CENWS-OD-ME-DMMO

MEMORANDUM FOR: RECORD June 5, 2013

SUBJECT: DETERMINATION REGARDING THE SUITABILITY OF PROPOSED DREDGED MATERIAL FROM THE PORT OF KINGSTON MARINA, KITSAP COUNTY, WA EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT FOR UNCONFINED OPEN-WATER DISPOSAL AT THE PORT GARDNER NON-DISPERSIVE DISPOSAL SITE OR FOR BENEFICIAL USE.

1. Introduction. This memorandum reflects the consensus determination of the Dredged Material Management Program (DMMP) agencies (U.S. Army Corps of Engineers, Washington State Department of Ecology, Washington State Department of Natural Resources, and the Environmental Protection Agency) regarding the suitability of up to 17,000 cubic yards (cy) of dredged material from the Port of Kingston Marina for either beneficial use or open-water disposal at the Port Gardner non-dispersive disposal site.

2. Background. The Port of Kingston Marina is located in Appletree Cove on the Northeast end of the Kitsap Peninsula, adjacent to the Washington State Ferries Kingston terminal facility (Figure 1). The marina provides safe harbor for both permanent and transient moorage for recreational and small commercial fishing vessels. Over time, sedimentation within the west portion of the marina basin and entrance channel has occurred to such an extent that dredging is required to restore operability of the facility to its originally permitted conditions, alleviate risk of vessel grounding, and eliminate tide dependant access to the marina. According to the applicant's research, no dredging has occurred in the boat basin since it was completed in 1967.

3. Project Summary. Table 1 includes project summary and tracking information.

Table 1. Project Summary

Project ranking	Moderate
Proposed dredging volume	17,000 cy
Proposed dredging depth	DMMU1: -15.5 ft MLLW DMMU2: -11 ft MLLW including 2 ft of overdredge depth
1st draft SAP received	November 21, 2012
Comments provided on 1st draft SAP	December 7, 2012
2nd draft SAP received	January 8, 2013
Comments provided on 2nd draft SAP	January 14, 2013
Final SAP received	February 7, 2013
SAP approved	February 8, 2013
Sampling dates	February 25-26, 2013
Draft data report received	April 26, 2013
Comments provided on draft report	May 3 and May 14, 2013

Final data report received	May 31, 2013
EIM Study ID	DMMP-POKMA-A-334-13
USACE Permit Application Number	NWS-2012-1110
Recency Determination (rank = 5 years)	February 2018

4. Project Ranking and Sampling Requirements. This project was ranked moderate by the DMMP agencies according to the guidelines set out in the User's Manual for marinas. In a moderate-ranked area the number of samples and analyses are calculated using the following guidelines (DMMP, 2008a):
    - Maximum volume of sediment represented by each field sample = 4,000 cubic yards
    - Maximum volume of sediment represented by each analysis in the upper 4-feet of the dredging prism (surface sediment) = 16,000 cubic yards
    - Maximum volume of sediment represented by each analysis in the subsurface portion of the dredging prism = 24,000 cubic yards

    Due to the unusual configuration of the project and the need to dredge the entire depth of the prism starting at the entrance channel in order to provide sufficient depth to maneuver the dredge near the boat ramp, the project was divided horizontally into two full depth DMMUs.

5. Sampling. Sampling took place February 25-26, 2013 and the approved sampling and analysis plan (SAP) was generally followed (Grette Associates, 2013). See Table 2 for sample coordinates and compositing information and Figure 2 for sample locations within the project area. Generally, two vibracores were collected from each DMMU and composited for a single analysis. Z-samples were collected from three locations and archived individually.

    Due to inclement weather and the nature of the fine sand in the project area, there were significant difficulties getting the required core percent recoveries. Real-time coordination with the DMMO occurred according to the procedures outlined in the SAP, and multiple coring attempts were made at each sampling station. As a result of the inability to retrieve sufficient material in the core barrel at station SS-3 after four attempts, with DMMO approval, this station was abandoned and not included in the composite for DMMU 2.

    Also as a result of the sampling difficulties, the depths of the samples collected varied from the compositing scheme outlined in the SAP. These deviations are shown in Table 2. Briefly, material from core S-2 was collected 2.6 ft deeper than the design depth, core S-4 was shorter than the design depth by 4.6 ft and core S-5 included material from 0.6 ft deeper than the design depth.

    The DMMP agencies determined, based on the results of the chemical analysis, that the deviations from the sampling plan outlined above did not significantly affect the representativeness of the samples or the usability of the data generated.

6. Chemical Analysis. All analyses were conducted by Analytical Resources, Inc of Tukwila, WA. The approved SAP was followed and quality control guidelines specified by the DMMP program were generally met. The conventional and chemical results compared to DMMP guidelines are presented in Table 3. The grain size data show the proposed dredged material is predominantly sand, with a

fines fraction ranging from 7.2 to 13.3%. The total organic carbon content ranged from 0.33 to 0.68%. The chemistry results show there were no detected or undetected exceedances of DMMP screening levels or bioaccumulation triggers for the standard DMMP chemicals of concern in either DMMU (DMMP, 2011). Tributyltin analysis was also conducted in both DMMUs. There was insufficient porewater in the samples, so bulk TBT analysis was conducted. TBT was undetected in both DMMUs at levels well below the screening level value of 73 μg/kg dry weight.

Both DMMUs were also compared to the Sediment Management Standards (Ecology, 1995), see Table 4. All results were below the SQS, with the exception of hexachlorobenzene, which was undetected at the reporting limit above the SQS in both DMMUs. The laboratory determined that there was no evidence that hexachlorobenzene was present in the samples at the lower detection limit (MDL), and the samples were flagged as UJ at the detection limit, which is below the SQS in both DMMUs.

7. Sediment Exposed by Dredging. The DMMP antidegradation guidelines (DMMP, 2008b) state that chemical analysis of the z-sample is required if the testing results for the overlying sediment are a) found to be unsuitable for unconfined aquatic disposal, b) if any other project in the same water body has shown evidence of subsurface sediment with greater contamination than surface sediment, or c) if there is any other site-specific reason to believe that the sediment to be exposed by dredging may fail to meet the antidegradation policy. Since there were no SQS exceedances in the dredge prism, the DMMP agencies determined that z-sample analysis was not required for this project.

   As demonstrated by the site history and by the results of the above analyses, the sediment to be exposed by dredging is not anticipated to be degraded relative to the currently exposed sediment surface. On this basis the DMMP agencies conclude that this project is in compliance with the State of Washington anti-degradation policy.

8. Suitability Determination. This memorandum documents the evaluation of the suitability of sediment proposed for dredging from the Port of Kingston Marina for beneficial use or open-water disposal at the Port Gardner non-dispersive disposal site. The approved sampling and analysis plan was generally followed. The data gathered were deemed sufficient and acceptable for regulatory decision-making under the DMMP program.

   In summary, based on the results of the previously described testing, the DMMP agencies conclude that **all 17,000 cy of dredged material are suitable** for open-water disposal at the Port Gardner non-dispersive site or in-water beneficial use. A determination regarding upland beneficial use should be coordinated with the local health jurisdiction.

   This suitability determination does ***not*** constitute final agency approval of the project. During the public comment period that follows a public notice, the resource agencies will provide input on the overall project. 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.

   A pre-dredge meeting with DNR, Ecology and the Corps of Engineers is required at least 7 days prior to dredging. A dredging quality control plan must be developed and submitted to the

Regulatory Branch of the Seattle District Corps of Engineers at least 7 days prior to the pre-dredge meeting. A DNR site use authorization must also be acquired.

9. References.

DMMP, 2011. *Marine Sediment Quality Screening Levels: Adopting RSET Marine SLs for Use in DMMP.* A Clarification Paper prepared by Laura Inouye (Ecology) and David Fox (USACE) for the Dredged Material Management Program, June 2011.

DMMP, 2008a. *Dredged Material Evaluation and Disposal Procedures (Users Manual)*. Prepared by the Seattle District Dredged Material Management Office for the Dredged Material Management Program, July 2008.

DMMP, 2008b. *Quality of Post-Dredge Sediment Surfaces (Updated).* A Clarification Paper Prepared by David Fox (USACE), Erika Hoffman (EPA) and Tom Gries (Ecology) for the Dredged Material Management Program, June 2008.

Ecology, 1995. *Sediment Management Standards – Chapter 173-204 WAC*. Washington State Department of Ecology, December 1995.

Grette Associattes, 2013. *Port of Kingston Marina Maintenance Dredge Sampling and Analysis Plan*. January 2013.

10. Agency Signatures.

The signed document is on file in the Dredged Material Management Office

Concur:

_____ _____
Date Kelsey van der Elst - Seattle District Corps of Engineers

_____ _____
Date Justine Barton - Environmental Protection Agency

_____ _____
Date Laura Inouye, Ph.D. - Washington Department of Ecology

_____ _____
Date Celia Barton - Washington Department of Natural Resources

Copies furnished:

DMMP signatories
Scott Maharry, Grette Associates
Kori Henry, Port of Kingston
Jerald Gregory, Corps Regulatory

Table 2. Sampling and Compositing depths (ft MLLW).

		Coordinates (NAD83)		DMMU 1	DMMU 2	z-sample	Total
		Latitude	Longitude				
	SAP volume			3,500 cy	13,500 cy	- - -	17,000 cy
	design depth			-11.0	-15.5		
Station	S-1	47° 47' 44.45" N	122° 29' 59.32" W	-4.1 to -11.1		-11.1 to -13.1	
	S-2	47° 47' 41.62" N	122° 29' 59.21" W	-6.6 to -13.6		-13.6 to -15.6	
	S-3	- - -	- - -	- - -	- - -	- - -	
	S-4	47° 47' 36.40" N	122° 29' 58.23" W		-3.4 to -10.9	- - -	
	S-5	47° 47' 35.66" N	122° 29' 58.23" W		-9.3 to -16.1	-16.1 to -18.1	

Notes:

1) z-samples were collected but no analysis was required

Table 3. Chemical results compared to DMMP regulatory guidelines.

CHEMICAL	DMMP Guidelines			DMMU 1		DMMU 2	
	SL	BT	ML				
CONVENTIONALS				conc	LQ	conc	LQ
Gravel, %				2.8		0	
Sand, %				84		91.8	
Silt, %				12.3		5.1	
Clay, %				1		2.1	
Fines (Silt + Clay), %				13.3		7.2	
Total Solids, %				78		77.7	
Volatile Soilids, %				1.13		1.75	
Total Organic Carbon, %				0.329		0.677	
Total Sulfides, mg/kg				1.24	U	97.1	
Total Ammonia, mg N/kg				3.51		25.1	
METALS (mg/kg dry)							
Antimony	150	---	200	6	U	6	U
Arsenic	57	507	700	6	U	6	U
Cadmium	5.1	11.3	14.0	0.6		0.5	
Chromium	260	260	---	16.2		17	
Copper	390	1,027	1,300	7.1		6.3	
Lead	450	975	1,200	2	U	2	U
Mercury	0.41	1.5	2.3	0.02	U	0.02	U
Selenium	---	3	---	0.6	U	0.6	U
Silver	6.1	6.1	8.4	0.4	U	0.4	U
Zinc	410	2,783	3,800	23		26	
ORGANOMETALLIC COMPOUNDS							
Tributyltin (porewater; ug/L)	0.15	0.15	---				
Tributyltin (bulk; ug/kg)	73	73	---	3.2	U	3.1	U
PAHs (ug/kg dry)							
Total LPAH	5,200	---	29,000	20	U	19	U
Naphthalene	2,100	---	2,400	20	U	19	U
Acenaphthylene	560	---	1,300	20	U	19	U
Acenaphthene	500	---	2,000	20	U	19	U
Fluorene	540	---	3,600	20	U	19	U
Phenanthrene	1,500	---	21,000	20	U	19	U
Anthracene	960	---	13,000	20	U	19	U
2-Methylnaphthalene	670	---	1,900	20	U	19	U
Total HPAH	12,000	---	69,000	20	U	19	U
Fluoranthene	1,700	4,600	30,000	20	U	19	U
Pyrene	2,600	11,980	16,000	20	U	19	U
Benzo(a)anthracene	1,300	---	5,100	20	U	19	U
Chrysene	1,400	---	21,000	20	U	19	U
Total benzofluoranthenes	3,200	---	9,900	39	U	38	U
Benzo[a]pyrene	1,600	---	3,600	20	U	19	U
Indeno(1,2,3-c,d)pyrene	600	---	4,400	20	U	19	U
Dibenzo(a,h)anthracene	230	---	1,900	4.9	U	4.8	U
Benzo(g,h,i)perylene	670	---	3,200	20	U	19	U

CHEMICAL	SL	BT	ML	DMMU 1		DMMU 2	
CHLORINATED BENZENES (ug/kg dry)							
1,2-Dichlorobenzene	35	---	110	4.9	U	4.8	U
1,4-Dichlorobenzene	110	---	120	4.9	U	4.8	U
1,2,4-Trichlorobenzene	31	---	64	4.9	U	4.8	U
Hexachlorobenzene	22	168	230	1.2	UJ	1.2	UJ
PHTHALATE ESTERS (ug/kg dry)							
Dimethyl phthalate	71	---	1,400	4.9	U	4.8	U
Diethyl phthalate	200	---	1,200	49	U	48	U
Di-n-butyl phthalate	1,400	---	5,100	20	U	19	U
Butyl benzyl phthalate	63	---	970	4.9	U	4.8	U
Bis(2-ethylhexyl)phthalate	1,300	---	8,300	24	U	24	U
Di-n-octyl phthalate	6,200	---	6,200	20	U	19	U
PHENOLS (ug/kg dry)							
Phenol	420	---	1,200	20	U	19	U
2 Methylphenol	63	---	77	4.9	U	4.8	U
4 Methylphenol	670	---	3,600	20	U	19	U
2,4-Dimethylphenol	29	---	210	20	U	19	U
Pentachlorophenol	400	504	690	49	U	48	U
MISCELLANEOUS EXTRACTABLES (ug/kg dry)							
Benzoic acid	650	---	760	390	U	380	U
Benzyl alcohol	57	---	870	20	U	19	U
Dibenzofuran	540	---	1,700	20	U	19	U
Hexachlorobutadiene	11	---	270	4.9	U	4.8	U
N-Nitrosodiphenylamine	28	---	130	20	U	19	U
PESTICIDES (ug/kg dry)							
Aldrin	10	---	---	0.50	U	0.49	U
Total Chlordane	3	37	---	0.99	U	0.97	U
Dieldrin	2	---	---	0.99	U	0.97	U
Heptachlor	2	---	---	0.5	U	0.49	U
p,p'-DDE	9	---	---	0.99	U	0.97	U
p,p'-DDD	16	---	---	0.99	U	0.97	U
p,p'-DDT	5	---	---	0.99	U	0.97	U
Total DDT		50	69	0.99	U	0.97	U
PCBs (ug/kg dry)							
Total PCBs	130	---	3,100	9	U	20	U
SUMMARY							
DMMU volume				3,500 cy		13,500 cy	
Rank				moderate		moderate	
Mean sample depth				- 8.85 ft MLLW		- 9.93 ft MLLW	
Maximum sampling depth				- 13.6 ft MLLW		- 16.1 ft MLLW	
DMMP DETERMINATION				PASS		PASS	

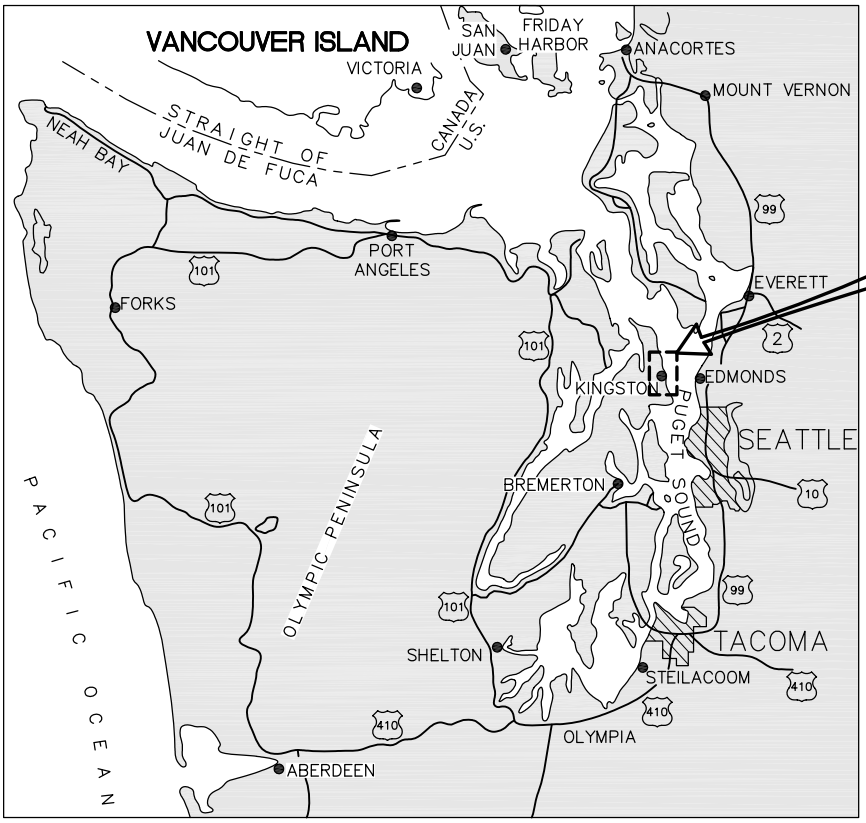
J = estimated concentration
U = undetected
OC = organic carbon
SL = screening level
BT = bioaccumulation trigger
ML = maximum level
reported at MDL

Table 4. Chemical results compared to SMS regulatory guidelines.

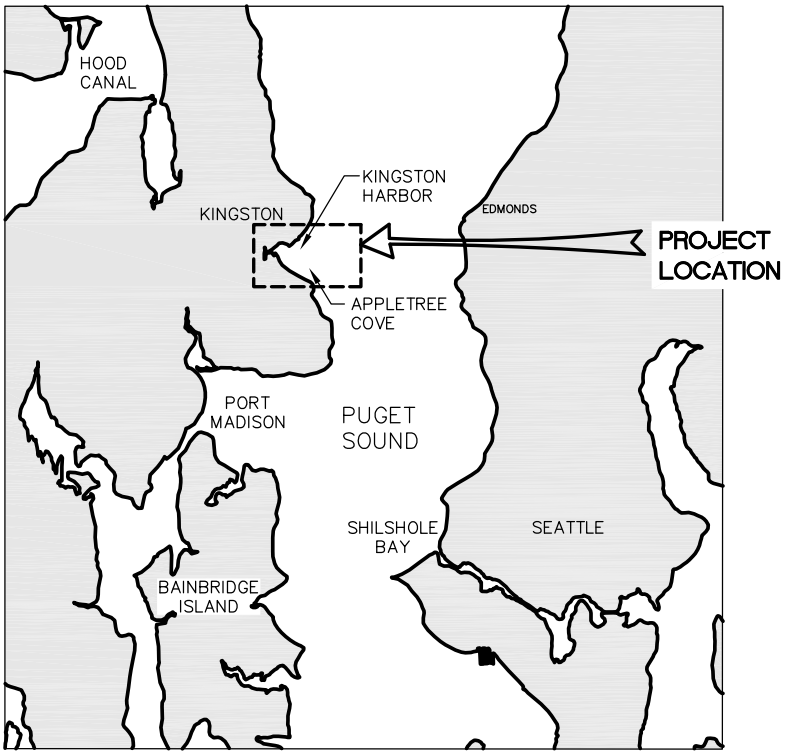
CHEMICAL	SMS Guidelines		DMMU 1		DMMU 2	
	SQS	CSL	conc	LQ	conc	LQ
Total Organic Carbon, %			0.329		0.677	
METALS (mg/kg dry)						
Arsenic	57	93	6	U	6	U
Cadmium	5.1	6.7	0.6		0.5	
Chromium	260	270	16.2		17	
Copper	390	390	7.1		6.3	
Lead	450	530	2	U	2	U
Mercury	0.41	0.59	0.02	U	0.02	U
Silver	6.1	6.1	0.4	U	0.4	U
Zinc	410	960	23		26	
PAHs (mg/kg OC)						
Total LPAH	370	780	6.08	U	2.81	U
Naphthalene	99	170	6.08	U	2.81	U
Acenaphthylene	66	66	6.08	U	2.81	U
Acenaphthene	16	57	6.08	U	2.81	U
Fluorene	23	79	6.08	U	2.81	U
Phenanthrene	100	480	6.08	U	2.81	U
Anthracene	220	1200	6.08	U	2.81	U
2-Methylnaphthalene	38	64	6.08	U	2.81	U
Total HPAH	960	5300	6.08	U	2.81	U
Fluoranthene	160	1200	6.08	U	2.81	U
Pyrene	1000	1400	6.08	U	2.81	U
Benzo(a)anthracene	110	270	6.08	U	2.81	U
Chrysene	110	460	6.08	U	2.81	U
Benzofluoranthenes	230	450	11.85	U	5.61	U
Benzo(a)pyrene	99	210	6.08	U	2.81	U
Indeno(1,2,3-c,d)pyrene	34	88	6.08	U	2.81	U
Dibenzo(a,h)anthracene	12	33	1.49	U	0.71	U
Benzo(g,h,i)perylene	34	88	6.08	U	2.81	U
CHLORINATED BENZENES (mg/kg OC)						
1,2-Dichlorobenzene	2.3	2.3	1.49	U	0.71	U
1,4-Dichlorobenzene	3.1	9	1.49	U	0.71	U
1,2,4-Trichlorobenzene	0.81	1.8	1.49	U	0.71	U
Hexachlorobenzene	0.38	2.3	0.36	UJ	0.18	UJ
PHTHALATE ESTERS (mg/kg OC)						
Dimethyl phthalate	53	53	1.49	U	0.71	U
Diethyl phthalate	61	110	14.89	U	7.09	U
Di-n-butyl phthalate	220	1700	6.08	U	2.81	U
Butyl benzyl phthalate	4.9	64	1.49	U	0.71	U
Bis(2-ethylhexyl)phthalate	47	78	7.29	U	3.55	U
Di-n-octyl phthalate	58	4500	6.08	U	2.81	U

	SMS Guidelines		DMMU 1		DMMU 2	
PHENOLS (ug/kg dry)						
Phenol	420	1200	20	U	19	U
2 Methylphenol	63	63	4.9	U	4.8	U
4 Methylphenol	670	670	20	U	19	U
2,4-Dimethylphenol	29	29	20	U	19	U
Pentachlorophenol	360	690	49	U	48	U
MISCELLANEOUS EXTRACTABLES (mg/kg OC)						
Dibenzofuran	15	58	6.08	U	2.81	U
Hexachlorobutadiene	3.9	6.2	1.49	U	0.71	U
N-Nitrosodiphenylamine	11	11	6.08	U	2.81	U
PCBs (mg/kg OC)						
Total PCBs (mg/kg carbon)	12	65	2.74	U	2.95	U
MISCELLANEOUS EXTRACTABLES (ug/kg dry)						
Benzyl alcohol	57	73	20	U	19	U
Benzoic acid	650	650	390	U	380	U

U = undetected
LQ = laboratory qualifier
OC = organic carbon
SMS = Sediment Management Standards
SQS = sediment quality standard
CSL = cleanup screening level
reported at MDL



VICINITY MAP



LOCATION MAP

DRAWING INDEX
1. VICINITY MAP
2. EXISTING SITE PLAN
3. PROPOSED DREDGING PLAN
4. SECTIONS
5. DISPOSAL SITE

PERMIT DRAWING

TIDAL WATER LEVELS (MLLW)	
MEAN HIGHER HIGH WATER	+11.0'
MEAN LOWER LOW WATER	0.0'

PURPOSE: TO RESTORE SAFE NAVIGATION TO AN AUTHORIZED NAVIGATION CHANNEL AND MARINA BASIN

LAT: 47° 47' 45.45" LONG: 122° 29' 58.76"

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. PORT OF KINGSTON
2. DANIEL CRABTREE
3. JEFFREY HAYES
4. ANDREW MCSHEA
5. FRANK JAMES
6. JOHNNY GILLESPIE

PORT OF KINGSTON MAINTENANCE DREDGING

VICINITY MAP

APPLICATION BY:
PORT OF KINGSTON

PROPOSED: DREDGE EXISTING NAVIGATION CHANNEL

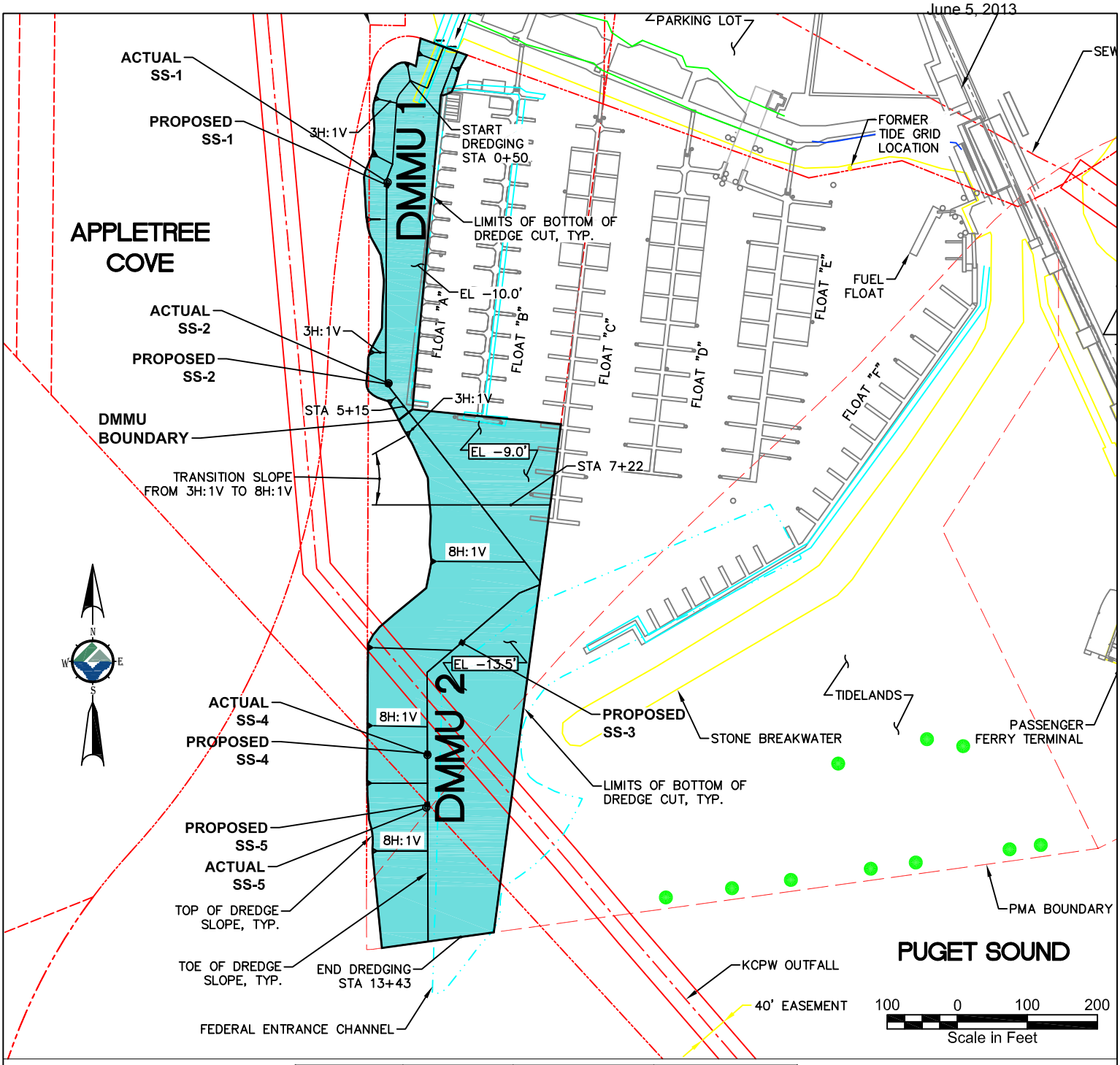
IN: PUGET SOUND

AT: KINGSTON, WASHINGTON

COUNTY: KITSAP

T27N R2E, SEC 25

Figure 1. Vicinity Map



Sampling Station Number	Proposed/ Actual Sample Location[1]	Latitude	Longitude
SS-1	Proposed	47° 47′ 44.41″ N	122° 29′ 59.33″ W
	Actual	47° 47′ 44.45″ N	122° 29′ 59.32″ W
SS-2	Proposed	47° 47′ 41.61″ N	122° 29′ 59.21″ W
	Actual	47° 47′ 41.62″ N	122° 29′ 59.21″ W
SS-3	Proposed	47° 47′ 37.99″ N	122° 29′ 57.56″ W
	Actual	Acceptance criteria not met for any of the SS-3 sample attempts[2]	
SS-4	Proposed	47° 47′ 36.42″ N	122° 29′ 58.23″ W
	Actual	47° 47′ 36.40″ N	122° 29′ 58.23″ W
SS-5	Proposed	47° 47′ 35.68″ N	122° 29′ 58.20″ W
	Actual	47° 47′ 35.66″ N	122° 29′ 58.23″ W

[1] Actual sample location refers to the location of the sample that met acceptance criteria and was used for compositing.
[2] DMMO contacted. Refer to DMMO Contact Log provided in Appendix C.

PURPOSE: TO RESTORE SAFE NAVIGATION TO AN AUTHORIZED NAVIGATION CHANNEL AND MARINA BASIN

LAT: 47° 47' 45.45" LONG: 122° 29' 58.76"

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PORT OF KINGSTON MAINTENANCE DREDGING

SAMPLING LOCATIONS

APPLICATION BY:
PORT OF KINGSTON

PROPOSED: DREDGE EXISTING NAVIGATION CHANNEL

IN: PUGET SOUND

AT: KINGSTON, WASHINGTON

COUNTY: KITSAP

Figure 2. Proposed and actual sampling locations