

24 May 2001

**SUBJECT: DETERMINATION OF THE SUITABILITY OF SEDIMENT PROPOSED TO BE MAINTENANCE DREDGED FROM THE BAY CENTER MARINA INNER CHANNEL AT WILLAPA BAY, WASHINGTON ( CENWS-ODTS-NS-13) FOR OPEN-WATER DISPOSAL AT EITHER THE GOOSE POINT OR CAPE SHOAL-WATER DISPERSIVE SITES, AS EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT.**

1. The following summary reflects the consensus determination of the Agencies that comprise the regional Dredged Material Management Program (DMMP) for the State of Washington. The agencies include the Corps of Engineers, Department of Ecology, Department of Natural Resources, and the Environmental Protection Agency. The agencies are charged with determining the suitability of dredged material for in-water disposal and have evaluated the proposed dredging associated with the maintenance dredging of the Bay Center Marina Inner Channel at Willapa Bay, Washington. The Agencies assessed the suitability of an estimated 38,000 cubic yards of maintenance material for disposal at either the Goose Point or Cape Shoal-water dispersive sites. The purpose of the dredging is to provide required operational depths for boats accessing the commercial fish base and marina.
2. The project was ranked low for testing purposes, and the sampling and analysis plan was approved on March 15, 2001 by the DMMP agencies for an estimated dredged material footprint volume of 38,000 cubic yards. Sampling of the proposed dredging footprint (see figures 1-3) was conducted on April 7, 2001, and consisted of collecting nine core samples, composited into two surface (C1 = 3 samples; C2 = 6 samples) Dredged Material Management Units (DMMUs) and one subsurface (C3 = 5 samples) DMMU. Chemical testing included analyses of the three DMMUs for the complete Grays Harbor/Willapa Bay chemical of concern list in addition to TBT, Carbaryl, and Glyphosate.
3. The Sampling and Analysis Plan approved by the Agencies for testing of the three DMMUs was followed, and quality assurance/quality control guidelines specified by the Grays Harbor/Willapa Bay Dredged Material Users Manual were generally complied with. The data gathered were deemed sufficient and acceptable for decision making by the DMMP agencies based on best professional judgment.
4. Relevant dates for regulatory tracking purposes are included in Table 1.

**Table 1. Regulatory Tracking Dates**

SAP submittal date:	February 26, 2001
SAP Approval date:	March 15, 2001
Sampling date(s):	April 7, 2001
Sediment data characterization report submittal date:	May 25, 2001
<b>Recency Determination Date: Low (6 years)</b>	April 2007

5. Table 2 summarizes the results of the conventional parameters analyzed in the three composited DMMUs. Chemical analysis of the three composited DMMUs indicated that no detected chemicals or undetected chemicals exceeded the screening level guidelines for the chemicals-of-concern, including TBT. Special COC analyses for Carbaryl (sediments and porewater) and Glyphosate, also were quantitated as non-detects. In addition, none of the chemicals-of-concern exceeded bioaccumulation triggers or maximum level guidelines in the DMMUs. Therefore, no biological testing was required to render a suitability determination.

6. The results of the chemical analysis indicated that all three DMMUs passed the dispersive disposal guidelines for open-water disposal. Thus, the 38,000 cy of dredged material is deemed suitable for placement at either the Goose Point or Cape Shoalwater dispersive disposal site.
7. This memorandum documents the suitability of sediment to be dredged from the Bay Center Channel maintenance dredging project, for disposal at either the Goose Point or Cape Shoalwater dispersive open-water sites. However, this suitability determination does not constitute final agency approval of the project. A dredging plan for this project must be completed as part of the final project approval process. A final decision will be made after full consideration of agency input, and after an alternatives analysis is done under Section 404(b)(1) of the Clean Water Act.

Concur:

6/7/2001  
Date

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David Kendall, Ph.D., Seattle District Corps of Engineers

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**Table 2. Summary of sediment conventional chemistry and grain size results.**

Analyte	C1	C2	C3
Total Solids (%)	43	62	45
Total Volatile Solids (%)	6.9	3.9	7.4
Total Organic Carbon (%)	1.8	1.3	2.4
Ammonia (mg/kg)	170	61	300
Total Sulfides (mg/kg)	1300	680	1100
pH			
Grain Size			
% Gravel	0	0.4	0.6
% Sand	6.7	65.7	10.4
% Silt	70.3	22.7	60.7
% Clay	22.3	11.1	29.3
% Fines	92.6	33.8	90.0

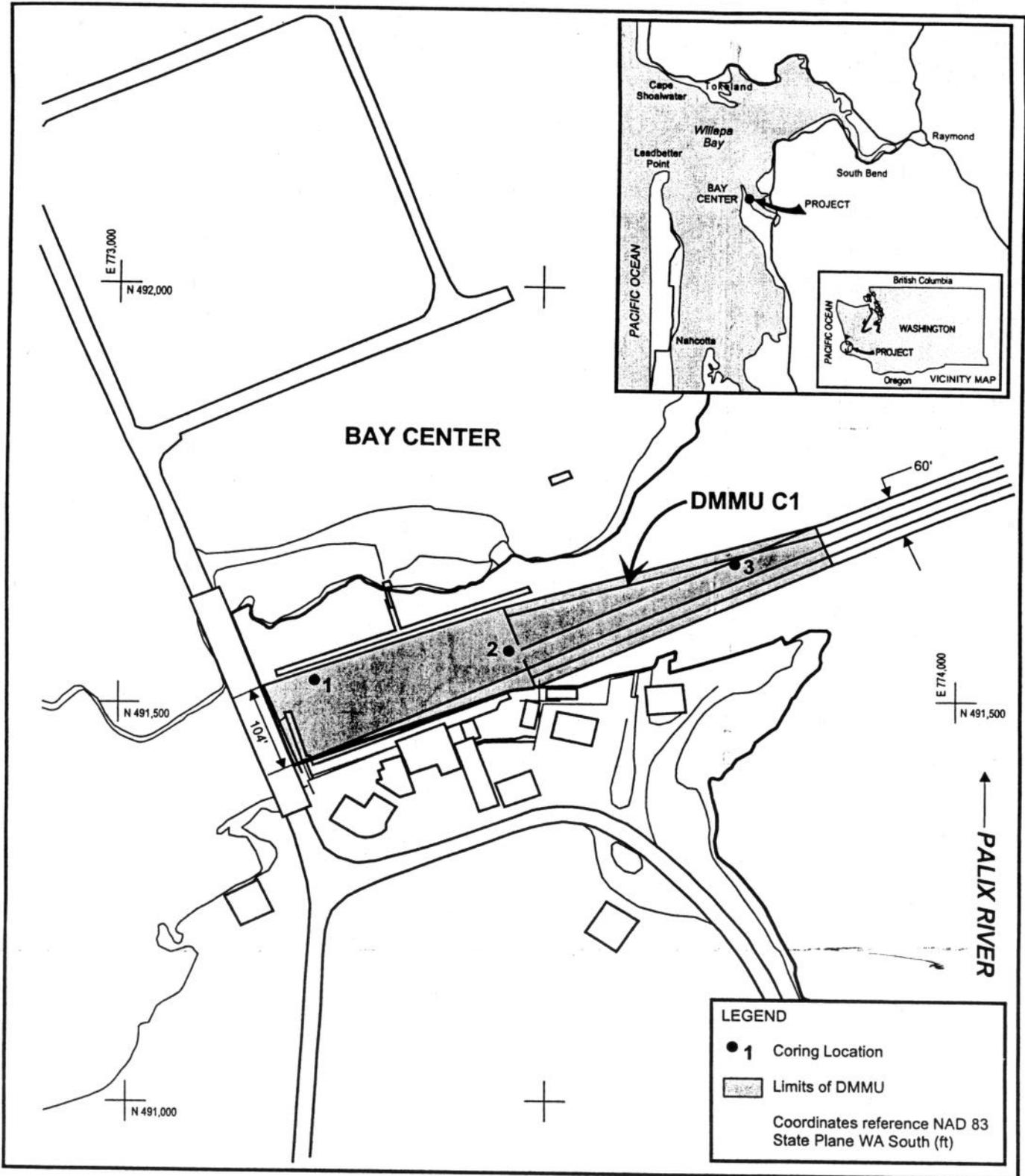


Figure 1. Bay Center Marina Inner Channel coring locations and surface (0-4 ft) DMMU C1.

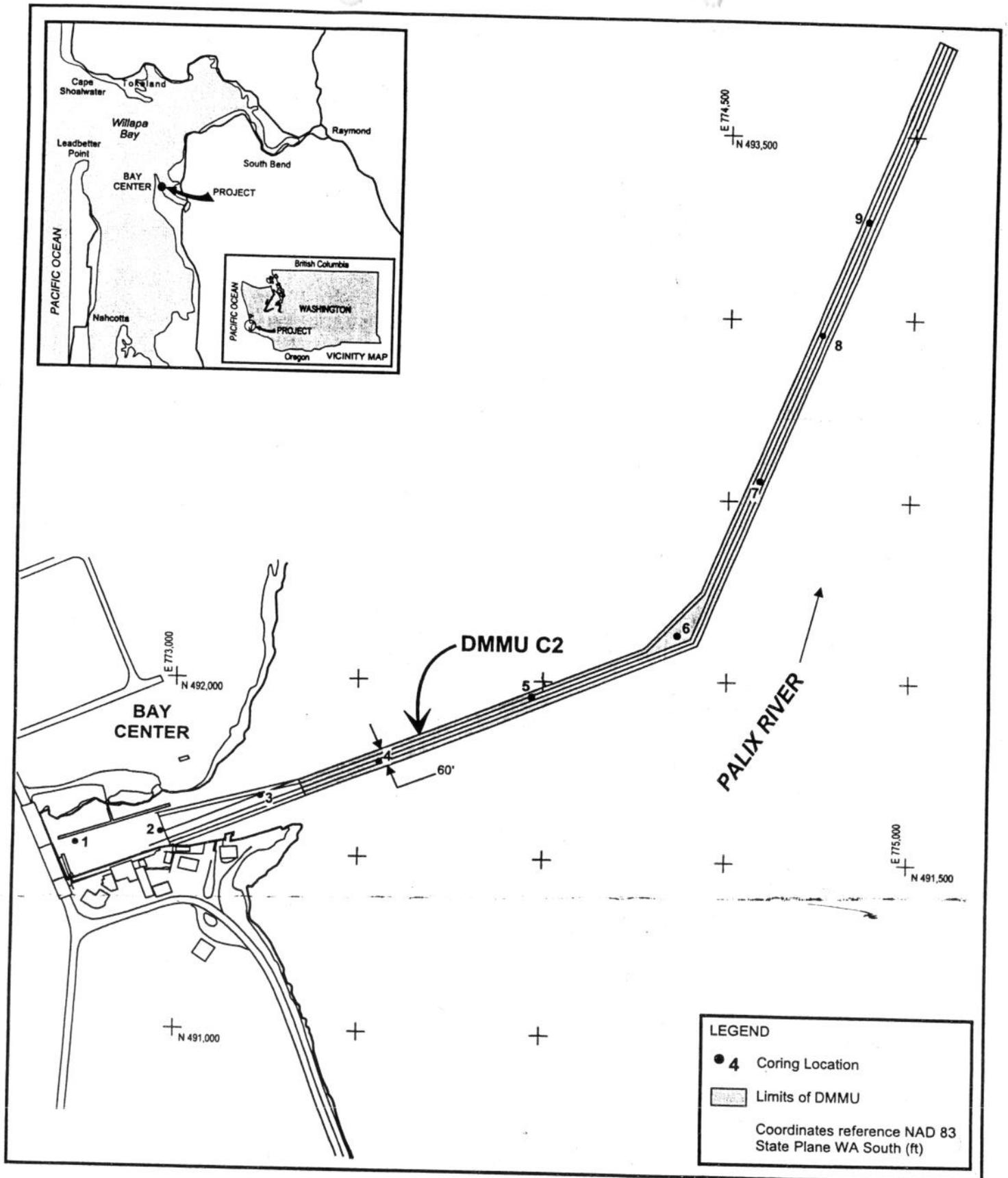


Figure 2. Proposed Bay Center Channel coring locations and surface (0-4 ft) DMMU C2.

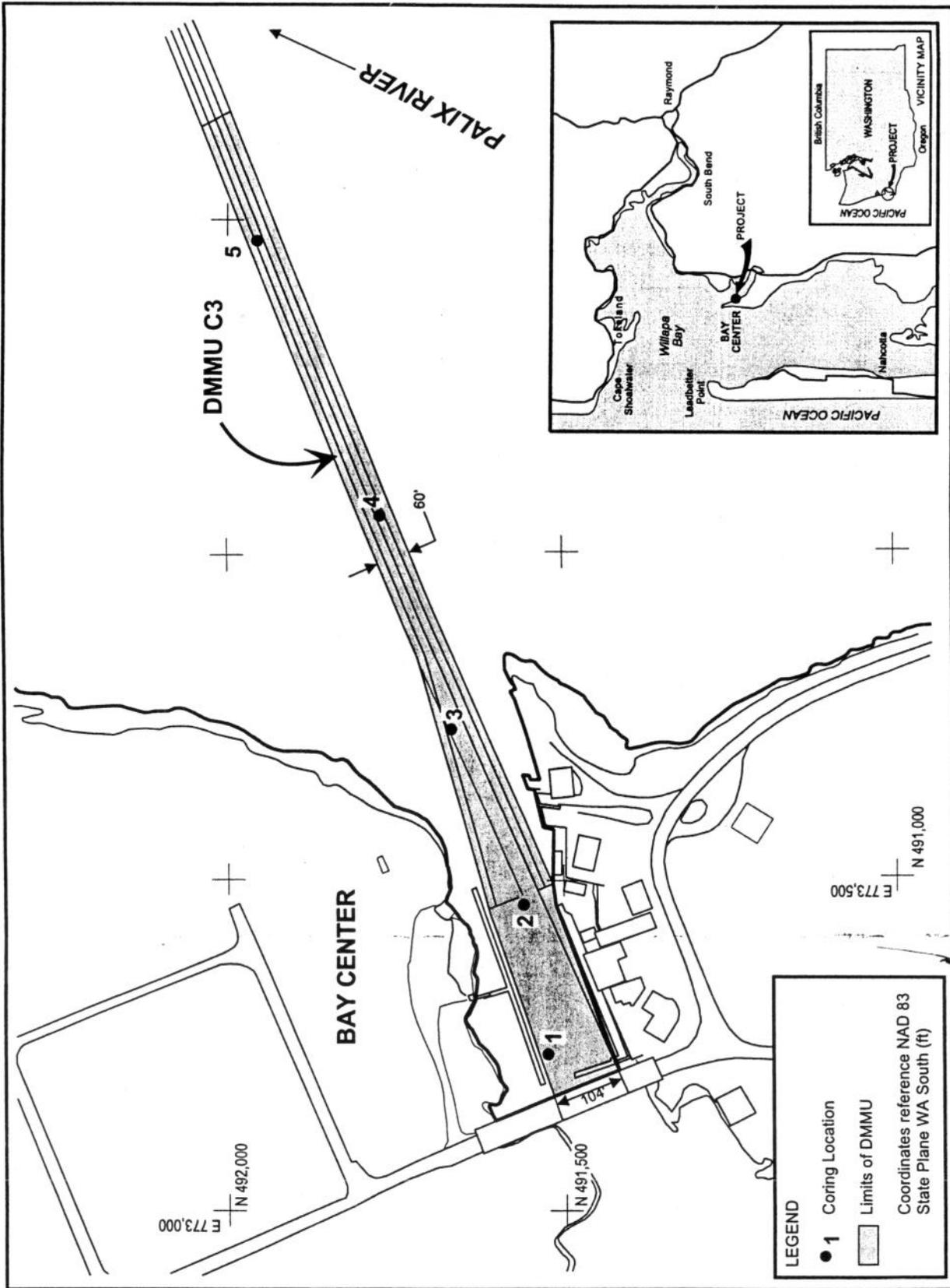


Figure 3. Bay Center Marina Inner Channel coring locations and subsurface (>4 ft) DMMU C3.

DAIS Value Table - Dry Weight Basis

Project: USACE Bay City, Willapa, DY01 BAYCE1AF159

	units	C1	C2	C3
<b>SEDIMENT CONVENTIONALS</b>				
Total Solids	%	43.1	62	45.1
Volatile Solids	%	6.9	3.9	7.4
Total Organic Carbon	%	1.8	1.3	2.4
Ammonia	MG/KG	170	61	300
Total Sulfides	MG/KG	1300	680	1100
<b>METALS</b>				
Antimony (1)	MG/KG	1.2 u	0.6 u	1 u
Arsenic	MG/KG	7.4	8.4	4.4
Cadmium	MG/KG	1.3	0.79	1.3
Chromium (4)	MG/KG	31	21	35
Copper	MG/KG	32	14	33
Lead	MG/KG	16	9.7	16
Mercury	MG/KG	0.19	0.1	0.15
Nickel	MG/KG	20	13	20
Selenium (4)	MG/KG	-	-	-
Silver	MG/KG	0.12 u	0.06 u	0.09 u
Zinc	MG/KG	80	49	82
<b>LPAH</b>				
2-Methylnaphthalene (1)	UG/KG	30 u	22 u	28 u
Acenaphthene (1)	UG/KG	30 u	22 u	28 u
Acenaphthylene (1)	UG/KG	30 u	22 u	28 u
Anthracene (1)	UG/KG	30 u	22 u	28 u
Fluorene (1)	UG/KG	30 u	22 u	28 u
Naphthalene (1)	UG/KG	30 u	22 u	28 u
Phenanthrene (1)	UG/KG	30 u	22 u	28 u
Total LPAH (1)	UG/KG	30 u	22 u	28 u
<b>HPAH</b>				
Benzo(a)anthracene (1)	UG/KG	30 u	22 u	28 u
Benzo(a)pyrene (1)	UG/KG	30 u	22 u	28 u
Benzo(g,h,i)perylene (1)	UG/KG	30 u	22 u	28 u
Benzofluoranthenes (1)	UG/KG	30 u	22 u	28 u
Chrysene (1)	UG/KG	30 u	22 u	28 u
Dibenzo(a,h)anthracene (1)	UG/KG	30 u	22 u	28 u
Fluoranthene	UG/KG	30 u	22 u	28 u
Indeno(1,2,3-c,d)pyrene (1)	UG/KG	30 u	22 u	28 u
Pyrene	UG/KG	30 u	22 u	28 u
Total HPAH (1)	UG/KG	30 u	22 u	28 u
<b>CHLORINATED HYDROCARBONS</b>				
1,2,4-Trichlorobenzene (1)	UG/KG	9 u	7 u	9 u
1,2-Dichlorobenzene (1)	UG/KG	4.3 uj	3.2 uj	4 uj
1,3-Dichlorobenzene (3)	UG/KG	4.3 uj	3.2 uj	4 uj
1,4-Dichlorobenzene (1)	UG/KG	4.3 uj	3.2 uj	4 uj
Hexachlorobenzene	UG/KG	15 u	11 u	14 u
<b>PHTHALATES</b>				
Bis(2-ethylhexyl)phthalate (1)	UG/KG	30 u	22 u	28 u

Butyl benzyl phthalate (1)	UG/KG	30	u	22	u	28	u
Di-n-butyl phthalate (1)	UG/KG	30	u	22	u	28	u
Di-n-octyl phthalate (1)	UG/KG	30	u	22	u	28	u
Diethyl phthalate (1)	UG/KG	30	u	22	u	28	u
Dimethyl phthalate (1)	UG/KG	30	u	22	u	28	u
PHENOLS							
2 Methylphenol (1)	UG/KG	15	u	11	u	14	u
2,4-Dimethylphenol (1)	UG/KG	15	u	11	u	14	u
4 Methylphenol (1)	UG/KG	30	u	22	u	28	u
Pentachlorophenol	UG/KG	120	u	89	u	110	u
Phenol (1)	UG/KG	30	u	22	u	28	u
MISCELLANEOUS EXTRACTABLES							
Benzoic acid (1)	UG/KG	150	u	110	u	140	u
Benzyl alcohol (1)	UG/KG	30	u	22	u	28	u
Dibenzofuran (1)	UG/KG	30	u	22	u	28	u
Hexachlorobutadiene (1)	UG/KG	18	u	13	u	17	u
Hexachloroethane (1)	UG/KG	30	u	22	u	28	u
N-Nitrosodiphenylamine (1)	UG/KG	15	u	11	u	14	u
VOLATILE ORGANICS							
Ethylbenzene (1)	UG/KG	4.3	uj	3.2	uj	4	uj
Tetrachloroethene (1)	UG/KG	4.3	uj	3.2	uj	4	uj
Total Xylene (1)	UG/KG	4.3	uj	3.2	uj	4	uj
Trichloroethene (1)	UG/KG	4.3	uj	3.2	uj	4	uj
PESTICIDES AND PCBs							
Aldrin (3)	UG/KG	1.5	u	1.1	u	1.4	u
Chlordane (2)	UG/KG	0.91	u	0.66	u	0.85	u
Dieldrin (3)	UG/KG	3	u	2.2	u	2.8	u
Heptachlor (3)	UG/KG	2.4	u	1.8	u	2.3	u
Lindane (3)	UG/KG	0.91	u	0.66	u	0.85	u
Total DDT	UG/KG	1.2	u	0.88	u	1.1	u
Total PCBs	UG/KG	61	u	44	u	57	u
ORGANOMETALLICS							
Tributyltin (porewater) (2)	UG/L	0.02	j	0.01	j	0.02	p

A dash indicates that no data exists for this analyte in DAIS

(1) = No BT exists (2) = No ML exists (3) = No BT or ML exists (4) = No SL or ML exists

END OF REPORT