APPENDIX A

ESSENTIAL FISH HABITAT CONSULTATION

ESSENTIAL FISH HABITAT

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) and the 1996 Sustainable Fisheries Act (SFA), an Essential Fish Habitat (EFH) evaluation of impacts is necessary for activities that may adversely affect EFH. EFH is defined by the MSFCMA in 50 Code of Federal Regulations (CFR) 600.905-930 as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" and is designated for groundfish, Pacific salmon, and coastal pelagic composites.

Identification of EFH in the Action Area

The Action Area for the proposed project includes habitats that have been designated as EFH for the groundfish and Pacific salmon EFH composites. The groundfish composite species that may occur in the Action Area is starry flounder (*Platichthys stellatus);* starry flounder have been captured in shallow water habitat areas in the lower Willamette River near St. Johns Bridge (EES 2003). Pacific salmon EFH composite species that may occur in the action area include Chinook and coho salmon. There are no coastal pelagic fish found in the vicinity of the proposed project.

Designated EFH for groundfish composite species encompasses all waters from the mean high water line and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon, and California, seaward to the boundary of the Unites States exclusive economic zone (370.4 kilometers) (PFMC 1998a, 1998b). Groundfish EFH is discussed in detail in the *Final Environmental Assessment/Regulatory Review for Amendment 11 to the Pacific Coast Groundfish Fishery Management Plan* (PFMC 1998a) and National Marine Fisheries Service's (NMFS') *Essential Fish Habitat for West Coast Groundfish Appendix* (NMFS 1998).

Freshwater EFH for Pacific salmon includes those streams, lakes, ponds, wetlands, and other waterbodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable constructed barriers (as identified by the Pacific Fisheries Management Council [PFMC]), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years; PFMC 1999). Salmonid EFH is discussed in detail in Appendix A of Amendment 14 to the

Pacific Coast Salmon Plan (PFMC 1999). EFH and life history stages for species that may occur in the Action Area are listed in Table A-1.

Table A-1
MSFCMA Managed Species and Life History Stages with Designated EFH that May Occur in the Project Vicinity

Species	Adult	Spawning/ Mating	Juvenile	Larvae	Eggs/ Parturition
Starry flounder	X	X	X	X	X
Chinook salmon	X		X		
Coho salmon	X		X		

Effects of the Proposed Action and Effects Determination

The assessment of potential impacts from the proposed project to the species' EFH is based on information in previous sections of this Biological Assessment (BA). Impacts may occur as a result of the Phase I of the Removal Action, as considered below.

Phase I of the Removal Action Effects to EFH

Direct and Indirect Effects to EFH

Direct and indirect effects on groundfish and Pacific salmon EFH, and the conservation measures that avoid and minimize impacts, are identified in Table A-2.

Table A-2
Affected EFH by Project Element and Proposed Conservation Measures

Affected EFH	Impact Discussion	Conservation Measures
Nearshore habitat used by salmonids will be affected in Slip 3 and Wheeler Bay.	No loss of nearshore EFH is expected to occur in Wheeler Bay, and nearshore EFH will be affected, but not appreciably altered over the long term. All of the placed armor material will occur at or above elevation +10 feet NGVD, in an area which is almost always dry; much of the area already contains armor material and additional habitat activities will improve habitat over the long term. Similarly, no loss of nearshore EFH is expected to occur at the Head of Slip 3. For the Head of Slip 3 cap, the substrate to be placed in the shallow	Conservation measures include those listed in the accompanying BA in Section 3. In addition, in-water work for the project will comply with the timing restrictions specified in the in-water work window, when salmonids are expected to be either not present or present in very low numbers. Post-project conditions of nearshore habitat will provide improved habitat benefits for salmonid species relative to existing conditions, as the overall effect of the action will be a net benefit to listed species.

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Table A-2
Affected EFH by Project Element and Proposed Conservation Measures

Affected EFH	Impact Discussion	Conservation Measures
	water area will be comprised of armor material, which is the same as the existing material in this area. The area below the timber bulkhead which will receive the armor wedge for stabilization does not currently have armor material; however, the nearshore habitat in Slip 3 that is being affected is contaminated and is located adjacent to active berths with vessel traffic, which may limit function as nearshore habitat. Moreover, the net effect and intention of the new Head of Slip 3 cap is to provide a habitat benefit to fishery species. The overall impact of work in this shoreline area is expected to be minimal because existing conditions in the project area are already heavily industrialized and fish use of the area is compromised.	
Benthic habitat in Slip 3 and Wheeler Bay would be disturbed.	Dredging and capping will temporarily disturb existing benthic organisms and habitat. However, existing conditions indicate that there is poor production of epibenthic and benthic prey in these areas. Thus, it is expected that impacts to fish via disturbance of the epibenthic prey community are not expected to affect the abundance or availability of typical prey/forage organisms for salmonids and groundfish. Therefore, potential impacts to the benthic community may not be linked to EFH for these species. Further, groundfish and salmonids are mobile and generally able to distinguish and avoid areas where prey are less abundant. If available, groundfish species could selectively use undisturbed or recolonized areas in the project vicinity for foraging.	Conservation measures include those listed in the accompanying BA in Section 3. In addition, in-water work for the project will comply with the timing restrictions specified in the in-water work window, when salmonids are expected to be either not present or present in very low numbers. The expected outcome of the proposed dredging and capping actions is significantly reduced exposure to existing contamination in sediments, which will improve overall aquatic ecosystem health.

Table A-2
Affected EFH by Project Element and Proposed Conservation Measures

Affected EFH	Impact Discussion	Conservation Measures
Suspended sediment and contaminant concentrations in water column EFH could be temporarily elevated.	Short-term effects to water quality will occur related to dredging and capping and resuspension of sediments and contaminants may occur during in-water work, but conservation measures will be implemented to minimize effects on water quality. Regarding turbidity, because groundfish and salmonid species in the Willamette River are mobile, they would be expected to avoid areas where unsuitably turbid conditions exist. For this reason, the adverse effects of turbidity on water column EFH are expected to be minimal.	Conservation measures include those listed in the accompanying BA in Section 3. In addition, in-water work for the project will comply with the timing restrictions specified in the in-water work window, when salmonids are expected to be either not present or present in very low numbers. Water quality monitoring will occur concurrent with dredging and capping activity in accordance with the Water Quality Monitoring Conditions and Compliance Plan (WQMCCP) that will be issued for the project by USEPA.
Suspension of sediment has the potential to adversely affect water column EFH by reducing dissolved oxygen (DO).	High concentrations of suspended sediments have the potential to reduce DO levels by exposing nutrients to bacterial breakdown (Mortensen et al. 1976). A model created by LaSalle (1988) demonstrated that even in a situation where the upper limit of expected suspended sediment is reached during dredging operations, DO depletion of no more than 0.1 milligrams per liter (mg/L) would occur at depth. LaSalle (1988) concluded that based on the relatively low levels of suspended material generated by dredging operations, and considering factors such as flushing, DO depletion around these activities should be minimal.	Conservation measures include those listed in the accompanying BA in Section 3. In addition, in-water work for the project will comply with the timing restrictions specified in the in-water work window, when salmonids are expected to be either not present or present in very low numbers. Water quality monitoring will occur concurrent with dredging and capping activity in accordance with the WQMCCP that will be issued for the project by USEPA.
Water column EFH could be adversely affected by spills from construction equipment.	There is a small chance that an unintentional release of fuel, lubricants, or hydraulic fluid from the construction equipment could lead to adverse impacts to salmonid or groundfish EFH. In addition, because groundfish and salmonid species in the Willamette River are mobile, they would be expected to avoid areas where unsuitable conditions exist. For this reason, the adverse effects of these substances on water column EFH are expected to be minimal.	Conservation measures include those listed in the accompanying BA in Section 3. In addition, surface booms, oil-absorbent pads, and similar materials will be on site for any accidental construction equipment spills. Water quality monitoring will occur concurrent with dredging and capping activity in accordance with the WQMCCP that will be issued for the project by USEPA. In-water work for the project will comply with the timing restrictions specified in the in-water work window, when salmonids are expected to be either not present or present in very low numbers.

Cumulative EFH Effects

The remainder of the Removal Action and cleanup of the Portland Harbor Superfund Site is slated to occur in future years as part of the harbor-wide RI/FS process, with the intent to provide a net benefit to species and habitat through cleanup of contaminated sediments. In addition, any (404[b][1]) compensatory mitigation completed as part of the future cleanup will provide higher quality habitat for listed species. Following implementation of the project, substrate quality in the Removal Action Area would be substantially improved relative to existing conditions.

Effects Determination for EFH

Based on the above information, it is concluded that the effects of the proposed action **may adversely affect Pacific Coast Salmon EFH and West Coast Groundfish EFH**. A "may adversely affect" determination is appropriate because there will be short-term impacts to freshwater rearing sites and migration corridors as described above in Table A-2. However, long-term beneficial effects to EFH are also expected as a result of the project based on the reduction of sediment contamination from the EFH environment.

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APPENDIX B

SPECIES LISTS

Endangered Species Act Status of West Coast Salmon & Steelhead

(Updated June 15, 2007)

Sockeye Salmon (*Oncorhynchus nerka*)	1	Snake River		
	2	Ozette Lake		
	3	Baker River	*Not Warranted*	
	4	Okanogan River	*Not Warranted*	
	5	Lake Wenatchee	*Not Warranted*	
	6	Quinalt Lake	*Not Warranted*	
	7	Lake Pleasant	*Not Warranted*	
Chinook Salmon (*O. tshawytscha*)	8	Sacramento River Winter-run		
	9	Upper Columbia River Spring-run		
	10	Snake River Spring/Summer-run		
	11	Snake River Fall-run		
	12	Puget Sound		
	13	Lower Columbia River		
	14	Upper Willamette River		
	15	Central Valley Spring-run		
	16	California Coastal		
	17	Central Valley Fall and Late Fall-run		
	18	Upper Klamath-Trinity Rivers	*Not Warranted*	
	19	Oregon Coast	*Not Warranted*	
	20	Washington Coast	*Not Warranted*	
	21	Middle Columbia River spring-run	*Not Warranted*	
	22	Upper Columbia River summer/fall-run	*Not Warranted*	
	23	Southern Oregon and Northern California Coast	*Not Warranted*	
	24	Deschutes River summer/fall-run	*Not Warranted*	
Coho Salmon (*O. kisutch*)	25	Central California Coast		
	26	Southern Oregon/Northern California		
	27	Lower Columbia River		• Critical habitat
	28	Oregon Coast	*Not Warranted*	
	29	Southwest Washington	*Undetermined*	
	30	Puget Sound/Strait of Georgia		
	31	Olympic Peninsula	*Not Warranted*	
Chum Salmon (*O. keta*)	32	Hood Canal Summer-run		
	33	Columbia River		
	34	Puget Sound/Strait of Georgia	*Not Warranted*	
	35	Pacific Coast	*Not Warranted*	
Steelhead (*O. mykiss*)	36	Southern California		
	37	Upper Columbia River		
	38	Central California Coast		
	39	South Central California Coast		
	40	Snake River Basin		
	41	Lower Columbia River		
	42	California Central Valley		
	43	Upper Willamette River		
	44	Middle Columbia River		
	45	Northern California		
	46	Oregon Coast		
	47	Southwest Washington	*Not Warranted*	
	48	Olympic Peninsula	*Not Warranted*	
	49	Puget Sound		• Critical habitat • Protective regulations
	50	Klamath Mountains Province	*Not Warranted*	
Pink Salmon (*O. gorbuscha*)	51	Even-year	*Not Warranted*	
	52	Odd-year	*Not Warranted*	

1 The ESA defines a "species" to include any distinct population segment of any species of vertebrate fish or wildlife. For Pacific salmon, NOAA Fisheries Service considers an evolutionarily significant unit, or "ESU," a "species" under the ESA. For Pacific steelhead, NOAA Fisheries Service has delineated distinct population segments (DPSs) for consideration as "species" under the ESA.

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APPENDIX C

EXISTING SEDIMENT CHEMISTRY DATA WITHIN THE BERTH 410 DREDGE AREA

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
HC-S-30	**-45.1**	**-45.4**	CRD					
ELEVATION	**-43.4**	**-43.7**	NGVD					
HC-S-30	0.0	0.3	ft	Arsenic	mg/kg	Y	4	0.1
HC-S-30	0.0	0.3	ft	Cadmium	mg/kg	Y	0.6	0.1
HC-S-30	0.0	0.3	ft	Chromium	mg/kg	Y	21.1	0.2
HC-S-30	0.0	0.3	ft	Copper	mg/kg	Y	62	0.4
HC-S-30	0.0	0.3	ft	Lead	mg/kg	Y	80.7	0.6
HC-S-30	0.0	0.3	ft	Mercury	mg/kg	Y	0.06	0.1
HC-S-30	0.0	0.3	ft	Nickel	mg/kg	Y	22	0.4
HC-S-30	0.0	0.3	ft	Silver	mg/kg	Y	0.3	
HC-S-30	0.0	0.3	ft	Zinc	mg/kg	Y	167	0.4
HC-S-30	0.0	0.3	ft	Dibenzofuran	µg/kg	Y	52	
HC-S-30	0.0	0.3	ft	bis(2-Ethylhexyl)phthalate	µg/kg	Y	300	
HC-S-30	0.0	0.3	ft	Butylbenzylphthalate	µg/kg	N	20	
HC-S-30	0.0	0.3	ft	Dimethylphthalate	µg/kg	N	20	
HC-S-30	0.0	0.3	ft	Di-n-octylphthalate	µg/kg	N	20	
HC-S-30	0.0	0.3	ft	Acenaphthene	µg/kg	Y	260	
HC-S-30	0.0	0.3	ft	Acenaphthylene	µg/kg	Y	44	
HC-S-30	0.0	0.3	ft	Anthracene	µg/kg	Y	370	0.4
HC-S-30	0.0	0.3	ft	Benzo(a)anthracene	µg/kg	Y	2700	2.6
HC-S-30	0.0	0.3	ft	Benzo(a)pyrene	µg/kg	Y	3300	2.3
HC-S-30	0.0	0.3	ft	Benzo(b)fluoranthene	µg/kg	Y	2400	
HC-S-30	0.0	0.3	ft	Benzo(g,h,i)perylene	µg/kg	Y	2500	
HC-S-30	0.0	0.3	ft	Benzo(k)fluoranthene	µg/kg	Y	2400	
HC-S-30	0.0	0.3	ft	Chrysene	µg/kg	Y	3000	2.3
HC-S-30	0.0	0.3	ft	Dibenzo(a,h)anthracene	µg/kg	Y	540	
HC-S-30	0.0	0.3	ft	Fluoranthene	µg/kg	Y	5200	2.3
HC-S-30	0.0	0.3	ft	Fluorene	µg/kg	Y	160	0.3
HC-S-30	0.0	0.3	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	4600	
HC-S-30	0.0	0.3	ft	Naphthalene	µg/kg	Y	64	0.1
HC-S-30	0.0	0.3	ft	Phenanthrene	µg/kg	Y	1600	1.4
HC-S-30	0.0	0.3	ft	Pyrene	µg/kg	Y	5000	3.3
HC-S-30	0.0	0.3	ft	Total Benzofluoranthenes	µg/kg	Y	4800	
HC-S-30	0.0	0.3	ft	Total HPAH (SMS)	µg/kg	Y	31640	
HC-S-30	0.0	0.3	ft	Total LPAH (SMS)	µg/kg	Y	2498	
HC-S-30	0.0	0.3	ft	Total PAH (SMS)	µg/kg	Y	34138	1.5
HC-S-35	**-40.9**	**-41.2**	CRD					
ELEVATION	**-39.2**	**-39.5**	NGVD					

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
HC-S-35	0.0	0.3	ft	Arsenic	mg/kg	Y	4	0.1
HC-S-35	0.0	0.3	ft	Cadmium	mg/kg	Y	0.4	0.1
HC-S-35	0.0	0.3	ft	Chromium	mg/kg	Y	23.3	0.2
HC-S-35	0.0	0.3	ft	Copper	mg/kg	Y	35.5	0.2
HC-S-35	0.0	0.3	ft	Lead	mg/kg	Y	39	0.3
HC-S-35	0.0	0.3	ft	Mercury	mg/kg	Y	0.08	0.1
HC-S-35	0.0	0.3	ft	Nickel	mg/kg	Y	21	0.4
HC-S-35	0.0	0.3	ft	Silver	mg/kg	Y	0.2	
HC-S-35	0.0	0.3	ft	Zinc	mg/kg	Y	122	0.3
HC-S-35	0.0	0.3	ft	Dibenzofuran	µg/kg	Y	31	
HC-S-35	0.0	0.3	ft	bis(2-Ethylhexyl)phthalate	µg/kg	Y	260	
HC-S-35	0.0	0.3	ft	Butylbenzylphthalate	µg/kg	N	20	
HC-S-35	0.0	0.3	ft	Dimethylphthalate	µg/kg	N	20	
HC-S-35	0.0	0.3	ft	Di-n-octylphthalate	µg/kg	N	20	
HC-S-35	0.0	0.3	ft	Acenaphthene	µg/kg	Y	120	
HC-S-35	0.0	0.3	ft	Acenaphthylene	µg/kg	Y	30	
HC-S-35	0.0	0.3	ft	Anthracene	µg/kg	Y	220	0.3
HC-S-35	0.0	0.3	ft	Benzo(a)anthracene	µg/kg	Y	1500	1.4
HC-S-35	0.0	0.3	ft	Benzo(a)pyrene	µg/kg	Y	1800	1.2
HC-S-35	0.0	0.3	ft	Benzo(b)fluoranthene	µg/kg	Y	1500	
HC-S-35	0.0	0.3	ft	Benzo(g,h,i)perylene	µg/kg	Y	1200	
HC-S-35	0.0	0.3	ft	Benzo(k)fluoranthene	µg/kg	Y	1300	
HC-S-35	0.0	0.3	ft	Chrysene	µg/kg	Y	1500	1.2
HC-S-35	0.0	0.3	ft	Dibenzo(a,h)anthracene	µg/kg	Y	280	
HC-S-35	0.0	0.3	ft	Fluoranthene	µg/kg	Y	2700	1.2
HC-S-35	0.0	0.3	ft	Fluorene	µg/kg	Y	85	0.2
HC-S-35	0.0	0.3	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	2300	
HC-S-35	0.0	0.3	ft	Naphthalene	µg/kg	Y	40	0.1
HC-S-35	0.0	0.3	ft	Phenanthrene	µg/kg	Y	730	0.6
HC-S-35	0.0	0.3	ft	Pyrene	µg/kg	Y	2700	1.8
HC-S-35	0.0	0.3	ft	Total Benzofluoranthenes	µg/kg	Y	2800	
HC-S-35	0.0	0.3	ft	Total HPAH (SMS)	µg/kg	Y	16780	
HC-S-35	0.0	0.3	ft	Total LPAH (SMS)	µg/kg	Y	1225	
HC-S-35	0.0	0.3	ft	Total PAH (SMS)	µg/kg	Y	18005	0.8
HC-S-37	**-41.5**	**-41.8**	CRD					
ELEVATION	**-39.8**	**-40.1**	NGVD					
HC-S-37	0.0	0.3	ft	Arsenic	mg/kg	Y	4	0.1
HC-S-37	0.0	0.3	ft	Cadmium	mg/kg	Y	0.3	0.1

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
HC-S-37	0.0	0.3	ft	Chromium	mg/kg	Y	24.4	0.2
HC-S-37	0.0	0.3	ft	Copper	mg/kg	Y	37	0.2
HC-S-37	0.0	0.3	ft	Lead	mg/kg	Y	28.3	0.2
HC-S-37	0.0	0.3	ft	Mercury	mg/kg	Y	0.08	0.1
HC-S-37	0.0	0.3	ft	Nickel	mg/kg	Y	22	0.4
HC-S-37	0.0	0.3	ft	Silver	mg/kg	Y	0.2	
HC-S-37	0.0	0.3	ft	Zinc	mg/kg	Y	116	0.3
HC-S-37	0.0	0.3	ft	Dibenzofuran	µg/kg	Y	30	
HC-S-37	0.0	0.3	ft	bis(2-Ethylhexyl)phthalate	µg/kg	Y	290	
HC-S-37	0.0	0.3	ft	Butylbenzylphthalate	µg/kg	N	20	
HC-S-37	0.0	0.3	ft	Dimethylphthalate	µg/kg	N	20	
HC-S-37	0.0	0.3	ft	Di-n-octylphthalate	µg/kg	N	20	
HC-S-37	0.0	0.3	ft	Acenaphthene	µg/kg	Y	88	
HC-S-37	0.0	0.3	ft	Acenaphthylene	µg/kg	Y	20	
HC-S-37	0.0	0.3	ft	Anthracene	µg/kg	Y	140	0.2
HC-S-37	0.0	0.3	ft	Benzo(a)anthracene	µg/kg	Y	800	0.8
HC-S-37	0.0	0.3	ft	Benzo(a)pyrene	µg/kg	Y	1100	0.8
HC-S-37	0.0	0.3	ft	Benzo(b)fluoranthene	µg/kg	Y	1000	
HC-S-37	0.0	0.3	ft	Benzo(g,h,i)perylene	µg/kg	Y	610	
HC-S-37	0.0	0.3	ft	Benzo(k)fluoranthene	µg/kg	Y	510	
HC-S-37	0.0	0.3	ft	Chrysene	µg/kg	Y	900	0.7
HC-S-37	0.0	0.3	ft	Dibenzo(a,h)anthracene	µg/kg	Y	170	
HC-S-37	0.0	0.3	ft	Fluoranthene	µg/kg	Y	1500	0.7
HC-S-37	0.0	0.3	ft	Fluorene	µg/kg	Y	75	0.1
HC-S-37	0.0	0.3	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	900	
HC-S-37	0.0	0.3	ft	Naphthalene	µg/kg	Y	27	0.0
HC-S-37	0.0	0.3	ft	Phenanthrene	µg/kg	Y	580	0.5
HC-S-37	0.0	0.3	ft	Pyrene	µg/kg	Y	1300	0.9
HC-S-37	0.0	0.3	ft	Total Benzofluoranthenes	µg/kg	Y	1510	
HC-S-37	0.0	0.3	ft	Total HPAH (SMS)	µg/kg	Y	8790	
HC-S-37	0.0	0.3	ft	Total LPAH (SMS)	µg/kg	Y	930	
HC-S-37	0.0	0.3	ft	Total PAH (SMS)	µg/kg	Y	9720	0.4
T4-01-1A	**-42.0**	**-43.0**	CRD					
ELEVATION	**-40.3**	**-41.3**	NGVD					
T4-01-1A	4.0	5.0	ft	Arsenic	mg/kg	Y	3.87	0.1
T4-01-1A	4.0	5.0	ft	Cadmium	mg/kg	Y	0.403	0.1
T4-01-1A	4.0	5.0	ft	Chromium	mg/kg	Y	20.8	0.2
T4-01-1A	4.0	5.0	ft	Copper	mg/kg	Y	32.6	0.2

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
T4-01-1A	4.0	5.0	ft	Lead	mg/kg	Y	41	0.3
T4-01-1A	4.0	5.0	ft	Mercury	mg/kg	Y	0.13	0.1
T4-01-1A	4.0	5.0	ft	Nickel	mg/kg	Y	19.9	0.4
T4-01-1A	4.0	5.0	ft	Silver	mg/kg	Y	0.562	
T4-01-1A	4.0	5.0	ft	Zinc	mg/kg	Y	129	0.3
T4-01-1A	4.0	5.0	ft	Dibenzofuran	µg/kg	Y	74	
T4-01-1A	4.0	5.0	ft	4,4'-DDD	µg/kg	Y	5.7	0.2
T4-01-1A	4.0	5.0	ft	4,4'-DDE	µg/kg	Y	4.7	0.2
T4-01-1A	4.0	5.0	ft	4,4'-DDT	µg/kg	N	2	0.0
T4-01-1A	4.0	5.0	ft	Dieldrin	µg/kg	N	1.8	0.0
T4-01-1A	4.0	5.0	ft	Endrin	µg/kg	N	2.3	0.0
T4-01-1A	4.0	5.0	ft	gamma-BHC (Lindane)	µg/kg	N	1.8	0.4
T4-01-1A	4.0	5.0	ft	Heptachlor Epoxide	µg/kg	N	1.8	0.1
T4-01-1A	4.0	5.0	ft	Total DDT (SMS)	µg/kg	Y	10.4	0.0
T4-01-1A	4.0	5.0	ft	bis(2-Ethylhexyl)phthalate	µg/kg	N	1800	
T4-01-1A	4.0	5.0	ft	Butylbenzylphthalate	µg/kg	N	87	
T4-01-1A	4.0	5.0	ft	Dimethylphthalate	µg/kg	N	87	
T4-01-1A	4.0	5.0	ft	Di-n-octylphthalate	µg/kg	N	87	
T4-01-1A	4.0	5.0	ft	Total PCB (SMS)	µg/kg	Y	190	0.3
T4-01-1A	4.0	5.0	ft	2-Methylnaphthalene	µg/kg	Y	100	
T4-01-1A	4.0	5.0	ft	Acenaphthene	µg/kg	Y	150	
T4-01-1A	4.0	5.0	ft	Acenaphthylene	µg/kg	Y	36	
T4-01-1A	4.0	5.0	ft	Anthracene	µg/kg	Y	130	0.2
T4-01-1A	4.0	5.0	ft	Benzo(a)anthracene	µg/kg	Y	360	0.3
T4-01-1A	4.0	5.0	ft	Benzo(a)pyrene	µg/kg	Y	410	0.3
T4-01-1A	4.0	5.0	ft	Benzo(b)fluoranthene	µg/kg	Y	500	
T4-01-1A	4.0	5.0	ft	Benzo(g,h,i)perylene	µg/kg	Y	400	
T4-01-1A	4.0	5.0	ft	Benzo(k)fluoranthene	µg/kg	Y	160	
T4-01-1A	4.0	5.0	ft	Chrysene	µg/kg	Y	470	0.4
T4-01-1A	4.0	5.0	ft	Dibenzo(a,h)anthracene	µg/kg	Y	87	
T4-01-1A	4.0	5.0	ft	Fluoranthene	µg/kg	Y	710	0.3
T4-01-1A	4.0	5.0	ft	Fluorene	µg/kg	Y	110	0.2
T4-01-1A	4.0	5.0	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	400	
T4-01-1A	4.0	5.0	ft	Naphthalene	µg/kg	Y	200	0.4
T4-01-1A	4.0	5.0	ft	Phenanthrene	µg/kg	Y	520	0.4
T4-01-1A	4.0	5.0	ft	Pyrene	µg/kg	Y	800	0.5
T4-01-1A	4.0	5.0	ft	Total Benzofluoranthenes	µg/kg	Y	660	
T4-01-1A	4.0	5.0	ft	Total HPAH (SMS)	µg/kg	Y	4297	

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
T4-01-1A	4.0	5.0	ft	Total LPAH (SMS)	µg/kg	Y	1146	
T4-01-1A	4.0	5.0	ft	Total PAH (SMS)	µg/kg	Y	5443	0.2
T4-01-1B	**-43.0**	**-44.0**	CRD					
ELEVATION	**-41.3**	**-42.3**	NGVD					
T4-01-1B	5.0	6.0	ft	4,4'-DDD	µg/kg	Y	6.1	0.2
T4-01-1B	5.0	6.0	ft	4,4'-DDE	µg/kg	Y	5.6	0.2
T4-01-1B	5.0	6.0	ft	4,4'-DDT	µg/kg	Y	10	0.2
T4-01-1B	5.0	6.0	ft	Dieldrin	µg/kg	N	5.5	0.1
T4-01-1B	5.0	6.0	ft	Endrin	µg/kg	N	5.5	0.0
T4-01-1B	5.0	6.0	ft	gamma-BHC (Lindane)	µg/kg	N	2.8	0.6
T4-01-1B	5.0	6.0	ft	Heptachlor Epoxide	µg/kg	N	2.8	0.2
T4-01-1B	5.0	6.0	ft	Total DDT (SMS)	µg/kg	Y	21.7	0.0
T4-01-1B	5.0	6.0	ft	Total PCB (SMS)	µg/kg	Y	150	0.2
T4-01-1C	**-44.0**	**-45.0**	CRD					
ELEVATION	**-42.3**	**-43.3**	NGVD					
T4-01-1C	6.0	7.0	ft	4,4'-DDD	µg/kg	Y	9.4	0.3
T4-01-1C	6.0	7.0	ft	4,4'-DDE	µg/kg	Y	4.2	0.1
T4-01-1C	6.0	7.0	ft	4,4'-DDT	µg/kg	Y	5.4	0.1
T4-01-1C	6.0	7.0	ft	Dieldrin	µg/kg	N	1.6	0.0
T4-01-1C	6.0	7.0	ft	gamma-BHC (Lindane)	µg/kg	N	1.6	0.3
T4-01-1C	6.0	7.0	ft	Total DDT (SMS)	µg/kg	Y	19	0.0
T4-01-1C	6.0	7.0	ft	Total PCB (SMS)	µg/kg	Y	129	0.2
T4-01-2A	**-42.0**	**-43.0**	CRD					
ELEVATION	**-40.3**	**-41.3**	NGVD					
T4-01-2A	2.0	3.0	ft	Arsenic	mg/kg	Y	6.39	0.2
T4-01-2A	2.0	3.0	ft	Cadmium	mg/kg	Y	0.711	0.1
T4-01-2A	2.0	3.0	ft	Chromium	mg/kg	Y	24.4	0.2
T4-01-2A	2.0	3.0	ft	Copper	mg/kg	Y	52.1	0.3
T4-01-2A	2.0	3.0	ft	Lead	mg/kg	Y	85.9	0.7
T4-01-2A	2.0	3.0	ft	Mercury	mg/kg	Y	0.1	0.1
T4-01-2A	2.0	3.0	ft	Nickel	mg/kg	Y	21.3	0.4
T4-01-2A	2.0	3.0	ft	Silver	mg/kg	Y	0.857	
T4-01-2A	2.0	3.0	ft	Zinc	mg/kg	Y	171	0.4
T4-01-2A	2.0	3.0	ft	Dibenzofuran	µg/kg	Y	290	
T4-01-2A	2.0	3.0	ft	4,4'-DDD	µg/kg	Y	4.8	0.2
T4-01-2A	2.0	3.0	ft	4,4'-DDE	µg/kg	N	4.4	0.1
T4-01-2A	2.0	3.0	ft	4,4'-DDT	µg/kg	N	18	0.3
T4-01-2A	2.0	3.0	ft	Dieldrin	µg/kg	N	5.5	0.1

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
T4-01-2A	2.0	3.0	ft	Endrin	µg/kg	N	18	0.1
T4-01-2A	2.0	3.0	ft	gamma-BHC (Lindane)	µg/kg	N	4.4	0.9
T4-01-2A	2.0	3.0	ft	Heptachlor Epoxide	µg/kg	N	18	1.1
T4-01-2A	2.0	3.0	ft	Total DDT (SMS)	µg/kg	Y	4.8	0.0
T4-01-2A	2.0	3.0	ft	bis(2-Ethylhexyl)phthalate	µg/kg	N	3600	
T4-01-2A	2.0	3.0	ft	Butylbenzylphthalate	µg/kg	N	180	
T4-01-2A	2.0	3.0	ft	Dimethylphthalate	µg/kg	N	180	
T4-01-2A	2.0	3.0	ft	Di-n-octylphthalate	µg/kg	N	180	
T4-01-2A	2.0	3.0	ft	Total PCB (SMS)	µg/kg	Y	97	0.1
T4-01-2A	2.0	3.0	ft	2-Methylnaphthalene	µg/kg	Y	170	
T4-01-2A	2.0	3.0	ft	Acenaphthene	µg/kg	Y	1800	
T4-01-2A	2.0	3.0	ft	Acenaphthylene	µg/kg	Y	70	
T4-01-2A	2.0	3.0	ft	Anthracene	µg/kg	Y	1700	2.0
T4-01-2A	2.0	3.0	ft	Benzo(a)anthracene	µg/kg	Y	8800	8.4
T4-01-2A	2.0	3.0	ft	Benzo(a)pyrene	µg/kg	Y	11000	7.6
T4-01-2A	2.0	3.0	ft	Benzo(b)fluoranthene	µg/kg	Y	13000	
T4-01-2A	2.0	3.0	ft	Benzo(g,h,i)perylene	µg/kg	Y	7700	
T4-01-2A	2.0	3.0	ft	Benzo(k)fluoranthene	µg/kg	Y	4300	
T4-01-2A	2.0	3.0	ft	Chrysene	µg/kg	Y	9300	7.2
T4-01-2A	2.0	3.0	ft	Dibenzo(a,h)anthracene	µg/kg	Y	2100	
T4-01-2A	2.0	3.0	ft	Fluoranthene	µg/kg	Y	12000	5.4
T4-01-2A	2.0	3.0	ft	Fluorene	µg/kg	Y	670	1.3
T4-01-2A	2.0	3.0	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	8900	
T4-01-2A	2.0	3.0	ft	Naphthalene	µg/kg	Y	390	0.7
T4-01-2A	2.0	3.0	ft	Phenanthrene	µg/kg	Y	6300	5.4
T4-01-2A	2.0	3.0	ft	Pyrene	µg/kg	Y	8500	5.6
T4-01-2A	2.0	3.0	ft	Total Benzofluoranthenes	µg/kg	Y	17300	
T4-01-2A	2.0	3.0	ft	Total HPAH (SMS)	µg/kg	Y	85600	
T4-01-2A	2.0	3.0	ft	Total LPAH (SMS)	µg/kg	Y	10930	
T4-01-2A	2.0	3.0	ft	Total PAH (SMS)	µg/kg	Y	96530	4.2
T4-01-2B	**-43.0**	**-44.0**	CRD					
ELEVATION	**-41.3**	**-42.3**	NGVD					
T4-01-2B	3.0	4.0	ft	Dibenzofuran	µg/kg	Y	85	
T4-01-2B	3.0	4.0	ft	4,4'-DDD	µg/kg	Y	6.1	0.2
T4-01-2B	3.0	4.0	ft	4,4'-DDE	µg/kg	N	5.3	0.2
T4-01-2B	3.0	4.0	ft	4,4'-DDT	µg/kg	N	5.3	0.1
T4-01-2B	3.0	4.0	ft	Dieldrin	µg/kg	N	5.3	0.1
T4-01-2B	3.0	4.0	ft	Endrin	µg/kg	N	5.3	0.0

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
T4-01-2B	3.0	4.0	ft	gamma-BHC (Lindane)	µg/kg	N	2.7	0.5
T4-01-2B	3.0	4.0	ft	Heptachlor Epoxide	µg/kg	N	2.7	0.2
T4-01-2B	3.0	4.0	ft	Total DDT (SMS)	µg/kg	Y	6.1	0.0
T4-01-2B	3.0	4.0	ft	bis(2-Ethylhexyl)phthalate	µg/kg	N	1700	
T4-01-2B	3.0	4.0	ft	Butylbenzylphthalate	µg/kg	N	84	
T4-01-2B	3.0	4.0	ft	Dimethylphthalate	µg/kg	N	84	
T4-01-2B	3.0	4.0	ft	Di-n-octylphthalate	µg/kg	N	84	
T4-01-2B	3.0	4.0	ft	Total PCB (SMS)	µg/kg	Y	69	0.1
T4-01-2B	3.0	4.0	ft	2-Methylnaphthalene	µg/kg	Y	57	
T4-01-2B	3.0	4.0	ft	Acenaphthene	µg/kg	Y	270	
T4-01-2B	3.0	4.0	ft	Acenaphthylene	µg/kg	Y	32	
T4-01-2B	3.0	4.0	ft	Anthracene	µg/kg	Y	260	0.3
T4-01-2B	3.0	4.0	ft	Benzo(a)anthracene	µg/kg	Y	1400	1.3
T4-01-2B	3.0	4.0	ft	Benzo(a)pyrene	µg/kg	Y	1600	1.1
T4-01-2B	3.0	4.0	ft	Benzo(b)fluoranthene	µg/kg	Y	2100	
T4-01-2B	3.0	4.0	ft	Benzo(g,h,i)perylene	µg/kg	Y	1000	
T4-01-2B	3.0	4.0	ft	Benzo(k)fluoranthene	µg/kg	Y	740	
T4-01-2B	3.0	4.0	ft	Chrysene	µg/kg	Y	1700	1.3
T4-01-2B	3.0	4.0	ft	Dibenzo(a,h)anthracene	µg/kg	Y	280	
T4-01-2B	3.0	4.0	ft	Fluoranthene	µg/kg	Y	3200	1.4
T4-01-2B	3.0	4.0	ft	Fluorene	µg/kg	Y	190	0.4
T4-01-2B	3.0	4.0	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	1100	
T4-01-2B	3.0	4.0	ft	Naphthalene	µg/kg	Y	120	0.2
T4-01-2B	3.0	4.0	ft	Phenanthrene	µg/kg	Y	1300	1.1
T4-01-2B	3.0	4.0	ft	Pyrene	µg/kg	Y	2600	1.7
T4-01-2B	3.0	4.0	ft	Total Benzofluoranthenes	µg/kg	Y	2840	
T4-01-2B	3.0	4.0	ft	Total HPAH (SMS)	µg/kg	Y	15720	
T4-01-2B	3.0	4.0	ft	Total LPAH (SMS)	µg/kg	Y	2172	
T4-01-2B	3.0	4.0	ft	Total PAH (SMS)	µg/kg	Y	17892	0.8
T4-01-2C	**-44.0**	**-45.0**	CRD					
ELEVATION	**-42.3**	**-43.3**	NGVD					
T4-01-2C	4.0	5.0	ft	Dibenzofuran	µg/kg	Y	60	
T4-01-2C	4.0	5.0	ft	bis(2-Ethylhexyl)phthalate	µg/kg	N	1500	
T4-01-2C	4.0	5.0	ft	Butylbenzylphthalate	µg/kg	N	72	
T4-01-2C	4.0	5.0	ft	Dimethylphthalate	µg/kg	N	72	
T4-01-2C	4.0	5.0	ft	Di-n-octylphthalate	µg/kg	N	72	
T4-01-2C	4.0	5.0	ft	2-Methylnaphthalene	µg/kg	Y	74	
T4-01-2C	4.0	5.0	ft	Acenaphthene	µg/kg	Y	280	

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
T4-01-2C	4.0	5.0	ft	Acenaphthylene	µg/kg	Y	37	
T4-01-2C	4.0	5.0	ft	Anthracene	µg/kg	Y	150	0.2
T4-01-2C	4.0	5.0	ft	Benzo(a)anthracene	µg/kg	Y	550	0.5
T4-01-2C	4.0	5.0	ft	Benzo(a)pyrene	µg/kg	Y	570	0.4
T4-01-2C	4.0	5.0	ft	Benzo(b)fluoranthene	µg/kg	Y	770	
T4-01-2C	4.0	5.0	ft	Benzo(g,h,i)perylene	µg/kg	Y	400	
T4-01-2C	4.0	5.0	ft	Benzo(k)fluoranthene	µg/kg	Y	250	
T4-01-2C	4.0	5.0	ft	Chrysene	µg/kg	Y	680	0.5
T4-01-2C	4.0	5.0	ft	Dibenzo(a,h)anthracene	µg/kg	Y	110	
T4-01-2C	4.0	5.0	ft	Fluoranthene	µg/kg	Y	1500	0.7
T4-01-2C	4.0	5.0	ft	Fluorene	µg/kg	Y	110	0.2
T4-01-2C	4.0	5.0	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	420	
T4-01-2C	4.0	5.0	ft	Naphthalene	µg/kg	Y	150	0.3
T4-01-2C	4.0	5.0	ft	Phenanthrene	µg/kg	Y	820	0.7
T4-01-2C	4.0	5.0	ft	Pyrene	µg/kg	Y	1300	0.9
T4-01-2C	4.0	5.0	ft	Total Benzofluoranthenes	µg/kg	Y	1020	
T4-01-2C	4.0	5.0	ft	Total HPAH (SMS)	µg/kg	Y	6550	
T4-01-2C	4.0	5.0	ft	Total LPAH (SMS)	µg/kg	Y	1547	
T4-01-2C	4.0	5.0	ft	Total PAH (SMS)	µg/kg	Y	8097	0.4
T4-01-3A	**-42.0**	**-42.5**	CRD					
ELEVATION	**-40.3**	**-40.8**	NGVD					
T4-01-3A	2.0	2.5	ft	Arsenic	mg/kg	Y	11.6	0.4
T4-01-3A	2.0	2.5	ft	Cadmium	mg/kg	Y	5.72	1.1
T4-01-3A	2.0	2.5	ft	Chromium	mg/kg	Y	24.7	0.2
T4-01-3A	2.0	2.5	ft	Copper	mg/kg	Y	72.3	0.5
T4-01-3A	2.0	2.5	ft	Lead	mg/kg	Y	1090	8.5
T4-01-3A	2.0	2.5	ft	Mercury	mg/kg	Y	0.25	0.2
T4-01-3A	2.0	2.5	ft	Nickel	mg/kg	Y	22	0.4
T4-01-3A	2.0	2.5	ft	Silver	mg/kg	Y	2.35	
T4-01-3A	2.0	2.5	ft	Zinc	mg/kg	Y	1010	2.2
T4-01-3A	2.0	2.5	ft	Dibenzofuran	µg/kg	Y	73	
T4-01-3A	2.0	2.5	ft	4,4'-DDD	µg/kg	Y	13	0.5
T4-01-3A	2.0	2.5	ft	4,4'-DDE	µg/kg	Y	17	0.5
T4-01-3A	2.0	2.5	ft	4,4'-DDT	µg/kg	Y	4.5	0.1
T4-01-3A	2.0	2.5	ft	Dieldrin	µg/kg	N	1.8	0.0
T4-01-3A	2.0	2.5	ft	Endrin	µg/kg	N	5.5	0.0
T4-01-3A	2.0	2.5	ft	gamma-BHC (Lindane)	µg/kg	N	1.8	0.4
T4-01-3A	2.0	2.5	ft	Heptachlor Epoxide	µg/kg	N	1.8	0.1

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
T4-01-3A	2.0	2.5	ft	Total DDT (SMS)	µg/kg	Y	34.5	0.1
T4-01-3A	2.0	2.5	ft	bis(2-Ethylhexyl)phthalate	µg/kg	N	1800	
T4-01-3A	2.0	2.5	ft	Butylbenzylphthalate	µg/kg	N	88	
T4-01-3A	2.0	2.5	ft	Dimethylphthalate	µg/kg	N	88	
T4-01-3A	2.0	2.5	ft	Di-n-octylphthalate	µg/kg	N	88	
T4-01-3A	2.0	2.5	ft	Total PCB (SMS)	µg/kg	Y	456	0.7
T4-01-3A	2.0	2.5	ft	2-Methylnaphthalene	µg/kg	Y	67	
T4-01-3A	2.0	2.5	ft	Acenaphthene	µg/kg	Y	200	
T4-01-3A	2.0	2.5	ft	Acenaphthylene	µg/kg	Y	35	
T4-01-3A	2.0	2.5	ft	Anthracene	µg/kg	Y	170	0.2
T4-01-3A	2.0	2.5	ft	Benzo(a)anthracene	µg/kg	Y	580	0.6
T4-01-3A	2.0	2.5	ft	Benzo(a)pyrene	µg/kg	Y	640	0.4
T4-01-3A	2.0	2.5	ft	Benzo(b)fluoranthene	µg/kg	Y	870	
T4-01-3A	2.0	2.5	ft	Benzo(g,h,i)perylene	µg/kg	Y	540	
T4-01-3A	2.0	2.5	ft	Benzo(k)fluoranthene	µg/kg	Y	240	
T4-01-3A	2.0	2.5	ft	Chrysene	µg/kg	Y	700	0.5
T4-01-3A	2.0	2.5	ft	Dibenzo(a,h)anthracene	µg/kg	Y	160	
T4-01-3A	2.0	2.5	ft	Fluoranthene	µg/kg	Y	1200	0.5
T4-01-3A	2.0	2.5	ft	Fluorene	µg/kg	Y	180	0.3
T4-01-3A	2.0	2.5	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	570	
T4-01-3A	2.0	2.5	ft	Naphthalene	µg/kg	Y	130	0.2
T4-01-3A	2.0	2.5	ft	Phenanthrene	µg/kg	Y	760	0.6
T4-01-3A	2.0	2.5	ft	Pyrene	µg/kg	Y	1200	0.8
T4-01-3A	2.0	2.5	ft	Total Benzofluoranthenes	µg/kg	Y	1110	
T4-01-3A	2.0	2.5	ft	Total HPAH (SMS)	µg/kg	Y	6700	
T4-01-3A	2.0	2.5	ft	Total LPAH (SMS)	µg/kg	Y	1475	
T4-01-3A	2.0	2.5	ft	Total PAH (SMS)	µg/kg	Y	8175	0.4
T4-B411-01(-43 to -44)	**-41.7**	**-42.7**	CRD					
ELEVATION	**-40.0**	**-41.0**	NGVD					
T4-B411-01(-40 to -41)	0.0	1.0	ft	Arsenic	mg/kg	Y	7	0.2
T4-B411-01(-40 to -41)	0.0	1.0	ft	Cadmium	mg/kg	Y	1.6	0.3
T4-B411-01(-40 to -41)	0.0	1.0	ft	Copper	mg/kg	Y	29.7	0.2
T4-B411-01(-40 to -41)	0.0	1.0	ft	Lead	mg/kg	Y	551	4.3
T4-B411-01(-40 to -41)	0.0	1.0	ft	Mercury	mg/kg	N	0.06	0.1
T4-B411-01(-40 to -41)	0.0	1.0	ft	Nickel	mg/kg	Y	19	0.4
T4-B411-01(-40 to -41)	0.0	1.0	ft	Zinc	mg/kg	Y	300	0.7
T4-B411-01(-40 to -41)	0.0	1.0	ft	Dibenzofuran	µg/kg	Y	70	
T4-B411-01(-40 to -41)	0.0	1.0	ft	4,4'-DDD	µg/kg	N	2.0	0.1

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
T4-B411-01(-40 to -41)	0.0	1.0	ft	4,4'-DDE	µg/kg	N	2.0	0.1
T4-B411-01(-40 to -41)	0.0	1.0	ft	4,4'-DDT	µg/kg	N	2.0	0.0
T4-B411-01(-40 to -41)	0.0	1.0	ft	Total DDT (SMS)	µg/kg	N	2	0.0
T4-B411-01(-40 to -41)	0.0	1.0	ft	bis(2-Ethylhexyl)phthalate	µg/kg	N	59	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Butylbenzylphthalate	µg/kg	N	59	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Dimethylphthalate	µg/kg	N	59	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Di-n-octylphthalate	µg/kg	N	59	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Total PCB (SMS)	µg/kg	N	19	0.0
T4-B411-01(-40 to -41)	0.0	1.0	ft	2-Methylnaphthalene	µg/kg	N	59	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Acenaphthene	µg/kg	Y	580	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Acenaphthylene	µg/kg	N	59	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Anthracene	µg/kg	Y	480	0.6
T4-B411-01(-40 to -41)	0.0	1.0	ft	Benzo(a)anthracene	µg/kg	Y	2900	2.8
T4-B411-01(-40 to -41)	0.0	1.0	ft	Benzo(a)pyrene	µg/kg	Y	3400	2.3
T4-B411-01(-40 to -41)	0.0	1.0	ft	Benzo(b)fluoranthene	µg/kg	Y	3600	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Benzo(g,h,i)perylene	µg/kg	Y	2200	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Benzo(k)fluoranthene	µg/kg	Y	2700	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Chrysene	µg/kg	Y	2800	2.2
T4-B411-01(-40 to -41)	0.0	1.0	ft	Dibenzo(a,h)anthracene	µg/kg	Y	1100	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Fluoranthene	µg/kg	Y	3700	1.7
T4-B411-01(-40 to -41)	0.0	1.0	ft	Fluorene	µg/kg	Y	180	0.3
T4-B411-01(-40 to -41)	0.0	1.0	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	2200	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Naphthalene	µg/kg	Y	58	0.1
T4-B411-01(-40 to -41)	0.0	1.0	ft	Phenanthrene	µg/kg	Y	1800	1.5
T4-B411-01(-40 to -41)	0.0	1.0	ft	Pyrene	µg/kg	Y	3400	2.2
T4-B411-01(-40 to -41)	0.0	1.0	ft	Total Benzofluoranthenes	µg/kg	Y	6300	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Total HPAH (SMS)	µg/kg	Y	28000	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Total LPAH (SMS)	µg/kg	Y	3098	
T4-B411-01(-40 to -41)	0.0	1.0	ft	Total PAH (SMS)	µg/kg	Y	31098	1.4
T4-B411-01(-41 to -42)	**-42.7**	**-43.4**	CRD					
ELEVATION	**-41.0**	**-41.7**	NGVD					
T4-B411-01(-41 to -42)	1.0	1.7	ft	Arsenic	mg/kg	N	6	0.2
T4-B411-01(-41 to -42)	1.0	1.7	ft	Cadmium	mg/kg	Y	1.2	0.2
T4-B411-01(-41 to -42)	1.0	1.7	ft	Copper	mg/kg	Y	23.3	0.2
T4-B411-01(-41 to -42)	1.0	1.7	ft	Lead	mg/kg	Y	440	3.4
T4-B411-01(-41 to -42)	1.0	1.7	ft	Mercury	mg/kg	N	0.05	0.0
T4-B411-01(-41 to -42)	1.0	1.7	ft	Nickel	mg/kg	Y	20	0.4
T4-B411-01(-41 to -42)	1.0	1.7	ft	Zinc	mg/kg	Y	225	0.5

Appendix C
Existing Sediment Chemistry Data within the Berth 410 Dredge Area

Sample ID	Top Depth	Bottom Depth	Depth Unit	Chemical	Unit	Detected?	Result	PEC ER
T4-B411-01(-41 to -42)	1.0	1.7	ft	Dibenzofuran	µg/kg	Y	260	
T4-B411-01(-41 to -42)	1.0	1.7	ft	4,4'-DDD	µg/kg	N	1.9	0.1
T4-B411-01(-41 to -42)	1.0	1.7	ft	4,4'-DDE	µg/kg	N	1.9	0.1
T4-B411-01(-41 to -42)	1.0	1.7	ft	4,4'-DDT	µg/kg	N	4.1	0.1
T4-B411-01(-41 to -42)	1.0	1.7	ft	Total DDT (SMS)	µg/kg	N	4.1	0.0
T4-B411-01(-41 to -42)	1.0	1.7	ft	bis(2-Ethylhexyl)phthalate	µg/kg	N	59	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Butylbenzylphthalate	µg/kg	N	59	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Dimethylphthalate	µg/kg	N	59	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Di-n-octylphthalate	µg/kg	N	59	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Total PCB (SMS)	µg/kg	N	19	0.0
T4-B411-01(-41 to -42)	1.0	1.7	ft	2-Methylnaphthalene	µg/kg	Y	230	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Acenaphthene	µg/kg	Y	2700	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Acenaphthylene	µg/kg	N	59	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Anthracene	µg/kg	Y	1300	1.5
T4-B411-01(-41 to -42)	1.0	1.7	ft	Benzo(a)anthracene	µg/kg	Y	8700	8.3
T4-B411-01(-41 to -42)	1.0	1.7	ft	Benzo(a)pyrene	µg/kg	Y	11000	7.6
T4-B411-01(-41 to -42)	1.0	1.7	ft	Benzo(b)fluoranthene	µg/kg	Y	11000	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Benzo(g,h,i)perylene	µg/kg	Y	7400	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Benzo(k)fluoranthene	µg/kg	Y	3800	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Chrysene	µg/kg	Y	8000	6.2
T4-B411-01(-41 to -42)	1.0	1.7	ft	Dibenzo(a,h)anthracene	µg/kg	Y	2700	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Fluoranthene	µg/kg	Y	10000	4.5
T4-B411-01(-41 to -42)	1.0	1.7	ft	Fluorene	µg/kg	Y	650	1.2
T4-B411-01(-41 to -42)	1.0	1.7	ft	Indeno(1,2,3-cd)pyrene	µg/kg	Y	7100	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Naphthalene	µg/kg	Y	470	0.8
T4-B411-01(-41 to -42)	1.0	1.7	ft	Phenanthrene	µg/kg	Y	4500	3.8
T4-B411-01(-41 to -42)	1.0	1.7	ft	Pyrene	µg/kg	Y	9800	6.4
T4-B411-01(-41 to -42)	1.0	1.7	ft	Total Benzofluoranthenes	µg/kg	Y	14800	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Total HPAH (SMS)	µg/kg	Y	79500	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Total LPAH (SMS)	µg/kg	Y	9620	
T4-B411-01(-41 to -42)	1.0	1.7	ft	Total PAH (SMS)	µg/kg	Y	89120	3.9