

SUBJECT: DETERMINATION OF THE SUITABILITY OF SEDIMENTS PROPOSED TO BE MAINTENANCED DREDGED FROM TOKE POINT ENTRANCE CHANNEL AND TOKELAND MARINA, WILLAPA BAY (CENWS-TS-NS-28) FOR OPEN-WATER UNCONFINED DISPOSAL AT THE CAPE SHOALWATER OR GOOSE POINT DISPERSIVE SITES, APPROPRIATE BENEFICIAL USE NEAR CAPE SHOALWATER, OR UPLAND DISPOSAL 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. This summary addresses the potential dredged material suitability of approximately 17,400 cy of maintenance material from the federally maintained Toke Point Entrance Channel, and approximately 45,500 cy of maintenance material from the Port of Willapa Harbor Tokeland Marina Project for either unconfined-open-water disposal at the Cape Shoalwater dispersive site or at an appropriate beneficial use at Cape Shoalwater.
2. The Toke Point Entrance Channel is ranked Low for testing purposes, whereas the Tokeland Marina project was reranked from Moderate to Low-moderate for testing purposes based on two previous sequential testing rounds conducted in 1991 and 1998. The Entrance channel is 100 feet wide by approximately 700 feet long, and has a permitted depth of -15 feet MLLW with a 2-foot overdepth (-17 feet MLLW). The Tokeland Marina is proposed for maintenance dredging to a depth of -17 feet MLLW with a 2-foot overdepth (-19 foot MLLW) in the area adjacent to the entrance channel (**P-1**) and to -11 feet MLLW with a 2-foot overdepth (-13 feet MLLW) in the berthing area (**P-2**)(**Figures 1, 3**).
3. Relevant dates for regulatory tracking purposed are included in Table 1.

Table 1. Regulatory Tracking Information and Dates

FEDERAL PUBLIC NOTICE	CENWS-TS-NS-28
SAP submittal date:	May 10,2006
SAP Approval letter date:	June 8, 2006
Sampling date(s):	August 16, 2006 October 17, 2006 (Willapa Bay reference station WBS7-A)
Sediment data characterization report submittal date:	January 16, 2007
DAIS Tracking Number	TPETM-1-B-F-235
Recency Determination Date: Low (Tokepoint Entrance) = 7 years Low-Moderate (Tokeland Marina) = 7 years	August 2013

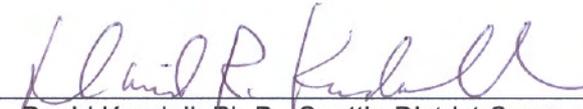
4. Sampling took place on August 16, 2006 using a Van Veen grab sampler. A grab sampler was authorized based on the relatively homogeneous nature of the site due to high sedimentation rates. Four surface grab stations were collected from the Navigation Entrance Channel and composited for one DMMU (C1), whereas 2 surface grab stations were composited for one DMMU within the Marina at the Channel Entrance (P-1), and five surface grab stations were collected and composited for one DMMU within the Marina (P-2) as depicted in Figure 3. The 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.
5. Chemical analysis results of the three DMMUs are summarized in Table 2, and indicated that all detected chemicals were below DMMP SLs and SMS criteria. Undetected chemicals were generally below the DMMO SLs and SMS except the following chemicals: Hexachlorobenzene exceeded the SL and SQS detection limit in DMMU-C3, 2,4-Dimethylphenol exceeded the SL in DMMU's-C2 and C-3, Benzoic acid exceeded the SL in DMMU-C3, N-Nitrosodiphenylamine exceeded the SL in DMMU-C3, and alpha-Chlordane exceeded the SL in all three DMMUs. Because of the detection limit SL exceedances, bioassay testing was required to finalize the suitability determination for all three DMMUs.
6. Bioassay testing results are summarized in Table 3. The results of bioassay testing indicated that the reference sediment and negative control sediment met the DMMP performance guidelines. The amphipod (*Eohaustorius estuarius*), sediment bivalve larval (*Mytilus galloprovincialis*), and 20-day *Neanthes* growth bioassay all performed within the parameters of the PSEP/DMMP protocols, and no hits were recorded under the Grays Harbor/Willapa Bay dispersive site guidelines (Table 4).
7. The results of chemical and bioassay analysis for the three composited DMMUs indicated that all 62,846 cy, (17,394 cy from the Federal navigation entrance channel, and 45,452 cy from the Port of Willapa's Tokeland Marina) are suitable for either unconfined-open-water disposal at the Cape Shoalwater or Goose Point Dispersive sites, appropriate beneficial use at Cape Shoalwater, or upland disposal at an Ecology approved site.
8. This memorandum documents the suitability of material proposed for dredging from the Toke Point Entrance Channel and Tokeland Marina for either open-water disposal, or an appropriate beneficial use. 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.

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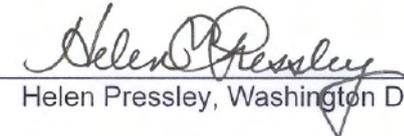
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Date


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

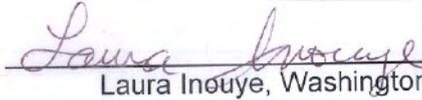
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Date


Helen Pressley, Washington Department of Ecology

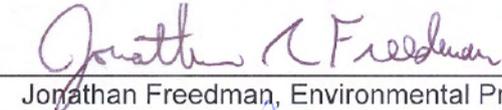
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Date


Laura Inouye, Washington Department of Ecology

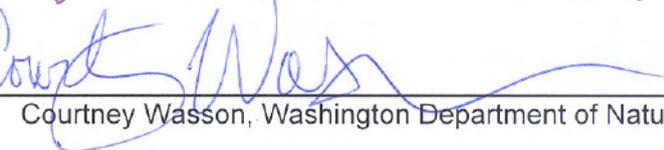
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Date


Jonathan Freedman, Environmental Protection Agency, Region 10

1-Feb-07

Date


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DMMO File

Table 2. Toke Point Entrance Federal Navigation Channel and Tokeland Marina DMMP and Beneficial Uses Analysis SMS Summary Comparison

CHEMICAL NAME	DMMP						SMS			DMMU-C1 (Entr. Chan.)			DMMU-C2 (Port: P1)			DMMU-C3 (Port: P2)			WBS7-A REF
	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			
								DMMP/SMS	SMS		DMMP/SMS	SMS		DMMP/SMS	SMS				
Antimony	mg/kg	150		200	mg/kg			0.23		U		0.26	U		0.23	U			
Arsenic	mg/kg	57	507.1	700	mg/kg	57	93	5.9				6.5			8.7				
Cadmium	mg/kg	5.1	11.3	14	mg/kg	5.1	6.7	0.057				0.047			0.07				
Chromium	mg/kg	(2)	267	(2)	mg/kg	260	270	14.4				14.1			--				
Copper	mg/kg	390	1,027	1,300	mg/kg	390	390	15.1				19.0			19.9				
Lead	mg/kg	450	975	1,200	mg/kg	450	530	19.1				17.9			20.0				
Mercury	mg/kg	0.41	1.5	2.3	mg/kg	0.41	0.59	0.025		U		0.026	U		0.027	U			
Nickel	mg/kg	140	370	370	mg/kg	--	--	13.5				13.4			14.3				
Selenium	mg/kg	(2)	3	(2)	mg/kg	--	--	0.24		U		0.24	U		0.21	U			
Silver	mg/kg	6.1	6.1	8.4	mg/kg	6.1	6.1	0.16				0.16			0.18				
Zinc	mg/kg	410	2,783	3,800	mg/kg	410	960	64.3				67.6			75.1				
Tributyltin (porewater as Tin)	ug/L	0.15	0.15		ug/L	0.05		0.001		U		0.002	Ui		0.002	J			
Naphthalene	ug/kg	2,100		2,400	mg/kg-OC	99	170	6.8		U		7.3	0.15	U	19.0		U		
Acenaphthylene	ug/kg	560		1,300	mg/kg-OC	66	66	7.3		U		7.9	0.16		20.0		U		
Acenaphthene	ug/kg	500		2,000	mg/kg-OC	16	57	5.2		U		5.7	0.12	U	14.0		U		
Fluorene	ug/kg	540		3,600	mg/kg-OC	23	79	8.8		U		9.6	0.20	U	24.0		U		
Phenanthrene	ug/kg	1,500		21,000	mg/kg-OC	100	480	11	0.44	JD		13	0.54	JD	22	0.88	JD		
Anthracene	ug/kg	960		13,000	mg/kg-OC	220	1,200	7.3	0.15	U		7.9	0.16	U	20	0.40	U		
2-Methylnaphthalene	ug/kg	670		1,900	mg/kg-OC	38	64	6.3	0.13	U		6.8	0.14	U	17	0.34	U		
Total LPAH	ug/kg	5,200		29,000	mg/kg-OC	370	780	11	0.44	JD		13	0.54	JD	22	0.88	JD		
Fluoranthene	ug/kg	1,700	4,600	30,000	mg/kg-OC	160	1,200	23	0.92	JD		24	1.00	JD	37	1.48	JD		
Pyrene	ug/kg	2,600	11,980	16,000	mg/kg-OC	1,000	1,400	33	1.32	D		25	1.04	JD	37	1.48	JD		
Benzo(a)anthracene	ug/kg	1,300		5,100	mg/kg-OC	110	270	15	0.60	JD		11	0.46	JD	20	0.80	JD		
Chrysene	ug/kg	1,400		21,000	mg/kg-OC	110	460	17	0.68	JD		17	0.71	JD	25	1.00	JD		
Benzofluoranthenes (b+k)	ug/kg	3,200		9,900	mg/kg-OC	230	450	13	0.26	U		15	0.31	U	35	0.70	U		
Benzo(a)pyrene	ug/kg	1,600		3,600	mg/kg-OC	99	210	23	0.92	JD		9	0.19	U	23	0.46	U		
Indeno(1,2,3-cd)pyrene	ug/kg	600		4,400	mg/kg-OC	34	88	13	0.52	JD		11	0.23	U	27	0.54	U		
Dibenzo(a,h)anthracene	ug/kg	230		1,900	mg/kg-OC	12	33	12	0.24	U		13	0.27	U	31	0.62	U		
Benzo(g,h,i)perylene	ug/kg	670		3,200	mg/kg-OC	31	78	12	0.24	U		13	0.27	U	32	0.64	U		
Total HPAH	ug/kg	12,000		69,000	mg/kg-OC	960	5,300	124	4.96	JD		77	3.21	JD	99	3.96	JD		
1,3-Dichlorobenzene	ug/kg	170		-	mg/kg-OC			0.34		U		0.37		U	0.37		U		
1,4-Dichlorobenzene	ug/kg	110		120	mg/kg-OC	3.1	9	0.50	0.01	U		0.54	0.01	U	0.53	0.01	U		
1,2-Dichlorobenzene	ug/kg	35		110	mg/kg-OC	2.3	2.3	0.32	0.01	U		0.34	0.01	U	0.34	0.01	U		
1,2,4-Trichlorobenzene	ug/kg	31		64	mg/kg-OC	0.81	1.8	0.60	0.01	U		0.65	0.01	U	0.64	0.01	U		
Hexachlorobenzene (HCB)	ug/kg	22	168	230	mg/kg-OC	0.38	2.3	11	0.22	U		12	0.25	U	30	0.60	U		
Dimethylphthalate	ug/kg	71		1,400	mg/kg-OC	53	53	9.4	0.19	U		12	0.25	U	25	0.50	U		
Diethylphthalate	ug/kg	200		1,200	mg/kg-OC	61	110	19	0.38	U		20	0.42	U	49	1.0	U		
Di-n-butylphthalate	ug/kg	1,400		5,100	mg/kg-OC	220	1,700	17	0.68	BJD		15	0.31	U	37	0.74	U		
Butylbenzylphthalate	ug/kg	63		970	mg/kg-OC	4.9	64	7.8	0.16	U		8.5	0.18	U	21	0.42	U		
Bis(2-ethylhexyl)phthalate	ug/kg	1,300		8,300	mg/kg-OC	47	78	18	0.72	BJD		39	1.63	BJD	27	1.08	BJD		
Di-n-octylphthalate	ug/kg	6,200		6,200	mg/kg-OC	58	4,500	6.3	0.13	U		6.8	0.14	U	17	0.34	U		
Phenol	ug/kg	420		1,200	mg/kg	420	1,200	9.9	0.20	U		11	0.23	U	27	0.54	U		
2-Methylphenol	ug/kg	63		77	mg/kg	63	63	18	0.36	U		20	0.42	U	48	1.0	U		
4-Methylphenol	ug/kg	670		3,600	mg/kg	670	670	15	0.30	U		24	1.0	JD	41	0.82	U		
2,4-Dimethylphenol	ug/kg	29		210	mg/kg	29	29	29	0.58	U		31	0.65	U	77	1.5	U		
Pentachlorophenol	ug/kg	400	504	690	mg/kg	360	690	44	0.88	U		48	1.00	U	120	2.4	U		
Benzyl alcohol	ug/kg	57		870	mg/kg	57	73	20	0.40	U		21	0.44	U	52	1.0	U		
Benzoic acid	ug/kg	650		760	mg/kg	650	650	500	10.0	U		540	11.3	U	1,400	28.0	U		
Dibenzofuran	ug/kg	540		1,700		15	58	6.8	0.14	U		7.3	0.15	U	19	0.38	U		
Hexachloroethane	ug/kg	1,400		14,000	mg/kg			12		U		13		U	31		U		
Hexachlorobutadiene	ug/kg	29		270	mg/kg	3.9	6.2	7.3	0.15	U		7.9	0.16	U	20	0.40	U		
N-Nitrosodiphenylamine	ug/kg	28		130	mg/kg	11	11	12	0.24	U		13	0.27	U	31	0.62	U		
Trichloroethene	ug/kg	160		1,600				0.21		U		0.23		U	0.23		U		
Tetrachloroethene	ug/kg	57		210				0.22		U		0.24		U	0.24		U		
Ethylbenzene	ug/kg	10		50				0.14		U		0.15		U	0.15		U		
Total Zylene (sum of o-,m-,p-)	ug/kg	40		160				0.29		U		0.31		U	0.31		U		

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	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		
Total DDT (sum of 4,4'-DDD, 4,4'-DDE and 4,4'-DDT)	ug/kg	6.9	50	69				1.6		U	1.7		U	1.7		U				
Aldrin	ug/kg	10		-				2.0		U	3.2		UI	2.9						
Chlordane (alpha)	ug/kg	10	37	-				33		UI	20		U	20		U				
Dieldrin	ug/kg	10						3.8		U	4.1		U	4.1		U				
Heptachlor	ug/kg	10		-				2.0		JD	1.2		U	3.4						JPD
Gamma-BHC (Lindane)	ug/kg	10		-				2.0		U	2.2		U	2.1		U				U
Total PCBs	ug/kg	130	38***	3,100	mg/kg-OC	12	65	4.4	0.09	U	4.8	0.10	U	4.8	0.10	U				
Total Solids	%							40.6			38.6			36.9						51.1
Total Volatile Solids	%							8.4			8.0			6.6						5.4
Total Organic Carbon	%							2.5			2.4			2.5						0.63
Total Ammonia	mg/kg							12.0		E	240		E	16		E				2.3
Total Sulfides	mg/kg							62.3		E	93.3		E	117		E				9.78
Gravel	%							0.3			0.6			0.6						0
Sand	%							24.5			9.7			10.0						57.0
Silt	%							55.5			74.5			70.9						31.5
Clay	%							19.8			15.3			18.1						11.3
Fines (percent silt + clay)	%							75.3			89.8			89.0						42.8
Eohaustorius estuarius hits:								NH			NH			NH						
Mytilus galloprovincialis hits:								NH			NH			NH						
Neanthes arenaceodentata hits:								NH			NH			NH						
Bioassay Determination: (Pass/Fail)								PASS			PASS			PASS						
BTs exceeded:								No			No			No						
Bioaccumulation conducted:								No			No			No						
Bioaccumulation Determination:																				
ML Rule exceeded:								No			No			No						
PSDDA Determination/SMS BU Determination:								S - UCOWD	S - BU		S - UCOWD	S - BU		S - UCOWD	S - BU					
DMMU Volume:	cy							17,394			9,351			36,101						
Rank (L, LM, M, H):								LM			LM			LM						
Mean Van Veen sampling depth	cm							0-10 cm			0-10 cm			0-10 cm						
Maximum sampling depth (mudline)	cm							10 cm			10 cm			10 cm						
DMMU ID:								DMMU-C1 (Fed Chan.)			DMMU-C2 (Port)			DMMU-C3 (Port)			WBS7-A			

Legend:

SL / SQS = Screening Level or Sediment Quality Standard exceedance

S - UCOWD/BU = Suitable for UCOWD & Beneficial Use

NH = No Hit (Test sediment response compared to Reference sediment)

VQ = Validation Qualifier

UCOWD = Unconfined open-water disposal

U = Undetected at the method detection limit

J = Estimate

D = The sample was diluted

B = The analyte was found in the associated method blank at a level that is significant relative to the sample result

i = The MRL/MDL has been elevated due to a chromatographic interference

P = The GC or HPLC confirmation criteria was exceeded. The RPD is greater than 40% between the 2 results

E = 7-day holding time exceedance for analyte (ammonia = 13 days; sulfides = 8 days)

TOC normalized (* 1/2 dL for U)

Table 3. DMMP Bioassay results for the Toke Point Navigation /Tokeland Marina Project

Sample ID.	<i>Eohaustorius</i> Amphipod Mortality (%)	<i>Mytilus Bivalve</i> Larval Test (% normalized M/A)	20-day <i>Neanthes</i> Growth Bioassay (mg/worm/day)*
Control	10 ± 7.9	NA	0.65 ± 0.28
WBS7-A	15 ± 12.2	7.7 ± 7.1	0.78 ± 0.10
C1	12 ± 4.5	-1.6 ± 16.6	0.73 ± 0.23
C2	11 ± 5.5	5.7 ± 4.1	0.62 ± 0.14
C3	8 ± 7.6	5.1 ± 9.1	0.67 ± 0.25

NA = Not applicable. Results are normalized to the seawater control

Note: Results reported as mean ± standard deviation

M/A = Mortality/Abnormality

* Percent survival was 100% in control and all three test sediments, and 96% in reference sediment

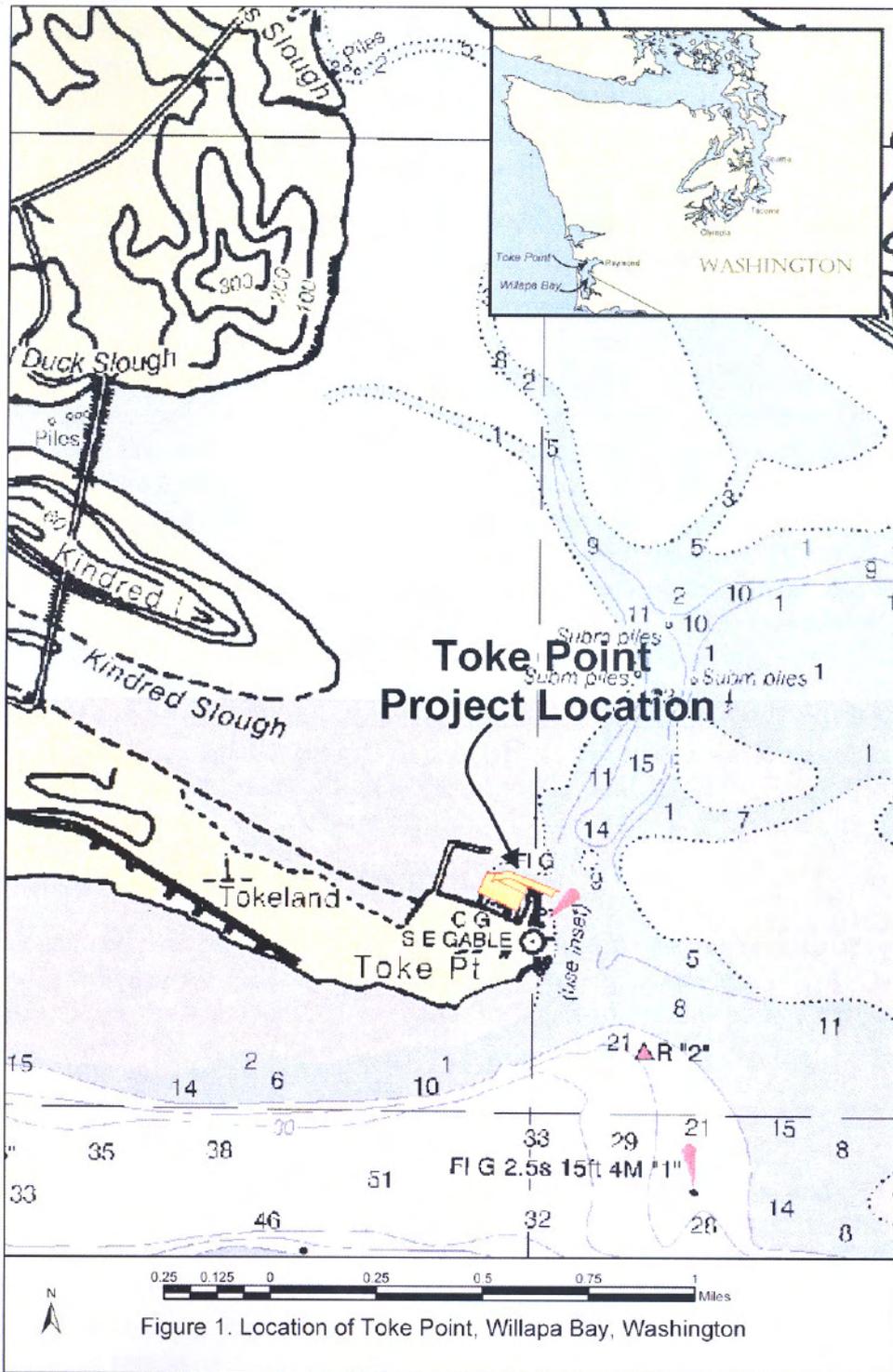


Figure 1. Location of Toke Point, Willapa Bay, Washington

Figure 1. Location of Toke Point, WA

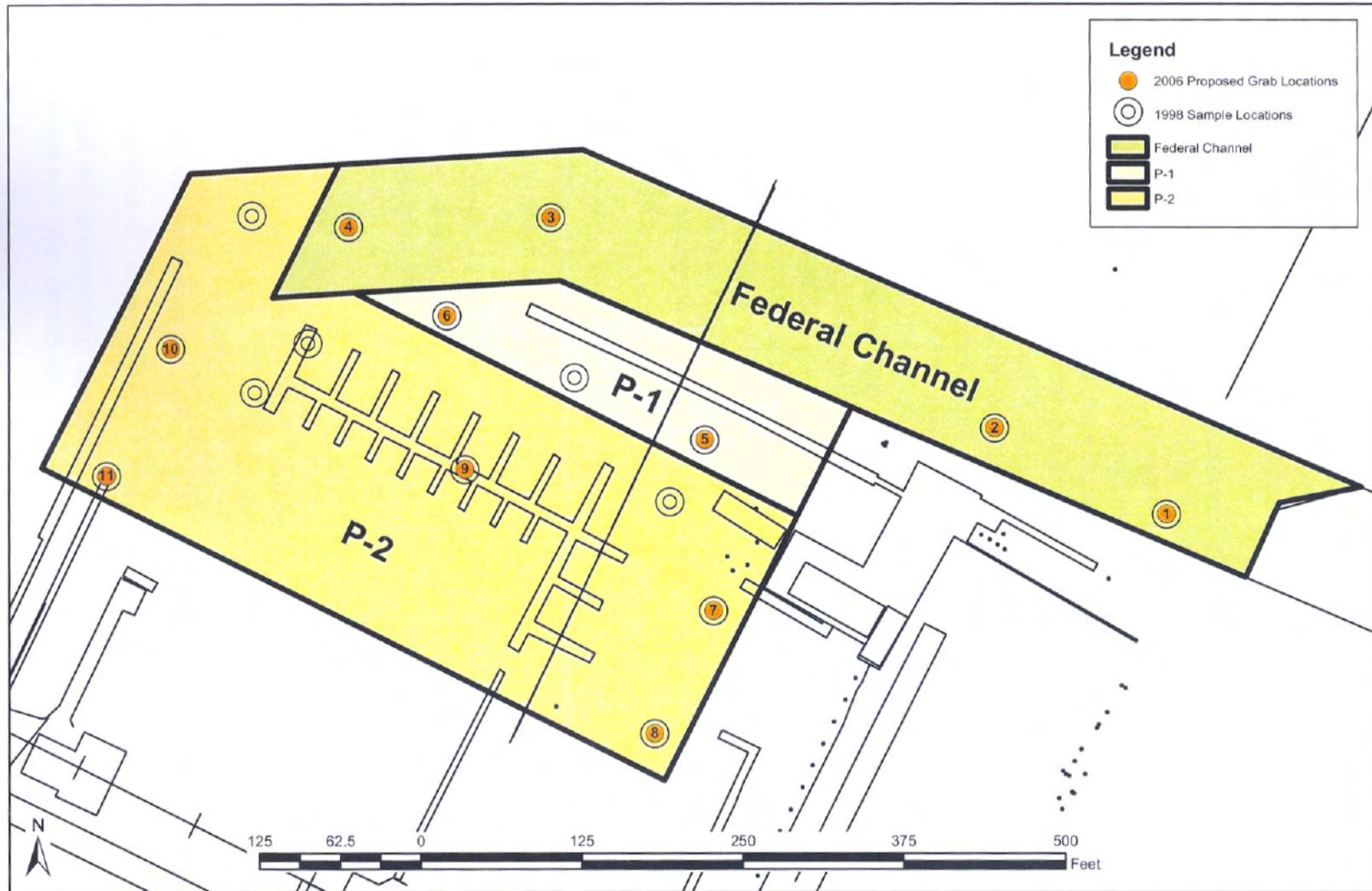


Figure 3. Proposed Sampling Locations in the Toke Point Federal Navigation Channel and the Tokeland Marina Berthing Area