

SUBJECT: RECENCY EXTENSION SUITABILITY DETERMINATION FOR SEDIMENTS PROPOSED TO BE MAINTENANCE DREDGED FROM PORT OF ANACORTES DAKOTA CREEK INDUSTRIES (DCI) SHIPYARD FACILITY / PIER 1, ANACORTES, WA FOR OPEN-WATER DISPOSAL AT THE ROSARIO STRAIT DISPERSIVE OPEN-WATER DISPOSAL SITE, AS EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT

1. The following summary reviews the recent history of sediment testing and consensus suitability determination memorandums (SDM) by the Agencies that comprise the regional Dredged Material Management Program (DMMP) for the State of Washington for the Port of Anacortes Dakota Creek Industries Shipyard Facility and Pier 1. The agencies include the Corps of Engineers, Department of Ecology, Department of Natural Resources, and the Environmental Protection Agency. The purpose of this review is to evaluate a recency extension request for the DCI sediments made by the applicant's agent (**Attachment 1**) due to delays in completing the Corps Section 10/404 permit process.
2. Relevant dates for regulatory tracking purposed are included in Table 1.

Table 1. Regulatory Tracking Information and Dates

CORPS APPLICATION / PUBLIC NOTICE #	2005-01451
Project Ranking: Dakota Creek Industries: Moderate Pier 1: Moderate	Recency date for Moderate Ranking = 5 years
Initial Dakota Creek (POA ¹) SDM Date:	April 12, 2001 (2 surface DMMUs tested, 2 subsurface DMMUs archived)
Initial Dakota Creek Industries (DCI) Sampling Date:	April 25, 2000 (Recency date = April 2005)
Volumes: (Suitable/Unsuitable)	Suitable: 16,000 cy (surface) Suitable: 214,000 cy (subsurface/untested Native) Unsuitable: 16,000 cy (surface) + 1-2 ft of buffer material in underlying Native sediments
Initial Pier 1 (POA) SDM Date:	April 12, 2001 (2 Surface DMMUs)
Initial Pier 1 Sampling Date:	April 24, 2000 (Recency date = April 2005)
Volume: (Suitable/Unsuitable)	Suitable: 32,000 cy; Unsuitable: 0
Recency Extension Pier 1 (P1) Memorandum	September 3, 2004 (2 surface DMMUs)
Recency Pier 1 Sampling Date:	July 15, 2004 (Recency date = July 2009)
Volume: (Suitable/Unsuitable)	Suitable: 32,000 cy
Supplemental Dioxin testing DCI/Pier 1 SDM Date:	September 28, 2005 (4 surface DMMUs)
Supplemental DCI/P1 SDM Sampling Dates:	July 13-15, 2004 (Recency date = July 2009)
Volume: (Suitable/Unsuitable)	DCI Suitable: 230,000 cy (surface/subsurface) Pier 1 Suitable: 32,000 cy (surface) Total Suitable: 262,000 cy DC Unsuitable surface: 16,000 cy (surface) + buffer

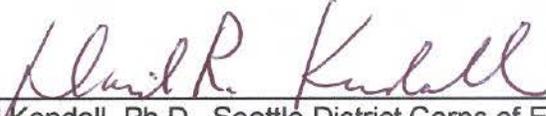
¹ POA = Port of Anacortes

3. **Dakota Creek Industries (DCI) Shipyard (Initial)**. The Initial 2000 characterization of 246,000 cy of potential dredged material at the Dakota Creek Industries (DCI) Shipyard found 16,000 cy of surface sediment suitable and 214,000 cy of uncharacterized subsurface Native material suitable for unconfined-open water disposal, whereas 16,000 cy of surface sediment was unsuitable for unconfined-open-water disposal (12 April 2001 SDM; **Attachment 2, Table 2**).
4. **Pier 1 (Initial)**. The initial 2000 characterization of the 32,000 cy of proposed dredged material at the Pier 1 area found all the material suitable for unconfined –open-water disposal (12 April 2001 SDM; **Attachment 3 Table 2**).
5. **Dioxin Testing (2004)**. Concerns about potential dioxin contamination from an old Scott Paper Mill outfall in the vicinity of the proposed dredging led to supplemental dioxin testing in 2004 within DCI and Pier 1, and the results of that testing (**Table 3**) from both locations were found to be suitable for unconfined-open-water disposal based on the existing dioxin DMMP evaluation framework at the time of the suitability determination dated 28 September 2005 (28 September 2005 SDM; **Attachment 4**).
6. **Pier 1 Recency Evaluation (2004)**. **Attachments 5** provides a letter and letter report describing results of additional testing conducted within each of the two previously tested DMMUs at Pier 1 to evaluate the sediment quality status in support of a recency extension to 2009. These data supported the recency extension to 2009.
7. **Recency**. The recency date for the initial non-dioxin DCI data collected expired in April 2005. The data collected from the 2004 Pier 1 recency evaluation suggest that sediment quality in the Dakota Creek Industries (DCI) area has not changed since the initial characterization, and that the recency date can be extended to July 2009 for the 230,000 cy of suitable material within the proposed DCI dredging footprint. The 16,000 cy of dredged material previously found unsuitable within the DCI footprint remains unsuitable for unconfined-open water disposal. Note that the recency date for the initial Pier 1 data expired in April 2005, but was extended to July 2009 due to recency testing conducted in 2004 (**Attachment 5**). Likewise, the recency date for the dioxin data collected in 2004 is July 2009.
8. This memorandum documents the recency extension of the suitable material within the DCI dredging area to July 2009. However, this recency extension 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.

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Concur:

April 15, 2007
Date


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

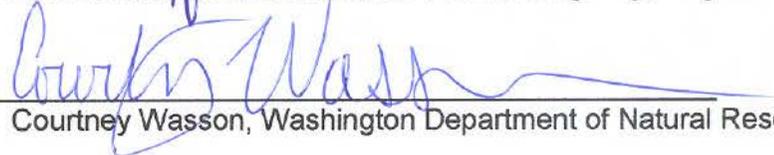
April 15, 2007
Date


Laura Inouye, Washington Department of Ecology

4/5/07
Date


Erika Hoffman, Environmental Protection Agency, Region 10

5 April 07
Date


Courtney Wasson, Washington Department of Natural Resources

Copies Furnished:

Randel Perry, Corps Regulatory Project Manager
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John Herzog, Contractor for Port of Anacortes
DMMO File

Table 2. Initial 2000 DMMP Characterization Summary for Dakota Creek Industries and Pier 1

CHEMICAL NAME	Pier 1 (2000 Characterization)																		Dakota Creek (2000 Characterization)					
	DMMP						DMMU-P1 (Comp-A)			DMMU-P2 (Comp-A)			DMMU-D1 (Comp-A)			DMMU-D2 (Comp-A)								
	Units	SL	BT	ML	SMS		dry wgt	mg/kg-OC	VQ	dry wgt	mg/kg-OC	VQ	dry wgt	mg/kg-OC	VQ	dry wgt	mg/kg-OC	VQ						
					Units	SQS													CSL	DMMP/SMS	SMS	DMMP/SMS	SMS	DMMP/SMS
Antimony	mg/kg	150		200	mg/kg				0.21		J	0.12		J	0.39		J	12.4		J				
Arsenic	mg/kg	57	507.1	700	mg/kg	57	93		3.0			3.1			5.5			28.8						
Cadmium	mg/kg	5.1	11.3	14	mg/kg	5.1	6.7		0.15			0.14			0.45			1.0						
Chromium	mg/kg	(2)	267	(2)	mg/kg	260	270		24.9			17.7			31.7		J	36.1		J				
Copper	mg/kg	390	1,027	1,300	mg/kg	390	390		25.6			18.4			37.4		J	174.0		J				
Lead	mg/kg	450	975	1,200	mg/kg	450	530		16.1			5.7			14.5		J	48.8		J				
Mercury	mg/kg	0.41	1.5	2.3	mg/kg	0.41	0.59		0.040			0.020			0.20			0.22						
Nickel	mg/kg	140	370	370	mg/kg	--	--		31.5			19.6			35.5		J	34.6		J				
Selenium	mg/kg	(2)	3	(2)	mg/kg	--	--		NA			NA			NA			NA						
Silver	mg/kg	6.1	6.1	8.4	mg/kg	6.1	6.1		0.09			0.06			0.12			0.26						
Zinc	mg/kg	410	2,783	3,800	mg/kg	410	960		37.0			36.1			82.7			257						
Tributyltin (porewater as Tin)	ug/L	0.15	0.15		ug/L	0.05			0.021			0.028			0.11			0.15						
Naphthalene	ug/kg	2,100		2,400	mg/kg-OC	99	170		20.0	1.00	U	20.0	1.92	U	64.0	2.34		91.0	5.06					
Acenaphthylene	ug/kg	560		1,300	mg/kg-OC	66	66		20.0	1.00	U	20.0	1.92	U	23.0	0.84		210.0	11.67					
Acenaphthene	ug/kg	500		2,000	mg/kg-OC	16	57		20.0	1.00	U	20.0	1.92	U	20.0	0.36	U	110.0	6.11					
Fluorene	ug/kg	540		3,600	mg/kg-OC	23	79		20.0	1.00	U	20.0	1.92	U	38.0	1.39		120.0	6.67					
Phenanthrene	ug/kg	1,500		21,000	mg/kg-OC	100	480		42	4.20		20.0	1.92	U	230	8.39		1,400	77.78					
Anthracene	ug/kg	960		13,000	mg/kg-OC	220	1,200		20.0	1.00	U	20.0	1.92	U	99	3.61		790	43.89					
2-Methylnaphthalene	ug/kg	670		1,900	mg/kg-OC	38	64		20.0	1.00	U	20.0	1.92	U	20	0.36	U	36	2.00					
Total LPAH	ug/kg	5,200		29,000	mg/kg-OC	370	780		42	4.20		20.0	1.92	U	454	16.57		2,757	153.17					
Fluoranthene	ug/kg	1,700	4,600	30,000	mg/kg-OC	160	1,200		55	5.50		30	5.77		600	21.9		5,200	288.89					
Pyrene	ug/kg	2,600	11,980	16,000	mg/kg-OC	1,000	1,400		100	10.00		28	5.38		900	32.85		6,400	355.56					
Benzo(a)anthracene	ug/kg	1,300		5,100	mg/kg-OC	110	270		32	3.20		20	1.92	U	380	13.87		3,000	166.67					
Chrysene	ug/kg	1,400		21,000	mg/kg-OC	110	460		48	4.80		20	1.92	U	400	14.6		3,100	172.22					
Benzo(a)fluoranthene (b+k)	ug/kg	3,200		9,900	mg/kg-OC	230	450		90	9.00		20.0	1.92	U	520	18.98		3,300	183.33					
Benzo(a)pyrene	ug/kg	1,600		3,600	mg/kg-OC	99	210		50	5.00		20.0	1.92	U	260	9.49		2,400	133.33					
Indeno(1,2,3-cd)pyrene	ug/kg	600		4,400	mg/kg-OC	34	88		28	2.80		20.0	1.92	U	28	1.02		1,200	66.67					
Dibenzo(a,h)anthracene	ug/kg	230		1,900	mg/kg-OC	12	33		20	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
Benzo(g,h,i)perylene	ug/kg	670		3,200	mg/kg-OC	31	78		35	1.75	U	20.0	1.92	U	35	0.64	U	20	0.56	U				
Total HPAH	ug/kg	12,000		69,000	mg/kg-OC	960	5,300		360	36.00		58.0	11.15		360	13.14		25,270	1,404					
1,3-Dichlorobenzene	ug/kg	170		288	mg/kg-OC				3.0		U	3.0	0.29	U	3.0	0.05	U	3.0	0.08	U				
1,4-Dichlorobenzene	ug/kg	110		120	mg/kg-OC	3.1	9		3.0	0.15	U	3.0	0.29	U	3.0	0.05	U	3.0	0.08	U				
1,2-Dichlorobenzene	ug/kg	35		110	mg/kg-OC	2.3	2.3		3.0	0.15	U	3.0	0.29	U	3.0	0.05	U	3.0	0.08	U				
1,2,4-Trichlorobenzene	ug/kg	31		64	mg/kg-OC	0.81	1.8		6.0	0.30	U	6.0	0.58	U	6.0	0.11	U	6.0	0.17	U				
Hexachlorobenzene (HCB)	ug/kg	22	168	230	mg/kg-OC	0.38	2.3		12	0.60	U	12.0	1.15	U	12	0.22	U	12	0.33	U				
Dimethylphthalate	ug/kg	71		1,400	mg/kg-OC	53	53		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
Diethylphthalate	ug/kg	200		1,200	mg/kg-OC	61	110		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
Di-n-butylphthalate	ug/kg	1,400		5,100	mg/kg-OC	220	1,700		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
Butylbenzylphthalate	ug/kg	63		970	mg/kg-OC	4.9	64		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
Bis(2-ethylhexyl)phthalate	ug/kg	1,300		8,300	mg/kg-OC	47	78		200	10.00	U	200.0	19.23	U	200	3.65	U	200	5.56	U				
Di-n-octylphthalate	ug/kg	6,200		6,200	mg/kg-OC	58	4,500		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
Phenol	ug/kg	420		1,200	mg/kg	420	1,200		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
2-Methylphenol	ug/kg	63		77	mg/kg	63	63		60	3.00	U	60.0	5.77	U	60	1.09	U	60	1.67	U				
4-Methylphenol	ug/kg	670		3,600	mg/kg	670	670		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
2,4-Dimethylphenol	ug/kg	29		210	mg/kg	29	29		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
Pentachlorophenol	ug/kg	400	504	690	mg/kg	360	690		60	3.00	U	60.0	5.77	U	60	1.09	U	60	1.67	U				
Benzyl alcohol	ug/kg	57		870	mg/kg	57	73		50	2.50	U	50.0	4.81	U	50	0.91	U	50	1.39	U				
Benzoic acid	ug/kg	650		760	mg/kg	650	650		600	30.00	U	600.0	57.69	U	600	10.95	U	600	16.67	U				
Dibenzofuran	ug/kg	540		1,700	mg/kg	15	58		21.0	2.10		55.0			20	0.36	U	20	0.56	U				
Hexachloroethane	ug/kg	1,400		14,000	mg/kg				20	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
Hexachlorobutadiene	ug/kg	29		270	mg/kg	3.9	6.2		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				
N-Nitrosodiphenylamine	ug/kg	28		130	mg/kg	11	11		20.0	1.00	U	20.0	1.92	U	20	0.36	U	20	0.56	U				

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CHEMICAL NAME	Pier 1 (2000 Characterization)																		Dakota Creek (2000 Characterization)					
	DMMP						DMMU-P1 (Comp-A)			DMMU-P2 (Comp-A)			DMMU-D1 (Comp-A)			DMMU-D2 (Comp-A)								
	Units	SL	BT	ML	Units	SQS	CSL	dry wgt	mg/kg-OC	VQ	dry wgt	mg/kg-OC	VQ	dry wgt	mg/kg-OC	VQ	dry wgt	mg/kg-OC	VQ					
							DMMP/SMS	SMS		DMMP/SMS	SMS		DMMP/SMS	SMS		DMMP/SMS	SMS							
Trichloroethene	ug/kg	160		1,600			8.1		U	6.0		U	4.3	0.08	U	4.8		U						
Tetrachloroethene	ug/kg	57		210			8.1		U	6.0		U	4.3	0.08	U	4.8		U						
Ethylbenzene	ug/kg	10		50			8.1		U	6.0		U	4.3	0.08	U	4.8		U						
Total Zylene (sum of o-,m-,p-)	ug/kg	40		160			8.10		U	6.0		U	4.3	0.08	U	4.8		U						
Total DDT (sum of 4,4'-DDD, 4,4'-DDE and 4,4'-DDT)	ug/kg	6.9	50	69			2.10			5.3			1.0	0.02	U	1.0		U						
Aldrin	ug/kg	10		-			1.00		U	1.0		U	1.0	0.02	U	1.0		U						
Chlordane (alpha)	ug/kg	10	37	-			1.00		u	1.0		u	1.0	0.02	U	1.0		U						
Dieldrin	ug/kg	10		-			1.00		u	1.0		u	1.0	0.02	U	1.0		U						
Heptachlor	ug/kg	10		-			1.00		u	1.0		u	1.0	0.02	U	1.0		U						
Gamma-BHC (Lindane)	ug/kg	10		-			1		u	1.0		u	1.0	0.02	U	1.0		U						
Total PCBs	ug/kg	130	38***	3,100	mg/kg-OC	12	65	14.0	1.4	24.0	4.62		20	0.36	U	20	0.56	U						
Total Solids	%						82.0			81.7			58.3			56.7								
Total Volatile Solids	%						195.0			1.63			6.0			4.96								
Total Organic Carbon	%						1.0			0.52			2.74			1.8								
Total Ammonia	mg/kg						3.4			3.66			31			34		E						
Total Sulfides	mg/kg						121.0			25.0			1,140	J		554		E						
Gravel	%						11.0			1.0			11.0			1.0								
Sand	%						56			48.0			56.0			48.0								
Silt	%						25.0			36.0			25.0			36.0								
Clay	%						8.0			15.0			8.0			15.0								
Fines (percent silt + clay)	%						33.0			41.0			33.0			51.0								
Eohaustorius estuarius hits:																								
Mytilus galloprovincialis hits:																								
Neanthes arenaceodentata hits:																								
Bioassay Determination: (Pass/Fail)							NP			NP			NP			NP								
BTs exceeded:							No			No			No			No								
Bioaccumulation conducted:							No			No			No			No								
Bioaccumulation Determination:																								
ML Rule exceeded:							No			No			No			No								
PSDDA Determination/SMS BU Determination:							S - UCOWD	S - BU		S - UCOWD	S - BU		S - UCOWD	S - BU		Unsuitable (B)	Unsuitable							
DMMU Volume:	cy						16,000			16,000			16,000			16,000								
Rank (L, LM, M, H):							M			M			M			M								
Mean core sampling depth	ft						0-4 ft			0-4 ft			0-4 ft			0-4 ft								
DMMU ID:							DMMU-C1 (Fed Chan.)			DMMU-C2 (Port)			DMMU-C3 (Port)			DMMU-C3 (Port)								

Legend:

- SL / SQS = Screening Level or Sediment Quality Standard exceedance
- S - UCOWD/BU = Suitable for UCOWD & Beneficial Use
- Unsuitable (B) = Unsuitable without toxicity Testing

VQ = Validation Qualifier
 UCOWD = Unconfined open-water disposal
 U = Undetected at the method detection limit
 J = Estimate
 E = Estimate
 NP = Not performed
 TOC normalized (* 1/2 dL for U)

Table 3. Dakota Creek Industries (DCI) and Pier 1, Port of Anacortes

Analyte	WHO (05) TEF	Dakota Creek Industries Dredging Area						Pier 1 Dredging Area						Anacortes Reference Area						Grand Mean
		AN-DC1-1 (1-3 ft)			AN-DC1-2 (1-3 ft)			AN-P1-1 (2-3 ft)			AN-P1-2 (1-3 ft)			AN-REF-1-01-SD (0-15 cm)			AN-REF-2-01-SD (0-15 cm)			
		ng/kg-dw	LQ	TEQ	ng/kg-dw	LQ	TEQ	ng/kg-dw	LQ	TEQ	ng/kg-dw	LQ	TEQ	ng/kg-dw	LQ	TEQ	ng/kg-dw	LQ	TEQ	
2,3,7,8-TCDD	1	1	u	0.5	1	u	0.5	1	u	0.5	1	u	0.5	1	u	0.5	1	u	0.5	
1,2,3,7,8-PeCDD	1	2.5	u	1.25	2.5	u	1.25	2.5	u	1.25	2.5	u	1.25	2.5	u	1.25	2.5	u	1.25	
1,2,3,4,7,8-HxCDD	0.1	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	
1,2,3,6,7,8-HxCDD	0.1	1.78	j	0.178	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	
1,2,3,7,8,9-HxCDD	0.1	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	
1,2,3,4,6,7,8-HpCDD	0.01	55.574		0.55574	25		0.25	2.5	u	0.0125	2.5	u	0.0125	2.742	j	0.02742	6.001		0.06001	
OCDD	0.0003	589.61	B	0.176883	206.812	B	0.062044	10.782	Bj	0.0032346	9.1	Bj	0.00273	16.972	j	0.005092	47.747	B	0.014324	
2,3,7,8-TCDF	0.1	1	u	0.05	1	u	0.1	1	u	0.05	1	u	0.05	1	u	0.05	1	u	0.05	
1,2,3,7,8-PeCDF	0.03	2.5	u	0.0375	2.5	u	0.0375	2.5	u	0.0375	2.5	u	0.0375	2.5	u	0.0375	2.5	u	0.0375	
2,3,4,7,8-PeCDF	0.3	2.5	u	0.375	2.5	u	0.375	2.5	u	0.375	2.5	u	0.375	2.5	u	0.375	2.5	u	0.375	
1,2,3,4,7,8-HxCDF	0.1	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	
1,2,3,6,7,8-HxCDF	0.1	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	
2,3,4,6,7,8-HxCDF	0.1	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	
1,2,3,7,8,9-HxCDF	0.1	2.5	u	0.25	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	2.5	u	0.125	
1,2,3,4,6,7,8-HpCDF	0.01	5.652		0.05652	5.104		0.05104	2.5	u	0.0125	2.5	u	0.0125	2.5	u	0.0125	2.5	u	0.0125	
1,2,3,4,7,8,9-HpCDF	0.01	2.5	u	0.025	2.5	u	0.0125	2.5	u	0.0125	2.5	u	0.0125	2.5	u	0.0125	2.5	u	0.0125	
OCDF	0.0003	10.785	j	0.003236	18.241		0.005472	5	u	0.00075	5	u	0.00075	5	u	0.00075	5	u	0.00075	
Total TEQ: (U = 1/2 DL)				4.083			3.519			3.129			3.128			3.146			3.188	3.365
Total TEQ: (U = 0)				0.970			0.369			0.003			0.003			0.033			0.074	
Total TOC, %:				2.24			4.25			0.27			0.64			1.17			0.74	

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Attachment 1

From: john herzog [john_herzog@comcast.net]
Sent: Friday, March 16, 2007 3:02 PM
To: Kendall, David R NWS
Cc: 'Connie Thoman'; 'Bob Elsner'; john_herzog@comcast.net
Subject: Recency Update for Dakota Creek Shipyard Open Water Disposal Determination

Attachments: Recency Ext Letter Report 090304.pdf; PSDDA Request Letter to DMMO 071404.pdf
David.

Thank you for prioritizing the update for the Dakota Creek Shipyard Open Water Suitability Determination.

The Port of Anacortes is seeking extension of the Dakota Creek Shipyard recency determination to allow for dredging activities to be conducted in the 2008/2009 dredging window. Originally, the project was targeted at the 2007/2008 dredging window however; the Corps permit was not able to be issued in time to allow for bidding and contractor procurement occur prior to the in-water work window.

Having reviewed the project files, we wanted to call to your attention the recency update request for the Pier 1 project which is located immediately adjacent to Dakota Creek. For this recency extension, the Port collected two supplemental samples of the Pier 1 DMMUs meeting open water criteria. The sampling was completed in 2004 and was intended to confirm that the sediment quality condition had not changed since the original characterization study. The supplemental data confirmed that the sediment condition had not changed since the initial characterization. Also at this time, data was also collected to address concerns about potential for dioxin contamination at Pier 1 and Dakota Creek Shipyard (due to new information on a historical outfall located at the sites). The dioxin sampling and analysis showed that the detected concentrations were below both the DMMP guidance criteria and also background location concentrations for Fidalgo Bay. By the DMMP guidelines, the recency determination for data collected in 2004 would extend five to seven years from the time of collection and is therefore, current.

We believe that the 2004 Pier 1 characterization data provides strong evidence that the conditions of Dakota Creek DMMU DCI-1 have not changed since the initial dredged material characterization. For Dakota Creek DCI-1 and the native material underlying both DMMUs is approved for open water disposal (reference Figure 1 of the attached September 3, 2004 Memorandum). DMMU DCI-2 failed open water criteria and will be disposed at an upland site. In addition to the sampling and analysis data, the Port has not noted any changed conditions at the Dakota Creek site that would cause concern for sediment contamination. Since the original characterization there have been no known environmental releases and the tenant has maintained their required best management practices.

We hope that this information is considered in your evaluation of the Dakota Creek recency determination. Please contact me if you have any questions.

John Herzog

john_herzog@comcast.net | 206.406.6431

12 April 2001

MEMORANDUM FOR RECORD

SUBJECT: DETERMINATION OF THE SUITABILITY OF DREDGED MATERIAL TESTED UNDER DMMP EVALUATION PROCEDURES FOR THE PORT OF ANACORTES DAKOTA CREEK DREDGING PROJECT WITH PROPOSED DISPOSAL AT THE ROSARIO STRAIT OPEN WATER DISPOSAL SITE.

1. The Port of Anacortes proposes to dredge in the vicinity of Dakota Creek, located on the northern shoreline of the City of Anacortes. The estimated volume of material proposed for dredging is 246,000 cubic yards. The following summary reflects the DMMP agencies (Corps of Engineers, Department of Ecology, Department of Natural Resources and the Environmental Protection Agency) consensus decision on the acceptability of the sampling plan and all relevant test data to make a determination of suitability for the disposal of the material at a PSDDA open-water disposal site.
2. The ranking for this area is "moderate" based on the guidance found in the PSDDA User's Manual (1998).
3. A sampling and analysis plan was completed for this project and approved by the DMMP agencies on 14 December 1998. Sampling for this project was performed on 25 April 2000.

SAP approval date	14 December 1998
Sampling date	25 April 2000
Data Report submittal date	June 2000
Recency determination dates	April 2005 to April 2007

4. Samples were taken from eight surface locations and composited for two analyses (D1-A and D2-A). Samples were also taken for analysis of subsurface sediments to confirm the presence of native sediments. Analysis was completed for all chemicals of concern. In addition, pore-water analysis for tributyltin was completed on both surface composites. Two subsurface samples were composited in area D1 (composite D1-B). In area D-2, the sampling device was unable to penetrate the native subsurface and insufficient material was available for analysis. Subsurface samples of native material from D1-B were archived, with testing dependent on the results of the surface samples, and the suitability of the surface material for open-water disposal.

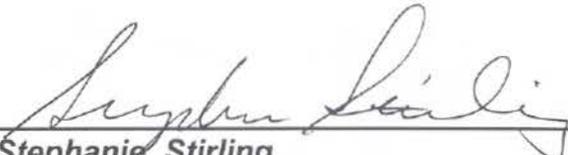
Attachment 2

5. There were no exceedances of 1998 DMMP screening levels for the standard list of chemicals of concern in DMMU D1-A. DMMU D2-A had exceedances of screening levels for seven HPAHs as well as for total HPAH. (Table 2 lists the screening level exceedances). TBT was detected in both samples, but well below the screening level. All detection limits were below screening level. The archived native sediment samples for D1-B were not analyzed, based on these results.
6. The Port of Anacortes chose to not pursue bioassay testing for the sediment represented by D2-A. Based on the chemistry data alone, the 16,000 cubic yards of sediment represented by this sample is not suitable for open water disposal. Native subsurface samples were not analyzed due to sampler refusal in the consolidated native sediment. Since chemistry data is not available for this material, a 1-2 foot buffer of native material must be removed with the overlying unsuitable material to assure that only suitable material is left exposed at the surface and only suitable material is placed at the open-water disposal site.
7. In summary, the DMMP-approved sampling and analysis plan was followed, and quality assurance, quality control guidelines specified by the DMMP were followed. The data gathered were deemed sufficient and acceptable for regulatory decision-making under the DMMP program. Based on the results of the chemical testing, the consensus determination of the DMMP agencies is that approximately 230,000 cubic yards (16,000 surface, 214,000 native subsurface) from the Port of Anacortes Dakota Creek dredging project are suitable for open-water disposal at either a dispersive or nondispersive site. Approximately 16,000 cubic yards of material from Dakota Creek is not suitable for open-water disposal.
8. This memorandum documents the suitability of proposed dredged sediments for disposal at a PSDDA open water disposal site or for beneficial use. It 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, including both vertical and horizontal buffers for the unsuitable material. A final decision will be made after full consideration of agency and public input, and after an alternatives analysis is done under section 404 (b) 1 of the Clean Water Act.

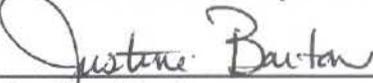
Port of Anacortes
Dakota Creek

Concur:

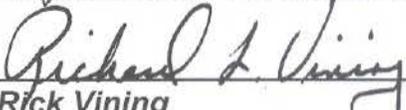
5/1/01
Date


Stephanie Stirling
Seattle District Corps of Engineers

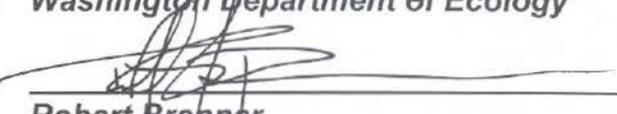
5-17-01
Date


Justine Barton
Environmental Protection Agency, Region 10

5/22/01
Date


Rick Vining
Washington Department of Ecology

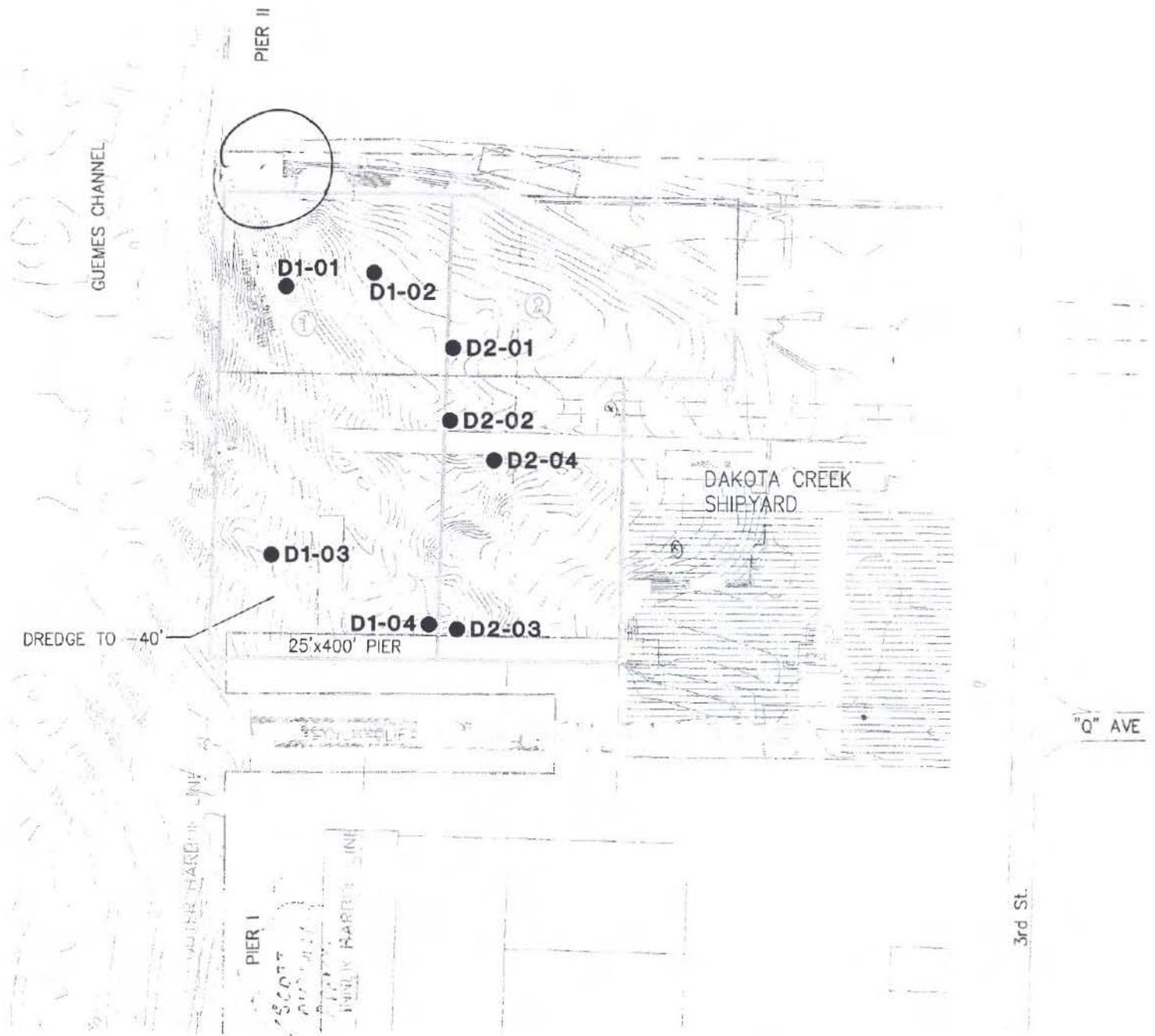
5/18/01
Date


Robert Brenner
WA Department of Natural Resources

Copies Furnished:

- EPA/Justine Barton
- DOE/Rick Vining
- DNR/Robert Brenner
- CENWS/OD-RG/Olivia Romano

Confirmed Sampling Location Plan Dakota Creek



DMMU Boundary

DMMU Designation

● D1-01

Confirmed Sample Location and Number



0 150 300



Scale in Feet



HARTCROWSER

J-7154

8/00

Figure 2

Note: Base map prepared from electronic file provided by Peratrovich, Nottingham & Drage, Inc., entitled "Shipyard Reconfiguration Surface DMMU's", dated September 1995.

Table 1. Sediment Conventional Parameters

Parameter	DMMU D1-A	DMMU D2-A
Total Solids (%)	58.3	56.7
Total Organic Carbon (%)	2.74	1.8
Bulk Ammonia (mg/kg)	30.9	34.2
Total Sulfides (mg/kg)	1140	554
Grain-size		
gravel	11	1
sand	56	48
silt	25	36
clay	8	15

Table 2. Screening Level Exceedances

Analyte (in $\mu\text{g}/\text{kg}$)	DMMP Screening Level (in $\mu\text{g}/\text{kg}$)	DMMU D2-A
Benzo(a)anthracene	1300	3000
Benzo(a)pyrene	1600	2400
Total Benzofluoranthenes	3200	3300
Benzo(g,h,i)perylene	1400	3100
Fluoranthene	1700	5200
Indeno(1,2,3-cd)pyrene	600	1200
Pyrene	2600	6400
Total HPAHs	12000	25270

12 April 2001

MEMORANDUM FOR RECORD

SUBJECT: DETERMINATION OF THE SUITABILITY OF DREDGED MATERIAL TESTED UNDER DMMP EVALUATION PROCEDURES FOR THE PORT OF ANACORTES PIER 1 DREDGING PROJECT WITH PROPOSED DISPOSAL AT THE ROSARIO STRAIT OPEN WATER DISPOSAL SITE.

1. The Port of Anacortes proposes to dredge in the vicinity of Pier I, located on the northern shoreline of the City of Anacortes. The estimated volume of material proposed for dredging is 32,000 cubic yards. The following summary reflects the DMMP agencies (Corps of Engineers, Department of Ecology, Department of Natural Resources and the Environmental Protection Agency) consensus decision on the acceptability of the sampling plan and all relevant test data to make a determination of suitability for the disposal of the material at a PSDDA open-water disposal site.
2. The ranking for this area is "moderate" based on the guidance found in the PSDDA User's Manual (1998).
3. A sampling and analysis plan was completed for this project and approved by the DMMP agencies on 14 December 1998. Sampling for this project was performed on 25 April 1999.

SAP approval date	14 December 1998
Sampling date	24 April 2000
Data Report submittal date	June 2000
Recency determination dates	April 2005 to April 2007

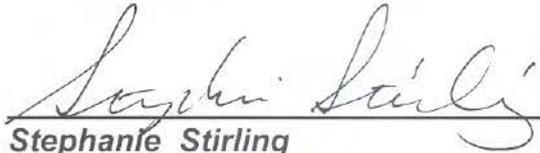
4. Samples were taken from a total of 8 surface locations and composited for two analyses. Analysis was completed for all chemicals of concern. In addition, pore-water analysis for tributyltin was completed on both composites. Subsurface samples of native material were collected and archived, with testing dependent on the results of the surface samples, and the suitability of the surface material for open-water disposal.
5. There were no exceedances of 1998 DMMP screening levels for the standard list of chemicals of concern. TBT was detected in both samples, but well below the screening level. All detection limits were below screening level. The archived native sediment samples were not analyzed, based on these results.

Attachment 3.

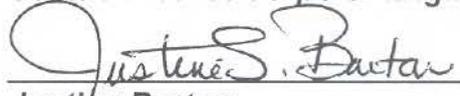
6. In summary, the DMMP-approved sampling and analysis plan was followed, and quality assurance, quality control guidelines specified by the DMMP were followed. The data gathered were deemed sufficient and acceptable for regulatory decision-making under the DMMP program. Based on the results of the chemical testing, the consensus determination of the DMMP agencies is that all 32,000 cubic yards from the Port of Anacortes Pier 1 dredging project are suitable for open-water disposal at either a dispersive or non-dispersive open-water disposal site.
7. This memorandum documents the suitability of proposed dredged sediments for disposal at a PSDDA open water disposal site or for beneficial use. It 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 and public input, and after an alternatives analysis is done under section 404 (b) 1 of the Clean Water Act.

Concur:

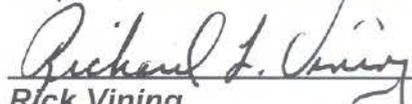
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Date


Stephanie Stirling
Seattle District Corps of Engineers

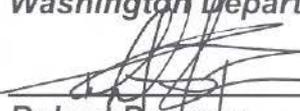
5/7/01
Date


Justine Barton
Environmental Protection Agency, Region 10

5/22/01
Date


Rick Vining
Washington Department of Ecology

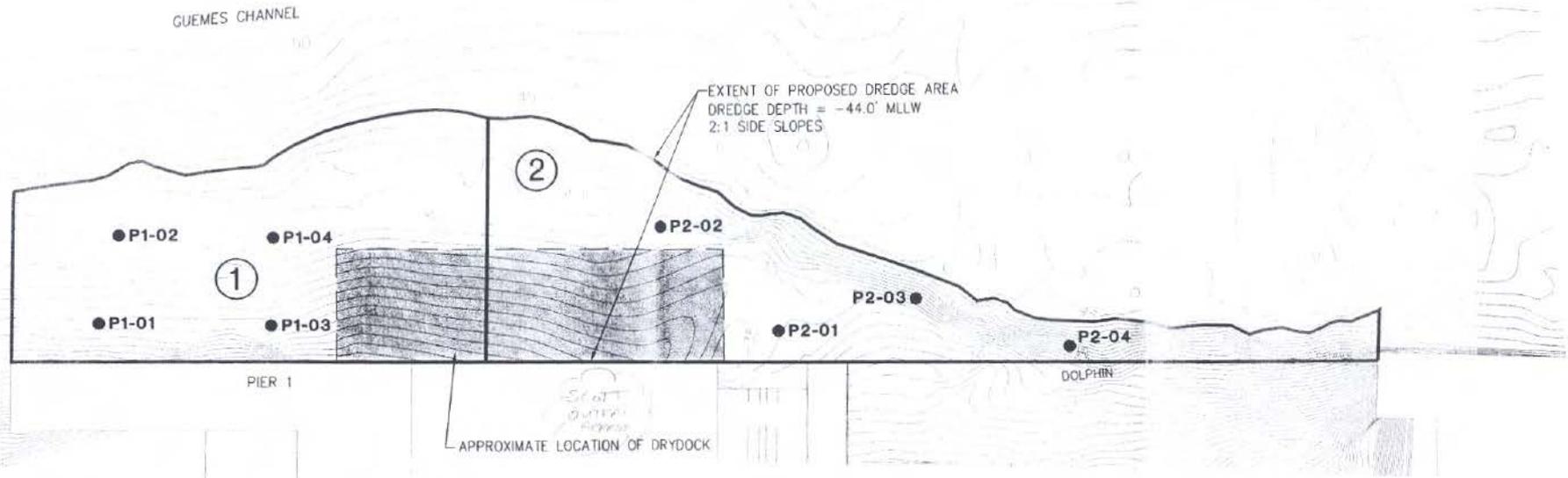
5/18/01
Date


Robert Brenner
WA Department of Natural Resources

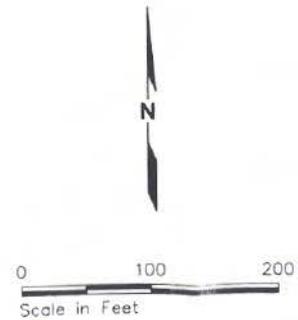
Copies Furnished:

EPA/Justine Barton
DOE/Rick Vining
DNR/Robert Brenner
CENWS/OD-RG/Olivia Romano

Confirmed Sampling Location Plan
Pier 1



- ① Surface DMMU Designation
- P1-01 Confirmed Sample Location and Number



Note: Base map prepared from drawing provided by Peratovich, Nottingham & Droge, Inc. entitled "Plan View," dated September 7, 1998.

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MEMORANDUM FOR RECORD

SUBJECT: DETERMINATION OF THE SUPPLEMENTAL SUITABILITY OF SEDIMENT PROPOSED TO BE MAINTENANCED DREDGED FROM DAKOTA CREEK INDUSTRIES (DCI) SHIPYARD FACILITY/PIER 1, ANACORTES, WA FOR OPEN-WATER DISPOSAL AT THE PORT TOWNSEND WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES (DNR) OPEN WATER DISPOSAL SITE, 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 proposed dredged material for in-water disposal and have evaluated the proposed maintenance dredging of 273,000 cubic yards (CY) from the Dakota Creek Industries (DCI) Shipyard Facility and Port of Anacortes Pier 1 located in Anacortes, WA.

The Port of Anacortes proposes to dredge approximately 241,000 cy of sediment from the two DMMUs at the DCI site and approximately 32,000 CY from the two DMMUs at the adjacent Pier 1 site. Of the 241,000 CY of sediment proposed for dredging at the DCI site, approximately 230,000 cy did not exceed PSDDA Screening Levels (SLs) and subsequently were determined to be suitable for open-water disposal whereas, approximately 16,000 CY (surficial material located within DMMU 1) will require disposal at an appropriate upland facility. All of the 32,000 CY characterized at Pier 1 did not exceed SLs and was determined to be suitable for open water.

Dioxin was not previously identified as a potential contaminant of concern in the initial sediment characterization studies, and subsequently, was not analyzed. To address concerns for the potential for contamination associated with historical pulp mill-related discharges at the site, four core samples were collected from the 2 to 4 foot layer within the established DCI and Pier 1 DMMUs and analyzed for dioxin. The stations will be located to sample historically-deposited material present at the 2 to 4 foot interval. Selection of specific sampling locations was based on a review of core log observations available from previous dredge material characterization studies, conservatively focusing on areas of finer-grained sediment deposits.

Two reference samples were collected using a van Veen-type grab sampler from Fidalgo Bay and Padilla Bay to characterize regional background sediment dioxin chemical concentrations. Reference sediment samples were surficial; the collected interval was from the 0 to 15 cm below mudline to characterize the dioxin concentration within the biologically mixed surface layer.

2. The project was ranked moderate for testing purposes. The sampling and analysis plan was approved on May 19, 2004 by the DMMP agencies for an estimated total dredged material footprint volume of 273,000 cubic yards. Five sediment cores were collected using a vibracorer from DMMUs DCI 1 (two cores), DCI 2 (one core), P1 (one core), P2 (one core). For each core,

a sample from the 1-to-3-foot interval was targeted. For DMMU DCI 1, samples DCI 1A and DCI 1B were composited into a single sample.

3. Relevant dates for regulatory tracking purposed are included in Table 1.

Table 1. Regulatory Tracking Information and Dates

Supplemental SAP submittal date:	March 2004
Supplemental SAP Approval letter date:	19 May 2004
Supplemental Sampling date(s):	13/15 July 2004
Supplemental Sediment data characterization report submittal date:	October 2004
Supplemental DAIS Tracking Number	ANAC1-1-A-O-218
Original Dakota Creek SAP submittal date:	14 December 1998
Original Dakota Creek SAP Approval letter Date:	25 April 2000
Original Dakota Creek Sampling date(s):	25 April 2000
Original Dakota Creek Sediment data characterization report submittal date:	June 2000
Dakota Creek DAIS Tracking Number:	ANAC11AF153
Original Dakota Creek Suitability Memorandum Date:	12 April 2001
Original Pier 1 SAP submittal date:	14 December 1998
Original Pier 1 SAP Approval letter Date:	14 December 1998
Original Pier 1 Sampling date(s):	24 April 2000
Original Pier 1 Sediment data characterization report submittal date:	June 2000
Pier 1 DAIS Tracking Number:	ANAC21AF168
Original Pier 1 Suitability Memorandum Date:	12 April 2001
Recency Determination Dates:	April 2005 to April 2007 (based upon the April 2001 SDM)

4. The sampling and Analysis Plan approved by the agencies for testing for the four DMMUs was followed, and quality assurance/quality control guidelines specified by the PSDDA 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 and current program guidelines.

5. Site conditions required modification to the original compositing and analysis approach in consultation with DMMO. Deviations from the SAP included:

- Samples were taken from the 1-to-3-foot interval in accordance with direction provide by the DMMP.
- A second core sample (AN-DCI-1B) was added in DMMU DCI-1 at a location deemed most likely to accumulate fined-grained sediment and that has not previously been dredged per comments by DMMP.

- The sample from core AN-P1-1 was from the 2-to-3-foot interval because the material from 1-to-2-foot interval was primarily gravel and there was not enough sediment to extract a sample.

6. Conventional analyses (see Table 2): total solids 60%, total organic carbon 2.24%. Grain size: 14.1% gravel, total sands 42.84%, silt 26.6% and clay 13%.

7. Dioxin concentrations in the DCI and Pier 1 DMMUs were below both the DMMP criterion for 2, 3, 7, 8-TCDD (5ng/kg) and the calculated DMMP 2, 3, 7, 8-TCDD Toxicity Equivalent Concentration (TEC) (15ng/kg) (see Table 2).

8. The results of the chemical analysis for the sediment samples confirmed the previously issued open water disposal suitability issued for Dakota Creek and Pier 1 in April 2001, summarized below:

Dakota Creek. Samples were taken from eight surface locations and composited for two analyses (D1-A and D2-A). Samples were also taken for analysis of subsurface sediments. Analysis was completed for all chemicals of concern. In addition, pore-water analysis for TBT was completed on both surface composites. There were no exceedances of DMMP screening levels for the standard list of chemicals of concern in DMMU D1-A. DMMU D2-A had exceedances of screening levels for seven HPAHs as well as for total HPAH. TBT was detected in both samples, but well below the screening level. All detection limits were below screening levels. The Port of Anacortes chose not to pursue bioassay testing for the sediment represented by D2-A. Based on the chemistry data alone, the 16,000 cubic yards of sediment represented by this sample is not suitable for open water disposal.

Native subsurface samples were not analyzed due to sampler refusal in the consolidated native sediment. Since chemistry data was not available for this material, a 1-2 foot buffer of native material must be removed with the overlying unsuitable material to assure that only suitable material is left exposed at the surface and only suitable material is placed at the open-water disposal site.

Based on the results of the chemical testing the consensus determination of the DMMP agencies was that approximately 230,000 CY (16,000 surface, 214,000 native subsurface) from the port of Anacortes Dakota Creek dredging project are suitable for open-water disposal at either a dispersive or non-dispersive site. Approximately 16,000 cubic yards of material from Dakota Creek is not suitable for open-water disposal.

Pier 1. Samples were taken from a total of 8 surface locations and composited for two analyses. In addition, pore-water analysis for tributyltin was completed on both composites. There were no exceedances of 1998 DMMP screening levels. TBT was detected in both samples, but well below the screening level. All 32,000 CY from the Port of Anacortes Pier 1 dredging project are deemed suitable for open-water disposal.

9. This memorandum documents the suitability of sediment to be dredged from the DCI/Pier 1 maintenance dredging project for disposal at a DNR approved dispersive open-water disposal

site. 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 alternative analysis is done under Section 404(b) (1) of the Clean Water Act.

Table 2. Testing Summary

Analytical Results for DCI/Pier 1 Sediment Core Samples

Sample ID		AN-DCI-1	AN-DCI-2	AN-P1-1	AN-P1-2	AN-REF-1-01-SD	AN-REF-2-01-SD
Sample Date		7/15/2004	7/15/2004	7/15/2004	7/15/2004	7/13/2004	7/13/2004
Depth		1-3 ft	1-3 ft	2-3 ft	1-3 ft	0-15 cm	0-15 cm
Conventionals							
Total solids	%	60	60.4	67.2	78.2	58	70.6
Total organic carbon	%	2.24	4.25	0.27	0.64	1.17	0.74
Grain Size							
Gravel	%	14.1	1.71	7.84	3.96	0.02	0.04
Sand, Very Course	%	4.35	2.21	3.26	3.25	0.36	0.41
Sand, Course	%	3.97	3.95	4.14	3.9	0.47	4.37
Sand, Medium	%	5.22	11.2	6.85	6.82	0.74	19.5
Sand, Fine	%	14.7	36	7.54	10.2	16.9	24.8
Sand, Very Fine	%	14.6	26	7.08	3.38	33	6.67
Silt	%	26.6	14.5	33.8	35	34.6	30
Clay	%	13	4.4	24.6	31.9	10.8	6.23
Dioxins							
1,2,3,4,6,7,8-HpCDD	ng/kg	55.574	25.002	2.5 U	2.5 U	2.742 J	6.001
1,2,3,4,6,7,8-HpCDF	ng/kg	5.652	5.104	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,4,7,8,9-HpCDF	ng/kg	2.5 U	2.5 U				
1,2,3,4,7,8-HxCDD	ng/kg	2.5 U	2.5 U				
1,2,3,4,7,8-HxCDF	ng/kg	2.5 U	2.5 U				
1,2,3,6,7,8-HxCDD	ng/kg	1.76 J	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,6,7,8-HxCDF	ng/kg	2.5 U	2.5 U				
1,2,3,7,8,9-HxCDD	ng/kg	2.5 U	2.5 U				
1,2,3,7,8,9-HxCDF	ng/kg	2.5 U	2.5 U				
1,2,3,7,8-PeCDD	ng/kg	2.5 U	2.5 U				
1,2,3,7,8-PeCDF	ng/kg	2.5 U	2.5 U				
2,3,4,6,7,8-HxCDF	ng/kg	2.5 U	2.5 U				
2,3,4,7,8-PeCDF	ng/kg	2.5 U	2.5 U				
2,3,7,8-TCDD	ng/kg	1 U	1 U	1 U	1 U	1 U	1 U
2,3,7,8-TCDF	ng/kg	1 U	1 UC	1 U	1 U	1 U	1 U
OCDD	ng/kg	589.61 B	205.812 B	10.762 BJ	9.1 BJ	16.972 J	47.747 B
OCDF	ng/kg	10.785 J	18.241	5 U	5 U	5 U	5 U
Total HpCDD	ng/kg	187.883	74.169	1.144	2.5 U	2.742	13.324
Total HpCDF	ng/kg	17.656	15.014	2.5 U	2.5 U	2.5 U	2.5 U
Total HxCDD	ng/kg	14.483	4.915	2.5 U	2.5 U	1.218	2.5 U
Total HxCDF	ng/kg	8.325	6.699	2.5 U	2.5 U	2.5 U	2.5 U
Total PeCDD	ng/kg	2.5 U	3.567	2.5 U	2.5 U	2.5 U	2.5 U
Total PeCDF	ng/kg	0.737	4.561	2.5 U	2.5 U	2.5 U	2.5 U
Total TCDD	ng/kg	1 U	5	1 U	1 U	1 U	1 U
Total TCDF	ng/kg	1 U	1.084	1 U	1 U	1 U	1 U
Dioxin TEQ	ng/kg	1.39	0.635	0.0108	0.0091	0.0444	0.108

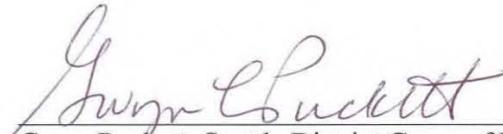


Table 2. Sampling Station Boring Depths and Elevations

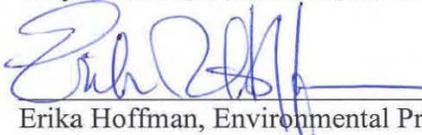
Sample ID	Sampling Depth (ft)	Mudline Elevation (ft MLLW)	Subsample Intervals, Designations, and Elevations
AN-DCI-1A	-18.7	-20.1	-23.1
AN-DC1-1B	-6.8	-7.8	-10.8
AN-DC1-2	-4.9	-2.4	-5.4
AN-P1-1	-34.7	-33.1	-36.1
AN-P1-2	-33.3	-33.4	-36.4
AN-REF-1	-10.6	-9.5	(0 to 15 cm interval)
AN-REF-2	-13.5	-5.4	(0 to 15 cm interval)

Concur:

11/3/2005
Date


Gwyn Puckett, Seattle District Corps of Engineers

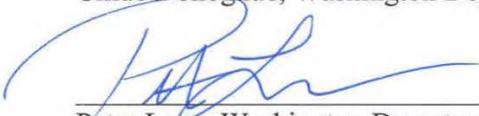
11/3/2005
Date


Erika Hoffman, Environmental Protection Agency

11/3/05
Date


Cinde Donoghue, Washington Department of Ecology

11/3/2005
Date


Peter Leon, Washington Department of Natural Resource

Copies Furnished:

Regulatory Branch Project Manager
Jonathan Freedman, EPA
Erika Hoffman, EPA
John Malek, EPA
Cinde Donoghue, Ecology
Helen Pressley, Ecology
Tom Gries, Ecology
Peter Leon, DNR
DMMO File

Table 2. Testing Summary

Analytical Results for DCI/Pier 1 Sediment Core Samples

Sample ID	AN-DCI-1	AN-DCI-2	AN-P1-1	AN-P1-2	AN-REF-1-01-SD	AN-REF-2-01-SD	
Sample Date	7/15/2004	7/15/2004	7/15/2004	7/15/2004	7/13/2004	7/13/2004	
Depth	1-3 ft	1-3 ft	2-3 ft	1-3 ft	0-15 cm	0-15 cm	
Conventionals							
Total solids	%	60	60.4	87.2	78.2	58	70.6
Total organic carbon	%	2.24	4.25	0.27	0.64	1.17	0.74
Grain Size							
Gravel	%	14.1	1.71	7.84	3.96	0.02	0.04
Sand, Very Course	%	4.35	2.21	3.26	3.25	0.36	0.41
Sand, Course	%	3.97	3.95	4.14	3.9	0.47	4.37
Sand, Medium	%	5.22	11.2	8.85	6.82	0.74	19.5
Sand, Fine	%	14.7	36	7.54	10.2	16.9	24.8
Sand, Very Fine	%	14.6	26	7.08	3.98	33	5.67
Silt	%	26.6	14.5	33.8	35	34.6	30
Clay	%	13	4.4	24.6	31.9	10.8	6.23
Dioxins							
1,2,3,4,6,7,8-HpCDD	ng/kg	55.574	25.002	2.5 U	2.5 U	2,742 J	6,001
1,2,3,4,6,7,8-HpCDF	ng/kg	5.652	5.104	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,4,7,8,9-HpCDF	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,4,7,8-HxCDD	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,4,7,8-HxCDF	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,6,7,8-HxCDD	ng/kg	1.76 J	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,6,7,8-HxCDF	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,7,8,9-HxCDD	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,7,8,9-HxCDF	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,7,8-PeCDD	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3,7,8-PeCDF	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,3,4,6,7,8-HxCDF	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,3,4,7,8-PeCDF	ng/kg	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,3,7,8-TCDD	ng/kg	1 U	1 U	1 U	1 U	1 U	1 U
2,3,7,8-TCDF	ng/kg	1 U	1 UC	1 U	1 U	1 U	1 U
OCDD	ng/kg	589.61 B	206.812 B	10.762 BJ	9.1 BJ	16.972 J	47.747 B
OCDF	ng/kg	10.785 J	18.241	5 U	5 U	5 U	5 U
Total HpCDD	ng/kg	187.853	74.169	1.144	2.5 U	2,742	13,324
Total HpCDF	ng/kg	17.656	15.014	2.5 U	2.5 U	2.5 U	2.5 U
Total HxCDD	ng/kg	14.483	4.915	2.5 U	2.5 U	1.218	2.5 U
Total HxCDF	ng/kg	6.325	6.699	2.5 U	2.5 U	2.5 U	2.5 U
Total PeCDD	ng/kg	2.5 U	3.567	2.5 U	2.5 U	2.5 U	2.5 U
Total PeCDF	ng/kg	0.737	4.561	2.5 U	2.5 U	2.5 U	2.5 U
Total TCDD	ng/kg	1 U	5	1 U	1 U	1 U	1 U
Total TCDF	ng/kg	1 U	1,064	1 U	1 U	1 U	1 U
Dioxin TEQ	ng/kg	1.39	0.635	0.0108	0.0091	0.0444	0.108



Table 2. Sampling Station Boring Depths and Elevations

Sample ID	Sampling Depth (ft)	Mudline Elevation (ft MLLW)	Subsample Intervals, Designations, and Elevations
AN-DC1-1A	-18.7	-20.1	-23.1
AN-DC1-1B	-6.8	-7.8	-10.8
AN-DC1-2	-4.9	-2.4	-5.4
AN-P1-1	-34.7	-33.1	-36.1
AN-P1-2	-33.3	-33.4	-36.4
AN-REF-1	-10.6	-9.5	(0 to 15 cm interval)
AN-REF-2	-13.5	-5.4	(0 to 15 cm interval)

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Attachment 5: July 14, 2004

Stephanie Stirling
Dredged Material Management Office
P.O. Box 3755
Seattle, Washington 98124-3755

**SUBJECT: PORT OF ANACORTES PIER 1 OPEN WATER SUITABILITY
DETERMINATION UPDATE
PROJECT NUMBER: POA-PSDDA**

Dear Stephanie:

This letter informs the Dredged Material Management Office (DMMO) that the Port of Anacortes (Port) is taking actions to extend the recency of the Suitability Determination for open water disposal of dredged material for the proposed Pier 1 maintenance dredging project. As noted in the April 12, 2001 Memorandum for the Record, the recency determination dates for the open water approval granted for this project are April 2005 to April 2007. The Port plans to collect additional data from the site to demonstrate that the quality of the sediment material within the proposed dredge prism has not changed since the April 2000 characterization, and remains acceptable for disposal according to DMMO guidelines. The additional data collected by the Port will be submitted to the DMMO in a formal letter of request for an extension of the recency period for the current open water disposal approval.

Background

Due to recent concerns regarding potential historical dioxin contamination at the site the DMMO has required resampling of the two Dredge Material Management Units (DMMUs) delineated at the site. A sampling plan (Plan) dated March 2004 was prepared by Anchor Environmental, L.L.C. on behalf of the Port and the Kimberly-Clark Corporation (a potentially responsible party for dioxin at the site). The Plan was approved by the DMMO in a letter dated May 19, 2004. Subsequent to this approval, several additional comments were provided by the DMMO. These comments were addressed on July 12, 2004 in e-mail correspondence from Clay Patmont of Anchor Environmental, L.L.C.

Sediment Quality Sampling

Sediment quality sampling will be performed by both the Port and Kimberly-Clark in accordance with the approved Plan and is expected to commence on July 15, 2004. The proposed sampling involves collection of one 4-foot sediment core from each of the two DMMUs at the

S. Stirling
July 14, 2004

Floyd Snider McCarthy, Inc.

site. The sampling locations are denoted as AN-P1-1 (DMMU 1) and AN-P1-2 (DMMU 2). These proposed sampling locations are co-located with the April 2000 coring locations P1-03 and P2-01, respectively. In addition to the proposed dioxin analysis, a split from each of the composite core samples will be handled in accordance with Table 4-1 of the PSDDA Users Manual. Analyses will be performed for the chemicals of concern as listed in Table 5-1 of this manual.

Results of the both the dioxin and spilt sample analyses will be presented to the DMMO in a formal letter of request to extend the recency determination at the site. Please give me a call at (206) 292-2078 with any questions you may have.

Sincerely yours,
Floyd Snider McCarthy, Inc.



John Herzog Ph.D.
Principal

Copies: Bob Elsner, Port of Anacortes

September 3, 2004

Bob Elsner
Director of Projects and Planning
Port of Anacortes
First and Commercial Avenue
P.O. Box 297
Anacortes, WA 98221

SUBJECT: DATA REPORT FOR PIER 1 REGENCY EXTENTION SAMPLING AND ANALYSIS
PROJECT NUMBER: POA-PSSDA

Dear Bob:

This letter report presents the results of the sediment sampling and analysis performed to support extension of the Recency for the Pier 1 dredged material disposal Open Water Suitability Determination. The current Recency determination dates granted for the open water approval are April 2005 to April 2007. Results of the July 2004 sampling and analysis, presented in this report, indicated no exceedances of the Dredged Material Management Program (DMMP) Screening Levels (SLs) in the samples tested, confirming that the sediment quality condition of the proposed dredge materials has not changed significantly since the last characterization of the site in April 2000.

July 2004 Field Investigation

Sediment samples were collected from two locations on July 15, 2004 (Figure 1). The sampling locations are denoted as AN-P1-1 (DMMU 1) and AN-P1-2 (DMMU 2). These proposed sampling locations were co-located with the April 2000 coring locations P1-03 and P2-01, respectively. All sampling and analyses activities were performed in accordance with the DMMO-approved Sampling and Analysis Plan (Anchor Environmental, 2004). Each of the two sediment samples was collected using a vibrating core sampler equipped with a 4-inch in diameter aluminum core tube and stainless steel finger catchers. The sediment coring device was advanced to approximately 6 feet below the mudline. After a sediment core was retrieved, the selected sample interval was cut from the core tube using a pipe cutter. Selected intervals were labeled and the core ends were closed with plastic caps, lined with aluminum foil, and taped with duct tape. A global positioning system (GPS) unit was used to record actual core locations.

The core tubes were delivered to shore and cut open lengthwise with a circular saw. The sediment cores were then examined and documented with digital photographs, visually characterized, and noted in a field log. Samples for chemical characterization were collected from the 0- to 4-foot interval, representative of the two upper Dredged Material Management Units (DMMUs) at the site.

Sediment Sample Descriptions

Each of the core samples collected was visually characterized. Both sediment cores AN-P1-1 and AN-P1-2 contained similar geological structuring, from sand to clayey silt and silty sand at depth. However, in AN-P1-1, coarse sand to gravel was observed and a small percentage of woody debris was also seen at the surface interval. The sediment core samples AN-P1-1 and AN-P1-2 are summarized in Table 1.

Laboratory Analytical Results

The following section summarizes the analytical results relative to DMMP SL criteria. A 0-to 4-foot interval composite sample was collected from each of the two core samples. Both of the composite samples were submitted to Analytical Resources, Inc. for analysis of metals, tributyltin (TBT), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), grain size, total solids, total volatile solids, ammonia, total organic carbon (TOC) and total sulfide in accordance with DMMP guidelines.

The results of the analyses are shown in Table 2. No exceedances of the SL were detected.

Data Quality Review

All analyses were conducted within the required holding times. All reporting limits were less than the DMMP criteria. The only reported qualifier for the two submitted samples was "U", indicating the compound was undetected at the reported concentration. Detailed summaries of chemical analyses are as follows:

- **Metals:** Method blank contamination was not detected. All matrix spike (MS), matrix spike duplicates (MSD) met quality control (QC) limits. Relative percent differences (RPD) and laboratory control sample (LCS) recoveries also met QC limits.
- **TBT:** For TBT, bulk sediment was analyzed instead of pore water, as sufficient pore water could not be obtained from centrifuged sediment samples. DMMO directed Floyd|Snider to proceed with TBT analysis of the bulk sediments instead of interstitial pore water. The reporting values, surrogate recoveries and method blanks were within the QC limits.
- **SVOCs:** Method blank contamination was not detected. All MS, MSDs met QC limits. RPDs and LCS also met QC limits. In the reconstructed ion chromatogram there is a large peak that is approximately 3 to 4 times greater than that shown for the other constituents. This is likely due to interference from external noise during analysis.
- **PCBs:** Method blank contamination was not detected. RPDs and LCS recoveries met QC limits.
- **VOCs:** Method blank contamination was not detected. All method blanks and LCS met QC limits. The surrogate recovery of sample AN-P1-1 for 1,2-Dichloroethane was slightly elevated at 112 percent, but within LCS/MB limits and QC limits.

Conventionals

- **Total Solids and Total Volatile Solids:** Method blank contamination was not detected. The RPD of duplicates for total solids and preserved total solids were 0.7 percent and 1.1 percent, respectively, well within the QC limits. The triplicate total solids analyses were very consistent with a percent RSD of 0.32.
- **Ammonia:** Method blank contamination was not detected. The RPD of the sample duplicates were low and met QC limits. The MS samples met QC limits.
- **TOC:** Method blank contamination was not detected. The LCS recovery was 98.4 percent. Triplicate analysis was conducted of sample AN-P1-1, with a low RPD of 8.3 percent. The MS samples met QC limits.
- **Sulfide:** Method blank contamination was not detected. The LCS recovery was 105 percent. The sample duplicate of AN-P1-1 resulted in a greater RPD of 42.9 percent. The sample detection was within two times the reporting limiting (RL). Consequently, a QC limit of \pm the RL was used and the duplicate RPD met this criterion. The MS samples met QC limits.

Thank you for the opportunity to perform this sediment quality characterization project for the Port of Anacortes. Please give me a call at (206) 292-2078 with any questions you may have.

Sincerely yours,
FLOYD | SNIDER



John Herzog, Ph.D.
Principal

Encl.: Table 1
Table 2
Figure 1
Copies: Tom Newlon, Stoel Rives

References:

Anchor Environmental, Inc. 2004. Supplemental Sediment Characterization Dakota Creek Industries Shipyard Facility/Pier 1 Redevelopment Area Anacortes, Washington. Sampling and Analysis Plan. Draft. Prepared for Seattle District U.S. Army Corp of Engineers Seattle, Washington. March.

Floyd Snider McCarthy. 2004. Port of Anacortes Pier 1 Open Water Suitability Determination Update. July 14.

Michelsen, T. and K. Bragdon-Cook. 1993. Technical Information Memorandum. Organic Carbon Normalization of Sediment Data. June.

**Table 1
Sediment Sample Descriptions**

AN-P1-1	
Depth Interval (ft)	Description
0.0 to 1.0	Olive gray, fine to medium sand with white, sand sized shell hash, with approximately 1 to 2 percent wood fragments. Moist and loose.
1.0 to 2.2	Light olive gray, fine and coarse gravel with medium to coarse sand and coarse, sand size shell fragments. Moist and loose.
2.3 to 4.0	Upper inch of stratum was softer, weathered, and very moist. Grayish brown, clayey silt or silty clay with 1 to 3 percent rounded fine and coarse gravel and coarse sand. Moist and medium stiffness.
AN-P1-2	
Depth Interval (ft)	Description
0.0 to 0.4	Olive gray, well graded sand with coarse gravel and shell hash. Moist, loose to medium dense.
0.4 to 4.0	Light gray, clayey silt or silty clay with about 5 percent rounded medium to coarse sand. A 0.03-foot sand lens or lamellae, with shell fragments. Approximately 1.8-feet deep. Moist and medium stiffness.
4.0 to 5.0	Light gray, silty sand. Moist and dense.

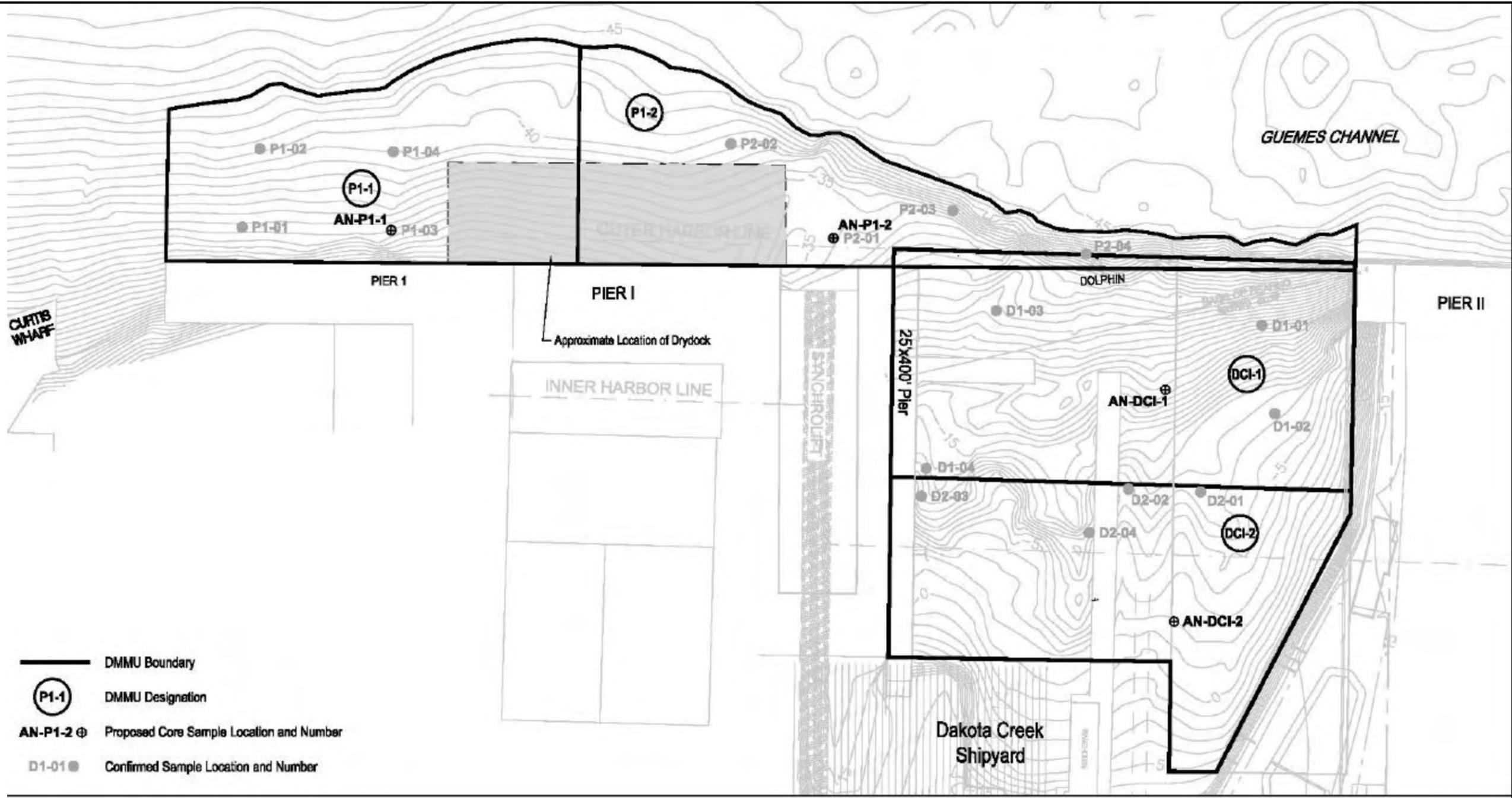
Table 2 Analytical Results for Sediment Samples			
Constituent Groups	PSDDA 2003 Criteria	AN-P1-1 (7/15/04)	AN-P1-2 (7/15/04)
Conventionals (in percent)			
Total Solids	NA	83.8	77.8
Total Solids (preserved)	NA	81.6	79.6
Total Organic Carbon (TOC)	NA	0.241	0.92
Sulfide in mg/kg	NA	1.7	1 U
Ammonia (total as mg-N/kg)	NA	0.33	0.254
Grain Size (in percent)			
<10 Phi Clay	NA	6.2	12.6
8-9 Phi Clay	NA	1.9	4.6
9-10 Phi Clay	NA	1.6	3.6
Coarse Sand	NA	7.7	9.2
Coarse Silt	NA	2.7	2.8
Fine Sand	NA	4.8	6.2
Fine Silt	NA	3	5.6
Gravel	NA	45.5	17.9
Medium Sand	NA	7.8	7.2
Medium Silt	NA	3.4	7.1
Very Coarse Sand	NA	9.8	14
Very Fine Sand	NA	2.9	3.8
Very Fine Silt	NA	2.9	5.4
Metals (in mg/kg)			
Antimony	150	6 U	6 U
Arsenic	57	6 U	6 U
Cadmium	5.1	0.2 U	0.3 U
Chromium	NA	47.5	53.7
Copper	390	42.6	37.5
Lead	450	7	6

Constituent Groups	PSDDA 2003 Criteria	AN-P1-1 (7/15/04)		AN-P1-2 (7/15/04)	
Nickel	140	38		41	
Silver	6.1	0.3	U	0.4	U
Zinc	410	51.3		55.9	
Mercury	0.41	0.05	U	0.05	U
Tributyltin (TBT) (in µg/kg)					
TBT	NA	4.895	U	5.073	U
Semivolatiles (in µg/kg)					
1,2,4-Trichlorobenzene	31	20	U	20	U
1,2-Dichlorobenzene	35	20	U	20	U
1,3-Dichlorobenzene	170	20	U	20	U
1,4-Dichlorobenzene	110	20	U	20	U
Hexachlorobenzene	22	20	U	20	U
Hexachlorobutadiene	29	20	U	20	U
N-Nitrosodiphenylamine	28	20	U	20	U
Dibenzofuran	540	20	U	20	U
Benzoic acid	650	200	U	200	U
Benzyl alcohol	57	20	U	20	U
HPAHs (in µg/kg)					
Benzo(a)anthracene	1300	21		20	U
Benzo(a)pyrene	1600	25		20	U
Benzo(b)fluoranthene	NA	22		20	U
Benzo(g,h,i)perylene	670	20	U	20	U
Benzo(k)fluoranthene	NA	20	U	20	U
Benzofluoranthenes (total)	3200	22		20	U
Chrysene	1400	25		20	U
Dibenzo(a,h)anthracene	230	20	U	20	U
Fluoranthene	1700	42		20	U

Table 2 Analytical Results for Sediment Samples					
Constituent Groups	PSDDA 2003 Criteria	AN-P1-1 (7/15/04)		AN-P1-2 (7/15/04)	
Indeno(1,2,3-cd)pyrene	600	20	U	20	U
Pyrene	2600	36		20	U
Total HPAHs	12000	171		20	U
LPAHs (in µg/kg)					
2-Methylnaphthalene	670	20	U	20	U
Acenaphthene	500	20	U	20	U
Acenaphthylene	560	20	U	20	U
Anthracene	960	20	U	20	U
Fluorene	540	20	U	20	U
Naphthalene	2100	20	U	20	U
Phenanthrene	1500	20	U	20	U
Total LPAHs	12000	20	U	20	U
Phthalates (in µg/kg)					
bis(2-ethylhexyl)phthalate	8300	20	U	20	U
Butyl benzyl phthalate	970	20	U	20	U
Diethylphthalate	1200	20	U	20	U
Dimethyl phthalate	1400	20	U	20	U
Di-n-butyl phthalate	5100	20	U	20	U
Di-n-octyl phthalate	6200	20	U	20	U
Phenols (in µg/kg)					
2-Methylphenol	63	20	U	20	U
2,4-Dimethylphenol	29	20	U	20	U
4-Methylphenol	670	20	U	20	U
Pentachlorophenol	400	98	U	98	U
Phenol	420	20	U	20	U
Pesticides (in µg/kg)					
4,4'-DDD	NA	1.9	U	1.9	U

Table 2 Analytical Results for Sediment Samples					
Constituent Groups	PSDDA 2003 Criteria	AN-P1-1 (7/15/04)		AN-P1-2 (7/15/04)	
4,4'-DDE	NA	1.9	U	1.9	U
4,4'-DDT	NA	1.9	U	1.9	U
Aldrin	10	0.96	U	0.97	U
alpha-Chlordane	10	0.96	U	0.97	U
Dieldrin	10	1.9	U	1.9	U
gamma-BHC	10	0.96	U	0.97	U
gamma-Chlordane	NA	0.96	U	0.97	U
Heptachlor	10	0.96	U	0.97	U
PCBs (in µg/kg)					
PCB-1016	NA	16	U	16	U
PCB-1221	NA	16	U	16	U
PCB-1232	NA	16	U	16	U
PCB-1242	NA	16	U	16	U
PCB-1248	NA	16	U	16	U
PCB-1254	NA	16	U	16	U
PCB-1260	NA	16	U	16	U
Total PCBs	130	16	U	16	U
Volatiles (in µg/kg)					
Ethylbenzene	10	0.9	U	1	U
Tetrachloroethene	57	0.9	U	1	U
Trichloroethene	160	0.9	U	1	U
Xylene (total)	40	0.9	U	1	U

NA=Not applicable



Source: Anchor Environmental, Inc. Sampling and Analysis Plan. March 2004.

