of large deep-draft vessels, the use of bow thrusters on intermediate-sized vessels, and waterway use by larger tug vessels. Additional analysis of potential anthropogenic effects on cap stability will be conducted during remedy design and permitting for any cap areas included as part of the final cleanup action at the Site. These cap areas would also require application of institutional controls (use restrictions) to reduce or eliminate future anthropogenic effects.

5.5 Whatcom Creek Flood Effects

Comment: Three commenters cited concerns that during high rain events, creek flows at the mouth of Whatcom Creek may affect sediment stability.

(Refer to Commenters #73, 87 & 143)

Response: Ecology shares this concern. Monitored natural recovery areas identified in the final cleanup action for the Site, including the head of the Waterway, will be further evaluated during remedial design. Additional evaluation of the head of the Whatcom Waterway will include an assessment of low-tide/ high-flow conditions and assessment of potential storm/flooding effects on sediment stability.

5.6 Effects of Climate Change

Comment: Several commenters expressed concerns that global warming is considered likely to increase sea levels, and that this rise may impact sediment stability. Additional concerns were expressed that storm severity or frequency may increase due to the effects of climate change.

(Refer to Commenters #73, 101, & 110)

Response: Ecology has been an active participant in evaluations of global warming and its potential impacts on people and the environment in the Puget Sound area. Scientific consensus is that some climate changes will occur and that sea levels will rise, though the extent of these changes is subject to scientific debate. As with storm surge (Section 5.3), increases in sea levels would affect primarily the design of above-water structures such as jetties, breakwaters, and dikes; but pose less of a design limitation for submerged caps. Because erosional force on submerged sediment caps tends to decrease with increasing water depth, increasing the sea level would tend to reduce effective erosional force on submerged sediment caps, and would reduce the portion of intertidal caps exposed to breaking waves. Because the extent of sea level rise remains uncertain, Ecology will consider a range of potential sea levels during remedial design and permitting. Current sea levels will likely be the limiting design condition for

intertidal and subtidal areas, whereas potential increased sea levels may affect shoreline stability evaluations in high intertidal and adjacent upland shoreline areas. Potential changes in storm severity or frequency will be addressed by including an increased margin of safety in sediment stability analyses.

5.7 Seismic Stability & Tsunamis

Comment: Multiple commenters expressed concerns related to potential seismic events and associated shoreline or sediment disturbance. One commenter noted that portions of the RI/FS replicated a seismic analysis performed during the design of the Log Pond Interim Remedial Action.

(Refer to Commenters #9, 11, 56, 63, 81, 98, 110, 119, 122, 133, 143 & 162)

Response: As discussed in the RI/FS, the Puget Sound region is an area of known seismic activity. Seismic stability is a factor that Ecology and EPA routinely require be evaluated as part of remedial design and permitting for sediment capping or confined disposal facility construction projects. An example of this is the analysis conducted as part of the Log Pond Interim Remedial Action, which has been summarized as part of the current Supplemental RI/FS. As discussed in the RI/FS, seismic effects relevant to the project include liquefaction and lateral spreading. Liquefaction and lateral spreading occur most frequently in thick sequences of saturated, unconsolidated sandy soils/sediments. The effects on sediment stability are greatest in steep-sloped shoreline areas on or adjacent to these liquefaction-prone areas. As discussed in the RI/FS and DSEIS, the risks of shoreline instability are decreased by reducing the height and steepness of sideslopes. Disruption of the sediment surface within the waterway by sand boils is less likely due to the relatively thin sequence of sandy sediments underlying the Whatcom Waterway (dredging of the waterway removed much of the original loose sandy materials) and the high silt and organic content of the Whatcom Waterway sediments overlying the sandy material. The remedial design process for the Site will include detailed analysis of geotechnical and seismic stability, and appropriate mitigation measures will be included in the final design of any cleanup action implemented at the Site.

Comment: A number of commenters specifically cited concerns about tsunamis that may occur in association with a seismic event.

(Refer to Commenters #11, 110, 122, 143 & 162)

Response: Due to its geography and history of seismic activity, the Pacific Coast and the Puget Sound region are periodically exposed to tsunamis. Extensive work has been conducted recently by NOAA and other researchers to evaluate likely ranges of tsunami effects, and to identify areas particularly prone to inundation during tsunami events. The Site area is not identified as a high risk area for tsunami inundation, though portions of the bay near the Nooksack river delta are

of greater concern. In the Site area, the effects of tsunamis are likely to be similar to high-water events caused by storm surges. As with storm surges (Section 5.3), these potential effects are most significant for design of above-water structures such as jetties or shoreline buildings. The increased water levels occurring during tsunami events tend to increase sediment stability relative to typical conditions. Potential tsunami effects will be included in seismic and sediment stability analyses conducted during remedial design evaluations.

5.8 Specific cap design comments

Comment: One commenter provided clarifying information on the AquaBlock product line that can be used to reduce permeability of a sediment cap, and in some situations to function as a reactive cap. The commenter provided references to several recently completed projects using the AquaBlock product.

(Refer to Commenter #5)

Response: Ecology appreciates the clarifying comments regarding the applications of the AquaBlock product for sediment capping. Consideration of specialty products for capping enhancement is a remedial design issue which will be addressed after Ecology's selection of a cleanup action for the Site.

Comment: Two commenters indicated that reactive capping methods should be considered for enhancing mercury sequestration by sediment caps.

(Refer to Commenters #116, 122)

Response: Reactive capping has not been eliminated from consideration as part of the future design process. However, findings from capping of the Log Pond sediments has indicated that pore-water in sediment caps has been consistent with surface water criteria, and thus natural geochemical processes, combined with the physical sequestration provided by the sediment cap are sufficient to meet remedial action objectives. Avoidance of physical disturbance of the sediment cap will likely represent the design consideration with the greatest impact on cap design.

Comment: Two commenters expressed concern over application of capping in areas where pilings are present.

(Refer to Commenters #28, 122)

Response: Cap design evaluations will address issues related to the application of capping in areas with pilings. These considerations include both potential effects of the cap on the pilings (e.g., geotechnical down-drag effects) as well as evaluations of the effects of the pilings on the cap (e.g., procedures to be used to avoid recontamination during piling maintenance or removal activities). Under the proposed land uses, the number and types of pilings present within the site will be significantly

reduced compared to current conditions, with removal of many of the existing over-water wharves present in areas that may be capped as part of the final cleanup. Further evaluation of this issue will be conducted as a part of design and permitting for the cleanup action.

Comment: Two commenters stated general concerns about the application of capping in steeply sloping areas.

(Refer to Commenters #28, 122)

Response: It is generally true that capping effectiveness depends in part on the control of sideslope grades. The effective slope limitations vary with the type of capping material and the site-specific conditions. Flatter slopes provide greater stability for a given type and size of sediment. The use of flatter sideslopes provides enhanced stability during seismic events. Remedial design evaluations will include an evaluation of sideslope stability under static and seismically active conditions, with adjustments made to the remedial design as appropriate. Adjustments can include cutting back slopes or adding stabilizing material at the base of the slopes, or modifying the type of material used.

Comment: Two commenters discussed the potential for wood waste to affect cap stability due to potential methane production during wood waste degradation, or to reduced sequestration for chemical contaminants compared to other sediments.

(Refer to Commenters #12, 46)

Response: The type and extent of wood waste varies throughout the Site. The highest concentrations were observed in portions of the Log Pond. These areas have been capped as part of the Interim Remedial Action, and no negative effects attributable to wood waste have been noted on cap performance. Wood waste abundance in other site areas is less extensive. Potential impacts of wood waste on cap chemical and physical stability will be evaluated as part of remedial design evaluations for specific cap areas included in the final cleanup action.

Comment: A number of commenters stressed the benefits of using caps that are thicker than the standard 2-3 feet commonly used in Puget Sound, particularly in areas with higher subsurface mercury concentrations. Multiple commenters stressed that this should be considered even in cases where this might trigger some sediment removal prior to cap placement.

(Refer to Commenters #7, 12, 122 & 150)

Response: Ecology concurs that the use of different cap thicknesses in different areas of the site and/or under different cleanup alternatives is appropriate. Alternatives 4, 5 and 6, already reflect a thick cap of up to 6 feet in areas adjacent to the Log Pond. Based on planned land and navigation uses and existing water depths, the use of thick

capping in this area under Alternatives 4, 5 and 6 does not require additional dredging prior to cap placement. The use of a thicker cap in this area is intended to provide an incremental degree of protection against physical cap disruption, and to enhance processes that tend to physically and chemically sequester contaminants. A thinner cap in this area is appropriately included under Alternatives 7 and 8 which leave less residual contamination present beneath the cap. Cap thicknesses in other lesser-contaminated areas are appropriately not as thick, and are based on a nominal cap thickness of 3 feet pending final design evaluations.

Comment: Two commenters argued that some sediments that may require dredging for cleanup or navigation uses, particularly from the outer portions of the Whatcom Waterway (i.e., Site Units 1A & B) may be suitable for beneficial reuse or PSDDA disposal and should not be assumed for upland disposal in project cost estimates.

(Refer to Commenters #35 & 36)

Response: Ecology concurs that sediments removed from the outer portion of the Whatcom Waterway may be suitable for PSDDA disposal or beneficial reuse. Cost estimates for the RI/FS alternatives 4 through 8 are based on this assumption, consistent with previous sediment testing in these units. Potential beneficial reuse options include use of the material as a capping subgrade in the Whatcom Waterway. Similarly, if clean materials are generated from other areas of the waterway during cleanup and/or navigation dredging, these materials may be managed by PSDDA for disposal or beneficial reuse. Sediments from the Inner Waterway area, however, have been shown to contain contaminant levels that exceed PSDDA disposal and beneficial reuse criteria. Cost estimates for alternatives 4 through 8 appropriately assume the use of upland disposal for sediments dredged from Inner Waterway areas.

Comment: One commenter requested that the RI/FS include an extensive summary of capping and dredging case studies. Another commenter recommended consideration of EPA's recent December 2005 guidance document titled Contaminated Sediment Remediation Guidance for Hazardous Waste Sites (<http://www.epa.gov/superfund/resources/sediment>).

(Refer to Commenter #122, 59)

Response: The RI/FS contains sufficient discussion of sediment remedial technologies, including dredging and capping, to screen technologies for Site application and to assemble and comparatively evaluate remedial alternatives. This level of analysis is appropriate for a MTCA RI/FS. Remediation case studies are appropriately summarized in regulatory guidance documents prepared by EPA and the Corps of Engineers including the one referenced by the second commenter. The RI/FS conveys a number of design considerations that will be addressed during remedial design.

Comment: Two commenters requested specific clarifications regarding capping design assumptions. One commenter requested that cap design life assumptions be specified, and a second commenter requested clarification of how dredging and capping would be applied in Unit 1C under Alternative 6.

(Refer to Comments #122, 150)

Response: The goal of sediment capping under a MTCA final cleanup action is to develop caps that are stable and that become a permanent part of the natural environment. In depositional systems such as Bellingham Bay, this ensures that the potential for cap maintenance and repair problems decreases with time rather than increases. The use of institutional controls (use restrictions) provides for perpetual maintenance of the caps and ensures that anthropogenic activities do not affect the integrity of the cap. Under Alternative 6, all portions of Unit 1C would be dredged. In contrast, under Alternatives 4 and 5, shallow portions of Unit 1C (subareas 1C-1 and 1C-2) would be dredged, whereas deeper portions would be capped without prior dredging (subarea 1C-3).

5.9 Grey Whale Exposures

Comment: One commenter cited past observations of grey whales sounding in Bellingham Bay near the Whatcom Waterway site, and expressed concern regarding potential physical disturbance by the whales of the site sediments, and regarding potential toxicity of the sediment contaminants to the grey whales.

(Refer to Comment # 159)

Response: The use of Bellingham Bay by migratory grey whales, and the potential for whales to conduct opportunistic feeding within Bellingham Bay and the Site, is well documented. Sections 4 and 6 of the RI Report include an analysis of potential feeding induced sediment disturbance and an evaluation of potential health effects for grey whales exposed to Site sediments. Site conditions are not considered by Ecology to pose a potential health risk to grey whales. Appropriate measures have additionally been incorporated into the RI/FS preferred alternatives (e.g., thick caps in areas adjacent to the Log Pond) to minimize potential physical disturbances in more impacted areas.

5-10. Length & Type of Cap Monitoring

Comment: Many commenters desired additional information on the scope, frequency and duration of cap monitoring that will be required as part of remedy construction and monitoring. Some commenters specifically requested that cap monitoring periods be extended to at least 30 years. Other commenters stated that the level of monitoring should not be uniform over all site areas, but should be proportionate to contaminant levels and the disturbance risks in various site areas.

(Refer to Comments #7, 10, 12, 51, 82, 111, 114, 122 & 150)

Response: Compliance monitoring is a required element of all cleanup actions. For cleanup actions involving sediment capping, compliance monitoring includes three types of monitoring. First, protection monitoring (e.g., water quality testing) is performed during cap installation to ensure compliance with project permits, and to ensure protection of human health and the environment during cap construction. Second, performance monitoring is conducted to document that the cap installation has met criteria defined in project design and permitting. Finally, confirmational monitoring is used to document that the cap is physically stable and continues to meet chemical and biological performance standards after construction is complete. The draft Cleanup Action Plan developed by Ecology includes a monitoring framework that establishes basic goals and expectations of the monitoring program, including long-term confirmational monitoring. Ecology anticipates requiring a minimum of 30 years of confirmational monitoring (likely years 1, 3, 5, 10, 20 and 30 following construction), with potential additional monitoring or implementation of contingency actions required if the cap has not yet been shown to represent a stable and permanent part of the natural environment. Ecology concurs that the density of sampling locations should not be uniform, but rather should be more dense in areas with higher subsurface contaminant levels, greater levels of anthropogenic activity and/or erosional forces, or other factors that increase the potential for recontamination to occur. Monitoring will at a minimum include physical, chemical and biological monitoring using bathymetric surveys, shoreline inspections, chemical sediment testing, contingent bioassay testing and mercury tissue monitoring for benthic species (i.e., Dungeness crab). A detailed Compliance Monitoring and Contingency Response Plan will be issued for public review as an element of a draft Engineering Design Report expected to be completed in 2009. This plan will include specific testing locations, protocols and interpretive criteria.

5-11. Costs of Cap Monitoring

Comment: A number of commenters argued that the costs included in the RI/FS did not accurately reflect the costs of long-term monitoring. In particular, commenters noted that the costs of monitoring were the same for alternatives 1, 4, 5, 6, 7 and 8, even though more sediment removal is conducted under Alternatives 7 and 8 than in the other alternatives. Some commenters argued that the costs of monitoring may have been so severely underestimated as to influence the comparative evaluation of remedial alternatives, and the identification of RI/FS preferred alternatives.

(Refer to Comments #7, 10, 12, 17, 28, 33, 41, 46, 48, 50, 88, 93, 109, 114, 120, 122, 125, 142, 155 & 159)

Response: The RI/FS cost estimates for monitoring of cap and natural recovery areas assumed completion of four monitoring events each, with an average per-event cost of \$160,000 (expressed in constant \$2005). Alternatives 2 and 3 had additional monitoring costs allocated to monitoring of confined disposal facilities constructed

under these two alternatives. The \$160,000 per-event monitoring cost for cap & natural recovery areas is considered by Ecology to be a reasonable estimate for Alternatives 6 and 7, though final costs will be subject to additional development of the monitoring scope and plan as part of remedial design. However, the costs probably do underestimate (by 10-25%) the monitoring costs for Alternatives 1, 4 and 5 which have a greater capping and natural recovery footprint. Similarly the costs likely overestimate (by 10-25%) the monitoring costs for Alternative 8 which has a smaller cap footprint. Further, Ecology anticipates requiring at least two additional monitoring events (for all alternatives) such that overall monitoring costs will increase for all alternatives. These adjustments to the monitoring costs would not change the analysis of alternatives or the outcome of the analysis. These adjustments will be reflected in Ecology's draft Cleanup Action Plan.

5.12 Contingent Remedies and Repairs

Comment: Separate from the costs of cap monitoring, multiple commenters requested that cost estimates be expanded to include defined line items for periodic cap repairs and contingent remedies. A number of commenters argued that the comparative evaluation of alternatives and the identification of a preferred alternative would be affected if remedy repairs and contingencies were included. Some commenters requested that specific contingencies and trigger-levels be specified in the Consent Decree.

(Refer to Comments #4, 7, 10, 12, 17, 28, 33, 41, 50, 71, 76, 82, 85, 109, 114, 117, 122, 155 & 159)

Response: Cap designs considered in the RI/FS are intended to provide stable conditions that do not require active scheduled cap maintenance. Therefore, it is not appropriate to include a presumptive, recurring cost for cap maintenance (e.g., annual maintenance). Contingent risks are associated with all remedies. The RI/FS cost estimates currently include a cost contingency of 30%. Potential additional contingent risks could apply to all remedies, but this does not affect the RI/FS cost analysis which must be based on definable and estimable costs. The argument that long-term risks are generally reduced by alternatives that remove more contamination is addressed in the MTCA evaluation criteria for long-term effectiveness and permanence. Specific monitoring requirements, contingencies and trigger levels for different site areas will be developed for public review as part of remedial design.

5.13 Navigation Dredging Costs

Comment: One commenter expressed concern that costs associated with future maintenance dredging in the waterway will be substantially increased due to the presence of capped contaminated sediment under the RI/FS alternatives, and that incremental navigation dredging costs should be included in the alternatives evaluation.

(Refer to Commenter #46)

Response: Conceptual designs for caps in navigation areas where future maintenance dredging may be required include sufficient design overdepth to allow for maintenance dredging, and cap areas near the Log Pond have been thickened in the RI/FS preferred alternatives in order to provide an additional degree of protection. Based on these provisions, incremental costs of navigation are not expected to be significant. The periodic costs of navigation dredging are appropriately excluded from RI/FS cost estimates since these are not remedial costs and would be incurred whether or not capped sediments are present in the Waterway.

5.14 Upgrades to Log Pond Cap

Comment: Multiple commenters concurred that the planned improvements to the shoreline edges of the Log Pond cap should be performed promptly, as part of the first phase of remedial action as described in the RI/FS.

(Refer to Commenters #29, 88 & 157)

Response: Ecology appreciates this concern. It is anticipated that contingency actions to contain exposed contaminated subsurface sediments and to prevent future cap erosion will be implemented as part of the first phase of the final cleanup action.

Comment: Several commenters expressed an opinion that the observed conditions in the Log Pond demonstrate flaws in capping as a technology, and cause concern about any application of capping for long-term remediation at the Site.

(Refer to Commenters #4, 7, 73, 109, 110, 116, 122, 125, 153, 155)

Response: As discussed in the RI/FS, the performance of the Log Pond cap has generally been good, with the exception of the observed erosion at two cap edge areas where the cap was the thinnest. The cap has successfully sequestered mercury contaminants and prevented impacts to surface sediment or water quality throughout the main portion of the cap. The cap has also proven an effective enhancement to habitat conditions within the Log Pond, and serves as important habitat for crab, juvenile salmonids and other species. Observed erosion indicates the need to consider a more rigorous cap design throughout other areas of the Site where physical erosional processes may occur at a range of tidal elevations, and to consider how cap edges are seated into shoreline areas. These factors have been considered in the conceptual design of the RI/FS alternatives and will be considered in Ecology's development of the Draft Cleanup Action Plan. Detailed cap designs will be developed for public review as part of remedial design and permitting.

Comment: Two commenters specifically requested discussion of concentration trends in samples within the Log Pond, including stations SS-301, SS-40 & SS-76.

(Refer to Commenters #87, 122)

Response: Sample SS-301 is located immediately offshore of the area in the southwest corner of the Log Pond where cap erosion and recontamination has been observed. Mercury concentrations in this sample were higher at Year-5 monitoring event than in previous events, but did not exceed the SQS. Completion of contingency actions to cap eroded areas and to install energy-dissipating groins will further protect the cap against increases in mercury concentrations at this station. Sample locations SS-40 and SS-76 are located near the extreme offshore edges of the Log Pond. Concentrations of mercury at these stations remain well below the SQS, despite being located near sediment areas not yet remediated. At station SS-76, mercury concentrations exceeded the numeric SQS, but did not exceed the SQS based on over-riding confirmational bioassays. Increasing concentrations of mercury in this sample are associated with its proximity to unremediated sediments in adjacent areas and equilibrium of concentrations between these locations.

5.15 Effectiveness of natural recovery

Comment: Several commenters expressed the belief that historic trends of natural recovery and sediment deposition may terminate in the near future, or at least that there is a significant degree of uncertainty on this point. These commenters generally requested that Ecology avoid selection of any remedy that relies on continued natural recovery to comply with cleanup standards.

(Refer to Commenters #7, 12, 57, 73, 122 & 129)

Response: Multiple lines of evidence have demonstrated that Bellingham Bay represents a natural depositional system, and that natural recovery through burial of contaminated sediments has been significant. Some changes to the rate of natural recovery could occur if significant sediment inputs to the bay were substantially altered (e.g., partial or complete modification of the Nooksack River discharge location). Were such a dramatic change to occur, only one of the RI/FS remedial alternatives (Alternative 1) would be substantially affected. That alternative relies significantly on continuation of natural recovery processes to comply with cleanup standards. In all other cases, the remedial alternatives use active remedial measures (dredging or capping) to remediate areas of contaminated surface sediment. Ecology does not intend to select Alternative 1 as the remedial plan for the Site, however. The natural capping that is expected to continue to occur, although not necessary to meet surface sediment standards under other remedial alternatives, will further improve conditions at the Site after completion of the construction phase of remediation. This will result in improvement of surface sediment beyond the requirements of the cleanup action.

5.16 Dredging Disturbance & Residuals

Comment: One commenter stated that remedy expectations for removal of “all of the mercury” are not practical, and that some mercury will remain on site under any realistic scenario.

(Refer to Commenter #1)

Response: The remedial alternatives presented and evaluated in the RI/FS include varying levels of removal. Alternative 8, which includes the greatest amount of removal, was shown to be impracticable through the FS evaluation. Ecology considers the range of alternatives presented in the RI/FS to be a reasonable representation of potential remedial approaches. All alternatives involve some on-site management of mercury-contaminated sediments.

Comment: Multiple commenters discussed the relationship between dredging and short-term risks to water quality, or to sediment quality through recontamination and dredge residuals. One commenter anticipated that mercury levels will “spike” during removal efforts. Commenters differed in their weighting of short-term risks, with some arguing that buried contaminated sediments should be left in place and not disturbed, whereas others argued that short-term risks associated with contaminant removal are more than offset by other gains in environmental protection.

(Refer to Commenters #12, 17, 34, 55, 79, 114 & 122)

Response: As presented in Section 7 of the FS Report, the MTCA evaluation of remedial alternatives considers short-term risk management as an element of the disproportionate cost analysis. Risks of water quality or sediment quality impacts, construction safety hazards, and potential impacts to fisheries resources are considered as part of this analysis and are significant factors in evaluation of construction techniques for sediment cleanups. However, the disproportionate cost analysis also considers other factors such as long-term effectiveness, remedy permanence and costs. In naturally recovered areas such as Bellingham Bay, removal of buried contaminated sediments generally produces short-term adverse impacts to water quality and often generates low volumes of dredge residuals. These short-term adverse impacts cannot be entirely eliminated. Where incremental sediment removal is not required to comply with cleanup standards, and does not result in a proportionate gain in environmental benefit, these short-term risks become significant in the disproportionate cost analysis. Ecology has conducted an updated evaluation of Alternatives 5 through 8 as part of its development of the draft Cleanup Action Plan for the Site. The Draft Cleanup Action Plan is currently available for public review and comment.

Comment: One commenter requested that the Cleanup Action Plan provide a specific plan for managing dredge residuals in dredging areas.

(Refer to Commenter #150)

Response: All dredging methods involve the generation of some dredging residuals. The residuals are minimized, but not eliminated, through the use of best practices during dredging and material handling. In areas that are proposed for capping after

dredging (these areas vary with remedial alternative), the capping will ensure compliance with cleanup standards at the time of construction. The RI/FS discussed different options for managing dredge residuals within the ASB (Alternatives 5-8). A management approach for dredge residuals within open-water areas of the site where subsequent capping is not proposed will be defined as part of the remedy design and permitting, and as part of the Compliance Monitoring and Contingency Response Plan. Potential management methods include redredging in cases where residuals are excessive, and application of monitored natural recovery and enhanced natural recovery for most other instances. The Compliance Monitoring and Contingency Response Plan will be subject to public review.

Comment: Two commenters argued that the Whatcom Waterway and/or Log Pond areas should be isolated by sheet-piling installation to allow complete dredging in these areas without impacting water quality or creating other short-term risks.

(Refer to Commenters #28 & 122)

Response: The use of sheet-piling to isolate the Whatcom Waterway and Log Pond areas of the site and allow removal of all contaminated sediments from these areas of the site is not considered by Ecology to be a feasible approach for site remediation for the following reasons. First, even if these actions could be performed safely, the costs of these actions would be substantially greater than those already evaluated for RI/FS Alternatives 7 and 8. These alternatives were shown in the RI/FS to have costs that were substantial and disproportionate relative to the incremental degree of risk reduction achieved. This conclusion would be even more extreme if additional costs of sheet pile isolation were conducted. Second, the use of sheet-piling alone would not be effective at isolating the Site area. Cofferdams or soil dams with installed barriers would be required to resist hydraulic pressures and maintain isolation of the enclosed area. Third, short-term risks are not eliminated by the sheet-piling approach, as impacts to fisheries resources would be significant during the period of construction, given that the work could not be completed within a single “fish window”, and rerouting of the mouth of Whatcom Creek would be required during the extended construction period.

5.17 Sediment Dewatering

Comment: Multiple commenters recommended that further evaluation be given to sediment dewatering, with the objective of saving on disposal costs and making the removal of additional sediments from the site more economical. Some reviewers recommended that the ASB be used to temporarily stockpile and dewater dredged sediments.

(Refer to Commenters #7, 12 & 78)

Response: The RI/FS evaluations included an evaluation of potential sediment dewatering methods. Different technologies are available for sediment dewatering,

with the performance of those methods varying depending on the physical and chemical properties of the dredge materials. Due to the costs, time and logistical requirements (e.g., multiple handling of the same sediments, treatment of separated waters) sediment dewatering is usually not economical (i.e., cost savings are not achieved) except for limited passive dewatering of dredged materials, and mechanical dewatering of very wet materials such as the ASB sludges. Potential use of the ASB for temporary passive dewatering of sediments would be limited to upper portions of the area above the level of surface/groundwater, and would be limited to performance during dry portions of the year which are limited in duration and do not always coincide with construction “fish windows”. Passive dewatering of ASB sludges in the ASB area (subject to these other limitations) would be additionally limited by the physical properties (i.e., the hydrophilic nature of the secondary treatment biosolids) and would be even less effective than the mechanically enhanced solids separation evaluated as part of the RI/FS. Based on these factors, the use of the ASB area for sediment dewatering was not evaluated as part of the remedial alternatives. Ecology considers the evaluations of dewatering methods contained in the RI/FS to be sufficient for completion of the RI/FS and remedy selection. Dewatering assumptions may be further refined as part of remedial design and permitting.

5.18 Future Sediment Treatment

Comment: Multiple commenters requested that the final cleanup of the site be deferred for an unspecified period of time to allow for development of potential future sediment treatment methods. Several of the commenters indicated that the sediments could be stockpiled in the ASB or in specially constructed tanks pending final cleanup at this deferred date.

(Refer to Commenters #78, 97, 159 & 161)

Response: The RI/FS technology screening section includes a summary of current technologies that are available or are under development for in situ and/or ex situ treatment of sediments and sludges. With the exception of dewatering for certain materials, no treatment technologies were identified that had the appropriate combination of implementability, effectiveness and cost for incorporation into the RI/FS remedial alternatives. No technologies were identified that are under development and that can be reasonably expected to achieve commercial viability in the near future for treating Site sediments and that are likely to change the outcome of the technology screening. Furthermore, appropriately designed and permitted disposal sites are available for managing dredged materials generated during site cleanup. Given the SMS preference for a Site restoration time-frame of less than 10 years, Ecology does not consider temporary sediment storage to be an appropriate interim cleanup action for the Site.

5.19 Dredging Methods

Comment: Three commenters discussed specific dredging methods as part of their comments, in some cases expressing a preference for hydraulic dredging, in another case recommending use of mechanical dredging, and in the third case acknowledging that both types of dredging may be used at the site as part of the final cleanup.

(Refer to Commenters #12, 14 & 139)

Response: The RI/FS included extensive discussion of different dredging methods, and developed conceptual designs for remedial alternatives based on specific dredging methods and materials handling assumptions. It is likely that both types of dredging will be used as part of the final remedial action, with each technique applied in appropriate site areas. However, final determinations must await completion of remedial design and permitting. The analysis conducted to date is sufficient for completion of the RI/FS, development of cost estimates and selection of a cleanup action.

5.20 ASB Comments

Comment: Three commenters made specific technical comments related to cleanup activities in the ASB portion of the site. Two commenters discussed the potential need to reline the ASB if the liner is damaged during dredging and if the liner is required as part of the remedial action (i.e., as part of RI/FS Alternative 3). The third commenter questioned the need to install sheet piling within the ASB berm as part of cleaning out of the ASB sludges and contaminated sediments under Alternatives 5 and 6.

(Refer to Commenters #12, 35 & 59)

Response: The disturbance of the ASB lining during dredging of ASB sludges can reasonably be expected to occur under Alternative 3. The RI/FS discusses several methods of addressing this issue, including adjustment of ASB water levels, driving of sheet-piling within the ASB berm and/or installation of new lining. This is a design detail which does not substantially affect the RI/FS evaluation of alternatives or selection of a cleanup action. With respect to Alternatives 5 and 6, the installation of sheet-piling was considered as part of the scenario involving initial hydraulic dredging of ASB sludges followed by dewatering of the ASB for removal of dredging residuals and transition zone sediments. Installation of the sheet-piling would be required to accomplish this second step without excessive water generation. Ecology concurs that the minimization of water seepage into the berms during wet dredging is a secondary benefit that may not in itself justify installation of the sheet-piling, as seepage may be minimized through water level maintenance or other measures. This issue will be revisited as part of remedial design and permitting.

5.21 Unit 3A Remedy Comments

Comment: Three commenters requested that additional remedial actions be taken at the head of Whatcom Waterway within Site Unit 3A, rather than using monitored natural recovery as described in the RI/FS preferred remedial alternatives. All three commenters affirmed a desire to provide shallow-water habitat in this area. Two commenters proposed dredging of this area followed by reconstruction of habitat using a thick layer of clean materials. The third commenter requested evaluation of sediment capping in this area.

(Refer to Commenters #46, 122, 150)

Response: To date the surface sediments at the head of Whatcom Waterway have been found to comply with Site cleanup levels, such that monitored natural recovery is the remedial technology identified for this area under preferred Alternatives 5 & 6. Ecology intends to require further sediment data collection and additional evaluations of sediment stability in this area during remedial design. Based upon the remedial design evaluations, the cleanup action currently identified for this area could be adjusted as necessary to ensure long-term compliance with Site cleanup levels, minimize erosion and optimize sediment stability. A draft Engineering Design Report reflecting the outcome of remedial design evaluations will be developed and subject to public review.

5.22 Additional Habitat Actions

Comment: Numerous commenters requested that additional actions be taken under Alternatives 3, 7 or 8 to enhance habitat within the Whatcom Waterway. These three remedial alternatives involve deep dredging of the former 1960s industrial navigation channel, which in turn requires installation of hardened shoreline infrastructure to safely conduct dredging of deeper sediments. The commenters recommended that after deep dredging, the area be backfilled with clean material to restore and enhance nearshore shallow-water habitat along the sides and at the head of the waterway. Commenters speculated that these changes to the alternatives would change the output of the RI/FS alternatives evaluation process.

(Refer to Commenters #15, 28, 35, 46, 65, 109, 110, 142, 154)

Response: If deep dredging of the Inner Whatcom Waterway is conducted exclusively for cleanup, and if there is no intent to use the area for deep draft navigation or to maintain the area as part of the federal navigation channel, then backfilling of the area with clean material to restore more gradual sideslopes could be conducted in order to mitigate some of the land use and habitat impacts associated with the deep dredging. Bulkheads would still be required to ensure stability of the shoreline during dredging, and these costs would need to be added to the cleanup cost referenced in the RI/FS (i.e., because the costs of the bulkheads are not carried by a separate navigation or development project as they would be if the area was to be used for deep draft navigation). The temporary bulkheading and sideslope backfill would serve as required mitigation for geologic issues, though addition of the sideslopes may exceed the mitigation measures that could reasonably be required as part of cleanup. The

ability to mitigate habitat impacts would potentially be significant to Alternative 8 or to Alternative 3 which have less net gain of habitat than Alternatives 2 and 7. Adding sideslopes as habitat mitigation would likely exceed the mitigation measures that could reasonably be required under Alternatives 2 and 7 due to the net habitat benefits already incorporated in these alternatives. These changes to the remedial alternatives would affect (increase) the costs of the alternatives, but would not provide significant new cleanup benefits that would proportionately offset these costs or change the outcome of the RI/FS analysis.

Comment: Several commenters requested the development of remedial alternatives involving the complete cleanup and removal of the ASB structure, followed by construction of shallow-water habitat in that area of the site.

(Refer to Commenters #28, 80, 87, 109, 122, 123, 124, 159)

Response: The MTCA cleanup of the Site is based upon ensuring protection of human health and the environment under specific land and navigation uses. The Port of Bellingham, the current owner of the ASB, has informed Ecology that they intend to open the ASB to Bellingham Bay and develop a Clean Ocean Marina including public shoreline access and habitat enhancements. Ecology's regulatory responsibility is to implement a cleanup action that is protective given this use scenario. The full removal of the ASB berm and the construction of nearshore habitat in the footprint of the ASB is a land use decision that would have to be made by the Port.

Comment: One commenter requested that a modified Alternative 3 be implemented in which a portion of the ASB was filled with contaminated sediments and sludges, and a portion of the ASB was reopened to Bellingham Bay for development of nearshore aquatic habitat. A second commenter proposed the construction of a new off-site confined nearshore disposal facility, and construction of habitat in the offshore berm sections of this facility.

(Refer to Commenters #15, 75)

Response: The alternative described by the first commenter conflict's with the Port's plans for the ASB area of the Site as understood by Ecology (see response above). The alternative described by the second commenter develops a large new enclosed harbor basin, and constructs other in-water features on state-owned aquatic lands. This is a land use decision that would need to be made by the Department of Natural Resources (DNR) as the manager of state-owned lands. Comments regarding land use cannot be addressed by Ecology within the scope of the Site cleanup and should be directed to DNR.

5.23 Cost Accuracy

Comment: Multiple commenters expressed concern that the costs of dredging Whatcom Waterway sediments in Alternatives 7 and 8 were inflated over likely costs necessary to

remediate these areas. Commenters argued that a significant volume of clean sediment that could be managed by PSDDA disposal or beneficial reuse was being classified as contaminated under these alternatives and assigned costs of upland landfill disposal in cost estimates. Commenters further stated that the depth of dredging under these alternatives was greater than that required for removal of contaminated materials.

(Refer to Commenters #10, 12, 35, 36, 49, 50, 71, 76, 110 & 120)

Response: Alternatives 7 and 8 both conduct dredging of the Inner Whatcom Waterway channel sediments to depths necessary to permit use of the 1960s industrial channel. Based on existing core sampling data the depth of contamination in this area generally exceeds that required to permit full channel use and allow for capping of residual contamination below elevations -23 and -35 feet MLLW. This observation is consistent with historical bathymetric surveys that show the dredging depths in these areas to generally exceed the minimum Corps-authorized project dimensions during the 1960s and 1970s when the majority of the sediment contamination occurred. Sediments in this area have been subjected to multiple rounds of subsurface sediment testing, and contaminant concentrations have repeatedly been shown to exceed allowable limits for PSDDA disposal or beneficial reuse. Ecology considers the cost estimates for Alternatives 7 and 8 as presented in the RI/FS to be reasonable and appropriate, and the uncertainties relating to the estimates to be within the contingency range customary to an RI/FS report. Additional sampling to refine sediment volumes in this area is not required to evaluate remedial alternatives in an RI/FS or to select a final cleanup action for the Site.

Comment: Two commenters questioned how the costs of shoreline infrastructure that is associated with deepening of the Whatcom Waterway channel in RI/FS Alternatives 2, 3, 7 and 8 are incorporated into the RI/FS cost analysis. The commenters argued that there may be a cost savings for these alternatives if the channel sideslopes are backfilled for shoreline stabilization and the construction of habitat benches after dredging.

(Refer to Commenters #12 & 50)

Response: The core cost estimates in the RI/FS for Alternatives 2, 3, 7 and 8 do not include the costs associated with upgrading shoreline infrastructure. A portion of this infrastructure (i.e., bulkheads) is required in order to permit deep dredging in waterway and berth areas, regardless of whether the area is backfilled for habitat, or used for deep draft navigation. The remaining infrastructure (docks and wharves) is required only if the area is used for deep draft navigation. These costs were not included in the core cost estimates of the RI/FS, to avoid artificially inflating the minimum remediation costs of these alternatives. Under a deep draft navigation scenario (not currently viable given planned land uses) these incremental infrastructure costs would have been allocated to industrial redevelopment activities. If on the other hand the area is backfilled for habitat, then the costs for bulkheading necessary to permit deep dredging would need to be added to the core remediation costs for these alternatives, along with the costs to purchase and place the additional

backfill materials. These additions would increase the core costs of Alternatives 2, 3, 7 and 8 beyond those currently carried in the RI/FS.

Comment: One commenter questioned whether the capping costs in Alternative 7 were inflated unnecessarily by the assumption that some of the capping materials used for capping the Inner Whatcom Waterway after dredging would need to be purchased, rather than assuming reuse of berm materials from the ASB as in Alternatives 5 and 6.

(Refer to Commenter #12)

Response: In order for ASB materials to be beneficially reused in dredge areas for subsequent capping, the materials must be available at the time that capping is required. Under Alternative 7 two full dredging seasons are required to complete the first phase of construction and remove contaminated materials from the Inner Waterway, with additional time required to install infrastructure for shoreline stabilization prior to sediment removal. Pending further design evaluation, costs were included for cap material purchase to ensure that cap materials would be available at the time that dredging is completed and capping can be initiated. The inclusion of these incremental costs is reasonable for this alternative. Because the costs are small relative to the total costs of this alternative (approximately \$1 million relative to a \$74 million remedy cost), changing this cost assumption would not affect the overall RI/FS alternatives evaluation.

5.24 Unit Costs

Comment: One commenter questioned why the cost estimates were not developed using uniform unit costs (i.e., X \$/cyd for dredging, and X \$/cyd for capping) and simpler spreadsheets. Commenters found the format of the cost estimates more difficult to review and compare between alternatives and technologies.

(Refer to Commenter #7)

Response: Cost estimates were developed using specific conceptual design scenarios that could be realistically accomplished, and using labor, materials, equipment, transportation and disposal costs applicable to a specific construction sequence. Because the project is somewhat complex and involves multiple inter-related phases of work, this type of estimating provides a greater degree of accuracy than application of gross unit cost assumptions.

5.25 Disproportionate Cost Analysis

Comment: Several commenters questioned the analysis of alternatives and the disproportionate cost analysis performed in the RI/FS. Some commenters desired the development of new or modified alternatives (e.g., deep dredging of waterway plus backfill for habitat). One commenter recommended that the disproportionate cost analysis be based on an analysis of mercury mass removal and costs as the best basis for comparison between

alternatives. Some commenters argued that land uses were over-emphasized in the analysis of alternatives, whereas others argued that some of the alternatives were inappropriately rejected as they don't fit with planned community land uses. Other commenters expressed dissatisfaction with the characterization of "public concerns" in the RI/FS, given that their individual concerns or alternative preferences were different than those discussed in the RI/FS.

(Refer to Commenters #7, 12, 35, 48, 50, 109, 110, 122, 129 & 154)

Response: In part due to these comments, Ecology has conducted a revised evaluation of Alternatives 5 through 8 as part of its development of the draft Cleanup Action Plan for the Site. The disproportionate cost analysis element of the evaluation incorporates weighting factors and a more detailed ranking methodology, better describes the rationale for the analysis, provides quantitative information, and incorporates public concerns expressed during the RI/FS public comment period, as reflected in this Responsiveness Summary. Alternatives 1 through 4 are not evaluated by Ecology as possible cleanup actions for the Site, for two reasons. First, Alternatives 1 through 4 cannot be executed given the Port's aquatic use plans for the ASB portion of the Site. Second, the Port has proposed removal of contaminated sludges and sediments from the ASB portion of the Site, which represents the most permanent cleanup alternative for this site unit. Given that a permanent cleanup alternative has been proposed for this one area of the Site, only those cleanup alternatives that incorporate this approach to the ASB (Alternatives 5-8) are considered in Ecology's evaluation. The basic parameters used in the evaluation of alternatives and in the disproportionate cost analysis are specified under MTCA regulations. These regulations require evaluation of the benefits of an alternative as defined using six specific criteria (permanence, protectiveness, long-term effectiveness, short-term risk management, implementability and public concerns). The relative benefits of alternatives are then compared against those of the most permanent alternative, and the incremental benefits and costs associated with each alternative evaluated.

5.26 Project Funding

Comment: Multiple commenters expressed a desire to analyze the costs of the cleanup using "net costs" rather than the total costs of cleanup. Some commenters argued that costs should not be considered if these are covered by the insurance policy procured as part of the Port-GP transaction. Other commenters argued that costs should be excluded from the analysis if the costs are potentially offset by remedial action grants.

(Refer to Commenters #7, 35, 48, 50)

Response: The MTCA analysis of remedial alternatives and the disproportionate cost analysis must be performed using total costs of cleanup. The other factors identified by the commenters may have significance with respect to how the Port or other

parties pay for the cleanup action selected by Ecology, but these factors do not affect Ecology's alternatives analysis under the MTCA regulations.

Comment: A number of commenters expressed a desire to conduct additional cleanup and habitat actions above-and-beyond the MTCA-required cleanup. Some commenters expressed the opinion that Bellingham taxpayers would be in favor of additional property taxes to pay for additional cleanup. Others expressed their personal willingness to pay more in taxes to fund the cleanup. Some commenters wanted to modify the criteria under which MTCA grant funds are allocated under the Local Toxics Account grant program, either to increase funding for the project, or alternately to decrease funding for specific project elements (e.g., ASB cleanout). Other commenters requested that the Port and Ecology pursue additional funding sources to support more cleanup and habitat enhancement work in Bellingham Bay.

(Refer to Commenters #12, 15, 35, 87, 109, 110, 114, 122, 137, 142, 154, 155)

Response: The citizens of Bellingham, public interest groups or other parties can work with the Port and other stakeholders to fund cleanup or habitat restoration actions beyond those required as part of Ecology's regulatory cleanup decision. However, Ecology cannot compel such actions under its MTCA authority. The question of property tax use is appropriately left to the voters and their elected representatives. Allocation of the MTCA Local Toxics Account grant funds are based on state regulations. Bellingham Bay is a high priority for Ecology and 11 waterfront cleanup sites are currently in various stages of the cleanup process. In addition, under the Bellingham Bay Demonstration Pilot, Ecology, the Port, and a number of other federal, state, local, and tribal entities, continue to coordinate and further cleanup and habitat restoration efforts in Bellingham Bay. For example: Ecology, DNR, PSAT and Whatcom County Public Works are funding partners in an effort to address wood debris at Cliffside Beach; this year DNR removed abandoned creosoted pilings from Bellingham Bay; Ecology continues to fund an eel grass seeding test project in the GP Log Pond; and, it is Ecology's understanding that the Port intends to construct habitat enhancements as part of their cleanup and redevelopment activities.

Comment: Several commenters expressed concern about the costs of cleanup and the potential impact on their property taxes, or supported the selection of alternatives that do not result in additional property taxes. Other commenters emphasized the need to support cleanup actions that have a viable funding plan already defined.

(Refer to Commenters #37, 52, 55, 106, 113 & 156)

Response: As described above, Ecology's pending decision about the MTCA cleanup of the Whatcom Waterway site is based on regulatory requirements. The funding of a cleanup action is the responsibility of the potentially liable parties, including the Port of Bellingham. The question of property taxation levels and the use of collected taxes is appropriately left to the voters and their elected representatives.

5.27 Comments on Design & Permitting

Comment: One commenter stated the opinion that cleanup permitting should be conducted separately from permitting for waterfront reuse, arguing that the ASB should be cleaned out prior to any consideration of potential future uses for the structure.

(Refer to Commenter #7)

Response: The Port is responsible for obtaining all permits required for conducting the cleanup. Final permitting decisions will be made by the agencies responsible for project permits. Federal permitting agencies like the Corps of Engineers may require cleanup and development actions that comprise an integrated project be permitted together as one project, under one permit, so that the agency's ability to evaluate project impacts is not unduly restricted. Ecology does not have authority to alter or amend federal regulations or policy with regard to how federal permits are granted. The MTCA cleanup of the Site is based upon ensuring protection of human health and the environment under specific land and navigation uses. The Port of Bellingham, the current owner of the ASB, has informed Ecology that it plans to open the ASB to Bellingham Bay and develop a Clean Ocean Marina including public shoreline access and habitat enhancements. Ecology's regulatory responsibility under the MTCA is to implement a cleanup action that is protective given this use scenario. Comments regarding land use cannot be addressed by Ecology within the scope of the Site cleanup and should be directed to the City and Port as part of their on-going land use planning initiatives.

Comment: Several commenters requested that the design and permitting process for the cleanup action be subject to public and stakeholder review.

(Refer to Commenters #66, 116 & 150)

Response: Although public review of the Engineering Design Report is not required under MTCA regulations, due to these comments Ecology intends to include a public comment period as part of the remedial design process for the Site. Additional public notice and opportunities to comment are also included in the Corps of Engineers permitting process.

Comment: One commenter expressed the desire that the design and permitting process can move ahead as expeditiously as possible so that the cleanup work can be completed sooner, rather than later.

(Refer to Commenters #104)

Response: Ecology shares the desire to move forward expeditiously with the design, permitting and cleanup of the Site.

5.28 Institutional Controls

Comment: Several commenters stated their belief that institutional controls would not be required for the filled ASB area if the cleanup action was performed using Alternative 3.

(Refer to Commenters 7, 35, 109)

Response: Based on the types and concentrations of contaminants in sediments that are present in or that would be disposed in the ASB under Alternative 3, Ecology concludes that institutional controls would be a required element of this alternative to ensure potential groundwater and vapor exposure pathways are controlled in perpetuity. Institutional controls are an aspect of all of the RI/FS alternatives.

Comment: Other commenters expressed concern about the effectiveness of institutional controls for sediments in a navigable waterway, and stated that institutional controls are more effective at confined disposal facilities. Commenters expressed concerns that controls such as speed limits for boaters to minimize wakes may not be realistic and that these risks should be taken into account in the evaluation of remedial alternatives. One commenter was skeptical that information regarding the cleanup could be communicated to future property owners or others proposing waterfront construction.

(Refer to Commenters 12, 109 & 122)

Response: Ecology agrees that institutional controls must be used in conjunction with other measures (e.g. appropriate engineering design and potential physical restrictions) to provide for long-term stability of capped sediment areas. Ecology believes that institutional controls can be highly effective at transmitting information on the presence of capped contaminated materials, and in communicating to regulatory agencies responsible for permitting construction projects (e.g., navigation dredging) the need to review construction practices that could disturb capped contaminated materials. Restrictive covenants will be filed with the County and tracked by the State of Washington Department of Natural Resources as part of the final cleanup action and will “run with the land”. However, institutional controls must be combined with engineering controls (e.g., thick caps, appropriate water depths, armor layers) to provide the appropriate level of overall protectiveness that Ecology expects. Ecology is considering these issues as part of its cleanup decision for the Site.

5.29 Recontamination Risks

Comment: Two commenters expressed the opinion that cleanup should be deferred until after completion of final cleanups at contaminated sites located adjacent to the Whatcom Waterway.

(Refer to Commenters #7 & 35)

Response: The RI/FS describes the source control evaluations that have been conducted at the adjacent Chlor-Alkali Plant site and Central Waterfront site. While

final cleanup of these upland sites has not been completed, the sites have been studied as part of on-going RI/FS activities. Groundwater evaluations have been performed at both sites indicating that the sites do not present an ongoing recontamination concern for the Whatcom Waterway sediments. Monitoring within the Log Pond has demonstrated that groundwater sources of contamination to the Log Pond are sufficiently controlled to prevent surface water quality impacts or sediment recontamination. Tissue monitoring for crabs within and near the Log Pond has demonstrated that seafood mercury levels are low and are declining. Since there is no evidence that these other sites are adversely impacting the Site there is no reason to delay cleanup. The cleanup of the Central Waterfront site, however, will be coordinated with the cleanup of this Site since contaminated surface sediments comprising part of the Central Waterfront site overlay contaminated subsurface sediments at this Site in one area of the Waterway.

Comment: One commenter expressed concern about potential recontamination of the Site due to stormwater discharges or other contamination events, and argued that capping was therefore not an appropriate cleanup remedy for the Whatcom Waterway.

(Refer to Commenter #7)

Response: Recontamination through stormwater discharges is a concern for all types of sediment cleanup, including dredging, capping and natural recovery remedies. Information reviewed, collected and compiled during the RI/FS indicates that stormwater is not a significant source of recontamination to Site sediments. Ecology will require monitoring of sediment near significant stormwater discharge locations as part of long-term monitoring. Also see recontamination response above.

5.30 Future Changes in Cleanup Standards

Comment: Several commenters expressed concern that cleanup standards may change over time, resulting in additional future requirements for sediment cleanup. Generally these comments were articulated along with a proposal to reduce this risk through additional sediment removal actions.

(Refer to Comments #46, 73, 74, 88, 105, 125, 133)

Response: Ecology is required to make its cleanup decisions based on the current regulations and the best available information at the time of its cleanup decision. Cleanup levels applicable to the Site are documented as part of Ecology's cleanup decision, articulated in the Consent Decree. These cleanup levels will not be affected by minor adjustments to state numeric criteria. However, Ecology retains its authority under the Consent Decree to require additional actions if new information indicates that there is a threat to human health and the environment and that the original cleanup standards are not adequately protective. This type of "reopener" to the Consent Decree could apply to any completed remedy, whether completed by dredging, capping or other techniques. Therefore, the reopener risk is not specific to

any one remedial alternative. As a practical matter, the natural recovery processes known to occur at the Site will tend to further reduce contaminant concentrations in sediments over time, improving overall protectiveness over time and reducing the potential for future reopeners to Ecology's cleanup decision due to potential future changes in cleanup standards should such changes occur.

5.31 Polling Data and Petitions

Comment: One commenter (the Bellingham Bay Foundation) submitted a copy of an initiative developed by the organization and a resolution and set of principles prepared by the board of directors of the organization. The organization also submitted copies of public opinion polls performed by two different contract polling companies on behalf of the organization and an additional petition completed by the organization.

(Refer to Comment #12)

Response: Specific concerns and technical issues raised in the materials and relating to the current RI/FS and EIS documents or the cleanup of the Site are addressed in several areas of this Responsiveness Summary.

6. DSEIS Comments and Responses

6.1 Scope of the DSEIS

Comment: One commenter posed several questions related to the scope of the SEPA DSEIS document. The commenter recommended that the analysis be updated to include analysis against National Environmental Policy Act (NEPA) criteria and federal permitting criteria, in addition to the SEPA criteria. Specifically the letter requested review of tribal treaty rights issues, cumulative effects of historical waterfront development and environmental justice issues.

(Refer to Commenter #87)

Response: SEPA is a state law requiring state and local agencies to analyze the environmental impact of projects they permit or perform. As discussed in the DSEIS, the document is supplemental to the previous Bellingham Bay Pilot Comprehensive Strategy EIS. The original EIS addressed the SEPA criteria, consistent with EIS Scoping and the decisions of the Bellingham Bay Pilot Work Group.

NEPA is a federal law that requires federal agencies to analyze the environmental impacts of projects they permit or perform; NEPA does not apply to state or local agencies. Analysis of NEPA or federal permitting agency criteria was beyond the scope of the 2000 EIS, and remains so as part of the current Supplemental EIS. As discussed in the DSEIS, these additional criteria will be addressed as part of the environmental reviews conducted by the federal government as part of the federal permitting required for the project.

Comment: One commenter requested that the DSEIS evaluate the project in comparison to Bellingham Bay conditions from 1859 rather than using current conditions at the time the DSEIS was prepared. This commenter provided several related comments requesting that the baseline conditions referenced in the DSEIS be defined as the habitat conditions, Site uses and fisheries resources prevailing historically, as opposed to those observed at the Site at the time the DSEIS was prepared.

(Refer to Commenter #87)

Response: The current DSEIS evaluates the cleanup of the Site against current conditions, consistent with the intent of a No Action alternative under SEPA. A historical analysis of patterns of waterfront development over the past 148 years or an analysis of the change in relative abundance of fisheries resources over that time period is beyond the scope of the current project or SEPA requirements.

6.2 Identity of SEPA Official

Comment: One commenter expressed concern that a Port of Bellingham staff member was designated as the SEPA official for the DSEIS and that this might represent a conflict of interest.

(Refer to Commenter #35)

Response: As discussed in the DSEIS and in the Ecology Fact Sheet, the SEPA official for the DSEIS is Steven Alexander of the Department of Ecology, not a Port of Bellingham staff member. The Department of Ecology is the agency responsible for SEPA compliance for the cleanup of the Whatcom Waterway Site. In regards to land use issues, Ecology understands that the Port of Bellingham is the agency responsible for SEPA compliance for the proposed Master Plan for the New Whatcom Special Development Area.

6.3 Property Ownership

Comment: Three commenters questioned the ownership of the former GP properties, stating that the properties are owned by “the public” rather than the Port of Bellingham.

(Refer to Commenters #12, 35 & 115)

Response: As a matter of public record, the former GP properties acquired by the Port are legally owned by the Port of Bellingham, which is a municipal corporation. The statements in the document are intended to be factual regarding legal ownership, and are not intended as a comment on broader issues about the mission of the Port and its projects, or the relationship of the Port to Whatcom County citizens, voters or taxpayers.

6.4 Recent Habitat Studies

Comment: One commenter requested inclusion of citations to three recent studies, including two related to salmonid use in Bellingham Bay and one additional study related to behavior of salmon in the vicinity of active ferry terminals.

(Refer to Commenter # 150)

Response: These additional documents will be referenced in the final SEIS. The documents include *Inner Bellingham Bay Juvenile Chinook Study Lummi Natural Resources Data Report* (2005); *NOAA Fisheries 2003 Bellingham Bay Juvenile Chinook Townetting Project Field Sampling and Data Summary* (2004); and *Impacts of Ferry Terminals on Juvenile Salmon Migrating Along Puget Sound Shorelines, Phase 1: Synthesis of State of Knowledge* (1999).

6.5 Eel Grass Comments

Comment: The Department of Fish and Wildlife requested that an updated inventory of the eelgrass habitats within the Site be completed, given the time that has elapsed since the previous eel grass survey conducted under the Bellingham Bay Demonstration Pilot. The agency also stated that the optimal elevations for eel grass development in Bellingham Bay are typically between 0.0 and -8.0 feet relative to mean lower low water (MLLW), and that eel grass would not be expected to colonize areas shallower or deeper than these elevations.

(Refer to Commenter # 150)

Response: An updated eel grass survey will be performed as part of remedial design and permitting activities for the project. The comments about optimal eel grass elevations are noted. Habitat benches constructed in these or other locations of the project area may include a range of elevations, with different vegetation likely in these different zones. For example, salt-marsh vegetation is likely at the upper edge of the intertidal zone, with macro-algae present in rocky areas of the intertidal zone, and eel grass in lower areas with appropriate substrate and wave energy characteristics.

6.6 Land Use Changes

Comment: Numerous commenters expressed general support for the waterfront revitalization efforts and land use changes being led by the Port and City.

(Refer to Commenters #18, 29, 31, 32, 47, 59, 99, 103, 112, 113, 127, 151 & 157)

Response: Ecology's role under the MTCA is to ensure protection of human health and the environment given current and planned land and navigation uses. Comments regarding land use changes cannot be addressed by Ecology within the scope of the Site cleanup and should be directed to the City and Port as part of their on-going land use planning initiatives.

Comment: Additional commenters emphasized that the land use changes occurring as part of the change to mixed-use zoning provide economic opportunities to the community. These commenters were generally supportive of the waterfront revitalization efforts.

(Refer to Commenters #29, 103, 127 & 157)

Response: See above response.

Comment: One commenter stated disagreement with the change in land use from industrial to mixed-use development taking place on Bellingham's waterfront. The commenter stated that the Port and GP properties should instead be developed into a container terminal.

(Refer to Commenter #14)

Response: See above response.

6.7 Navigation Channel Changes

Comment: Multiple commenters expressed support for the conversion of the historical industrial channel in the Inner Whatcom Waterway to a locally-managed multi-purpose channel. These comments were made by commenters favoring different cleanup alternatives.

(Refer to Commenters #7, 28, 47, 51, 59, 113, 140, 151, 154 & 157)

Response: Ecology's role under the MTCA is to ensure protection of human health and the environment given current and planned land and navigation uses. The Port is the local sponsor for the federal channel maintenance program in Bellingham. The Port informed Ecology that it has passed a resolution supporting the deauthorization of the federal channel in the inner portion of the Whatcom Waterway, to provide for multi-purpose uses of this area. The DSEIS evaluates the impacts of the cleanup alternatives, and potential mitigation measures, given this planned use.

Comment: Three commenters stated specific support for continuation of deep draft navigation uses at Bellingham Shipping Terminal. These commenters included the Port of Bellingham.

(Refer to Commenters #51, 113 & 149)

Response: Most of the alternatives evaluated are protective given this existing and planned deep draft use at the Bellingham Shipping Terminal.

Comment: One commenter stated disagreement with the Port's decision to convert the Inner portion of the Whatcom Waterway from a federally-managed industrial channel to a locally-managed multi-purpose channel.

(Refer to Commenter #14)

Response: As noted above, Ecology's role under the MTCA is to ensure protection of human health and the environment given current and planned land and navigation uses. The Port is the local sponsor for the federal channel maintenance program in Bellingham. The Port informed Ecology that it has passed a resolution supporting the deauthorization of the federal channel in the inner portion of the Whatcom Waterway, to provide for multi-purpose uses of this area. Comments regarding navigational use changes should be directed to the Port.

6.8 Marina Comments

Comment: Twenty commenters provided comments supporting the Port's proposal for future use of the ASB as a marina. Some commenters emphasized the economic benefits that a marina may provide to the community. Others emphasized the role of the marina in satisfying community moorage demand. Several commenters emphasized that the conceptual design for the marina will provide significant enhancement of nearshore habitat for juvenile salmonids, and will also provide public shoreline access opportunities for the community.

(Refer to Commenters #13, 21, 22, 31, 32, 34, 39, 77, 99, 103, 111, 112, 113, 130, 133, 146, 147, 149, 152 & 157)

Response: Ecology's role under the MTCA is to ensure protection of human health and the environment given current and planned land and navigation uses. The Port, as the owner of the ASB area of the Site, has informed Ecology that they plan to develop a Clean Ocean Marina, with associated public access and habitat enhancements, within the ASB. The DSEIS evaluates the impacts of a range of cleanup alternatives, and potential mitigation measures, given this planned use. Comments regarding this change in use cannot be addressed by Ecology within the scope of the Site cleanup and should be directed to the City and Port as part of their on-going land use planning initiatives.

Comment: Eleven commenters voiced opposition to the Port's stated objective of developing a marina within the ASB. Some of the commenters argued that the ASB structure should instead be removed and the area used for habitat development. Others argued that the ASB should be filled (as in RI/FS Alternative 3) and used for park or high-rise residential development. One commenter stated that a new larger marina basin should be built elsewhere (between Boulevard Park and Fairhaven) and the ASB retained for industrial wastewater treatment uses. Another commenter questioned the need for a new marina and argued that dry stack storage could be used to meet boat storage demand.

(Refer to Commenters #12, 15, 35, 41, 69, 75, 78, 80, 139, 156 & 159)

Response: See above response.

Comment: One commenter who also supported the Port's plan to build a marina stated a desire for storage and launching facilities to be developed in the Whatcom Waterway area for small boats (i.e., less than 18 feet).

(Refer to Commenter #77)

Response: See above response.

6.9 Alternative ASB Uses

Comment: Eight commenters stated a preference for the ASB area to be reused in part or in full for aquatic habitat. One commenter was in favor of a modification of RI/FS Alternative 3 in which a portion of the ASB not filled with dredged material would be opened up as aquatic habitat. The other commenters stated that the ASB should be removed and the area restored for aquatic habitat.

(Refer to Commenters #15, 28, 80, 87, 122, 123, 124 & 159)

Response: See above response.

Comment: Four commenters stated a preference for upland reuse of the ASB. Three of the commenters desired the development of a large park on the filled ASB. One commenter stated that the filled ASB should be reused for high-rise residential development.

(Refer to Commenters #12, 15, 35 & 139)

Response: See above response.

Comment: One commenter stated a preference for the ASB to continue in use for treatment of industrial wastewater.

(Refer to Commenter #75)

Response: See above response.

6.10 Habitat Backfill in Waterway

Comment: Eight commenters stated support for deep dredging of the Inner Whatcom Waterway, followed by backfilling the area with clean sediment to restore shallow-water habitat along the waterway edges.

(Refer to Commenters #15, 28, 33, 35, 46, 109, 110, 122, 142)

Response: If deep dredging of the Inner Whatcom Waterway is conducted exclusively for cleanup, and if there is no intent to use the area for deep draft navigation or to maintain the area as part of the federal navigation channel, then backfilling of the area with clean material to restore more gradual sideslopes could be conducted in order to mitigate some of the land use and habitat impacts associated with the deep dredging. Bulkheads would still be required to ensure stability of the shoreline during dredging, and these costs would need to be added to the cleanup cost referenced in the RI/FS (i.e., because the costs of the bulkheads are not carried by a separate navigation or development project as they would be if the area was to be used for deep draft navigation). The temporary bulkheading and sideslope backfill would serve as required mitigation for geologic issues, though addition of the sideslopes may exceed the mitigation

measures that could reasonably be required as part of cleanup. The ability to mitigate habitat impacts would potentially be significant to Alternative 8 or to Alternative 3 which have less net gain of habitat than Alternatives 2 and 7. Adding sideslopes as habitat mitigation would likely exceed the mitigation measures that could reasonably be required under Alternatives 2 and 7 due to the net habitat benefits already incorporated in these alternatives.

6.11 Comprehensive Strategy Updates

Comment: One commenter stated that updating of the Comprehensive Strategy may be appropriate to address new information relating to natural resources and surface water circulation patterns in Bellingham Bay.

(Refer to Commenter #117)

Response: Ecology is considering performing an update to the Comprehensive Strategy, after finalization of ongoing local land use planning efforts. Ecology is also continuing in its role as a coordinating agency to make Bellingham Bay Pilot information available to agencies and stakeholders involved with cleanup, source control and habitat restoration efforts around Puget Sound.

6.12 Pilot Goals

Comment: Several commenters referenced the Pilot Goals statements in their comment letters. Two commenters discussed Goal 6: “Faster Better Cheaper”, and argued that the RI/FS preferred alternatives should not have scored as highly against this goal because they were faster and cheaper, but the commenters argued that the alternatives were not necessarily better. A third commenter stated appreciation that the DSEIS included an evaluation against the Pilot Goals, but did not provide specific comments on the evaluation performed in the DSEIS.

(Refer to Commenters 7, 12, 29)

Response: The Pilot analysis of alternatives summarized in Section 5 of the DSEIS is not a regulatory requirement and will not be used for regulatory decisions. Consistency with the Pilot Goals is voluntary and the analysis simply provides an additional basis by which the qualitative benefits or short-comings of a remedial alternative can be measured. The differences of opinion stated by the first two commenters are noted.

6.13 Specific Edits

Comment: Several specific updates to the text in Section 3 of the DSEIS were requested by one commenter. First, the commenter requested that the text be clarified to emphasize that the final decision on whether to remove the Bald Eagle from the federal list of threatened and endangered species has not been made, and that the Bald Eagle is still protected by the ESA

regulations. Second, the commenter requested that the text be updated to clarify that the Peregrine falcon has been delisted under the ESA regulations. Third, the commenter requested that the discussion of the Nooksack River watershed be updated to reference the 303(d) listings of the Lower Nooksack River for fecal coliform. The commenter also requested that Lake Whatcom be listed under the Whatcom Creek watershed and not the Nooksack River watershed, presumably because the inflows to Lake Whatcom are induced by the City water supply project (i.e., diversion dam on the Middle Fork of the Nooksack) rather than from natural surface water flow.

(Refer to Commenter 87)

Response: Text edits to the DSEIS will be made to address the issues noted.