

MEMORANDUM FOR RECORD

4 November 2014

SUBJECT: SUPPLEMENTAL TESTING AND DMMP RECENCY EXTENSION FOR THE PORT OF GRAYS HARBOR TERMINAL 2.

1. The most recent sampling for full characterization of maintenance dredged material at the Port of Grays Harbor Terminal 2 occurred in September 2007. The Dredged Material Management Program (DMMP) suitability determination based on that sampling was issued November 14, 2007 (DMMP, 2007). Terminal 2 is ranked low-moderate. The recency period for low-moderate-ranked projects is six years. Therefore, the recency period for Terminal 2 expired in September 2013.
2. The Port of Grays Harbor notified the DMMP agencies on September 9, 2013 of their intention to conduct maintenance dredging at all four of their terminals, including Terminal 2, beginning in September 2013 and extending through February 15, 2014. The DMMP agencies evaluated the project, determined that conditions had not changed since the time of the 2007 suitability determination, and agreed to extend the frequency (now called recency) period until the end of the dredging window in February 2014. A memo documenting this decision was finalized on September 16, 2013 (DMMP, 2013). The memo included a stipulation that full characterization at all four terminals be completed in the summer of 2014, prior to the 2014/2015 dredging season.
3. On August 21, 2014 the Port of Grays Harbor notified the DMMP agencies that full characterization of the four terminals had been delayed due to studies the Port had undertaken to evaluate sediment accumulation rates and potential accumulation reduction methods. The Port indicated that maintenance dredging of approximately 41,000 cubic yards of material from Terminal 2 was critical for continued cargo operations and that full characterization would likely not be completed prior to the beginning of dredging. Therefore, the Port requested another recency extension for this terminal.
4. The DMMP agencies considered this request, but determined that at least some supplemental sampling and testing would be needed at Terminal 2 before a second recency extension could be provided. The Port agreed and developed a sampling and analysis plan (SAP) for this supplemental characterization. The SAP was approved by the DMMP agencies on September 17, 2014.
5. The Port of Grays Harbor collected multiple grab samples at three locations along the pier face at Terminal 2 (Figure 1) and composited the material for a single analysis. Results of the analysis are provided in Table 1. There were no exceedances of the DMMP screening levels or bioaccumulation triggers; therefore, biological testing was not required. The dioxin/furan toxicity equivalent (TEQ) concentration of the composite was 6.0 parts per trillion (pptr), which is below the Grays Harbor bioaccumulation trigger of 15 pptr. The supplemental testing results indicate that the proposed dredged material from Terminal 2 is suitable for in-water disposal.
6. On the basis of the supplemental testing results, the DMMP agencies are in agreement that a recency extension for Terminal 2 is acceptable. This recency extension covers maintenance dredging at Terminal 2 until the end of the dredging window in February 2015 or until results from the full characterization are

available. Should the full characterization results indicate that dredged material at Terminal 2 is no longer suitable for in-water placement, this recency extension will become void.

7. A pre-dredge meeting or conference call with the DMMP agencies is still required prior to dredging. A dredging quality control plan must be developed and submitted to the Seattle District Corps of Engineers Regulatory Branch project manager for dredging at least 7 days prior to the pre-dredge meeting. A DNR site-use authorization must also be acquired.

8. References:

DMMP, 2007. Determination Regarding the Suitability of Proposed Dredged Material from the Port of Grays Harbor Terminals 1, 2 and 4, Aberdeen, Grays Harbor County, for Open-Water Disposal at the South Jetty or Point Chehalis Dispersive Sites, or for Beneficial Use. Prepared by the Army Corps of Engineers for the DMMP agencies, November 14, 2007.

DMMP, 2013. DMMP Frequency Extension for Port of Grays Harbor Terminals 2, 3, 4 and Volume Increase for Terminal 3. Prepared by the Army Corps of Engineers for the DMMP agencies, September 16, 2013.

9. Agency Signatures.

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

Concur:

Date David Fox, P.E. - 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

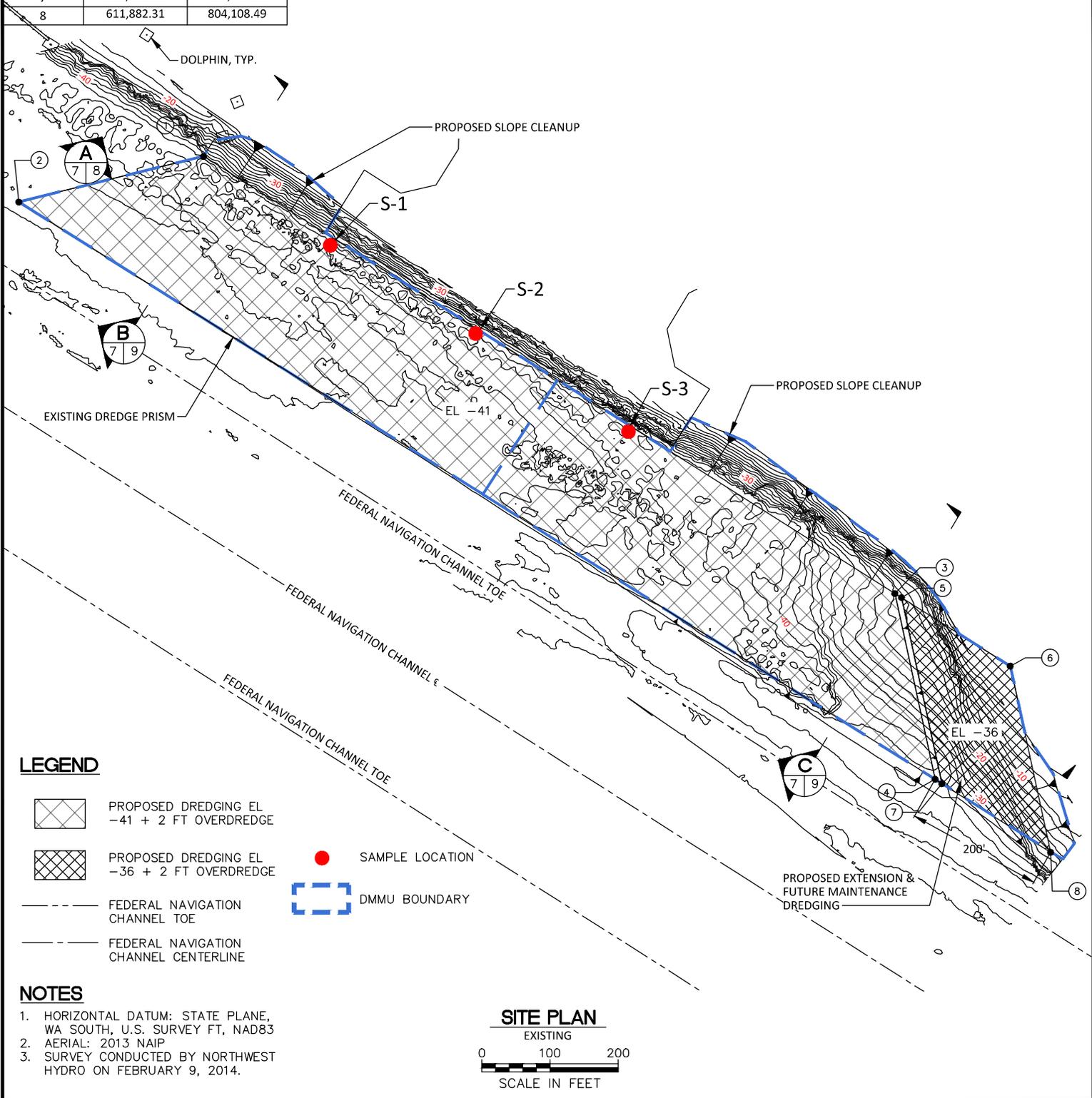
Copies furnished:

DMMP signatories
Ron Wilcox, Seattle District Regulatory
Marc Horton, Port of Grays Harbor
Sally Fisher, Berger-Abam

Figure 1



WORKING POINTS		
POINT ID	NORTHING	EASTING
1	612,904.37	802,866.14
2	612,837.33	802,594.96
3	612,262.16	803,880.10
4	611,989.57	803,939.10
5	612,256.37	803,889.92
6	612,155.60	804,049.34
7	611,983.08	803,949.06
8	611,882.31	804,108.49



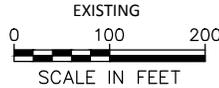
LEGEND

-  PROPOSED DREDGING EL -41 + 2 FT OVERDREDGE
-  PROPOSED DREDGING EL -36 + 2 FT OVERDREDGE
-  SAMPLE LOCATION
-  DMMU BOUNDARY
-  FEDERAL NAVIGATION CHANNEL TOE
-  FEDERAL NAVIGATION CHANNEL CENTERLINE

NOTES

1. HORIZONTAL DATUM: STATE PLANE, WA SOUTH, U.S. SURVEY FT, NAD83
2. AERIAL: 2013 NAIP
3. SURVEY CONDUCTED BY NORTHWEST HYDRO ON FEBRUARY 9, 2014.

SITE PLAN



PURPOSE: MAINTENANCE DREDGING

VERTICAL DATUM: MLLW = 0.0 FT

APPLICATION BY: PORT OF GRAYS HARBOR

**PORT OF GRAYS HARBOR
TERMINAL 2
MAINTENANCE DREDGING PROJECT**

**TERMINAL 2 - SURFACE
SAMPLING LOCATION**

PROPOSED: MAINTENANCE DREDGING PROJECT

IN: GRAYS HARBOR
 AT: TERMINAL 2
 COUNTY: GRAYS HARBOR STATE: WASHINGTON
 SHEET 2 DATE: 10/21/2014

**Table 1
Summary of Chemical Analytical Results Relative to DMMP and SMS Criteria**

CHEMICAL	CAS [®] NUMBER	9/17/2014	For SMS	DMMP Marine Guidelines			SMS Guidelines	
		C1	C1	SL	BT	ML	SQS	CSL
CONVENTIONALS (mg/kg dry weight) - BIOASSAY ADVISORY ONLY								
Ammonia		82.5	---	---	---	---	---	---
Total sulfides		8.0 (S3)	---	---	---	---	---	---
General Chemistry Analysis (percent)								
Total solids		45.2	---	---	---	---	---	---
Total volatile solids		8.8	---	---	---	---	---	---
Total organic carbon		2.1	---	---	---	---	---	---
Preserved total solids		39.9 (S3)	---	---	---	---	---	---
METALS (mg/kg dry weight)							mg/kg dry weight	
Antimony	7440-36-0	<10	---	150	---	200	---	---
Arsenic	7440-38-2	<10	<10	57	507.1	700	57	93
Cadmium	7440-43-9	0.5	0.50	5.1	11.3	14	5.1	6.7
Chromium	7440-47-3	42	42	260	260	---	260	270
Copper	7440-50-8	54.8	54.8	390	1,027	1,300	390	390
Lead	7439-92-1	7	7	450	975	1,200	450	530
Mercury	7439-97-6	0.0418 J	0.0418 J	0.41	1.5	2.3	0.41	0.59
Nickel	7440-02-0	28	---	---	---	---	---	---
Selenium	7782-49-2	0.53 J	---	---	3	---	---	---
Silver	7440-22-4	<0.7	<0.7	6.1	6.1	8.4	6.1	6.1
Zinc	7440-66-6	87	87	410	2,783	3,800	410	960
PAHs (µg/kg dry weight)							mg/kg Organic Carbon	
Naphthalene	91-20-3	28	1.33	2,100	---	2,400	99	170
Acenaphthylene	208-96-8	4.9	0.23	560	---	1,300	66	66
Acenaphthene	83-32-9	3.2 J	0.15	500	---	2,000	16	57
Fluorene	86-73-7	5	0.24	540	---	3,600	23	79
Phenanthrene	85-01-8	39	1.86	1,500	---	21,000	100	480
Anthracene	120-12-7	3.4 J	0.16	960	---	13,000	220	1,200
2-Methylnaphthalene [®]	91-57-6	11	0.52	670	---	1,900	38	64
Total LPAH	---	76.9	3.66	5,200	---	29,000	370	780
Fluoranthene	206-44-0	35	1.67	1,700	4,600	30,000	160	1,200
Pyrene	129-00-0	31	1.48	2,600	11,980	16,000	1,000	1,400
Benzo(a)anthracene	56-55-3	5	0.24	1,300	---	5,100	110	270
Chrysene	218-01-9	8	0.38	1,400	---	21,000	110	460
Benzo(a)fluoranthenes (b, j, k)	205-99-2	---	---	---	---	---	---	---
	205-82-3	9.8	0.5	3,200	---	9,900	---	---
	207-08-9	---	---	---	---	---	230	450
Benzo(a)pyrene	50-32-8	4.7 J	0.22	1,600	---	3,600	99	210
Indeno(1,2,3-c,d)pyrene	193-39-5	<4.80	0.23	600	---	4,400	34	88
Dibenz(a,h)anthracene	53-70-3	<4.80	0.23	230	---	1,900	12	33
Benzo(g,h,i)perylene	191-24-2	5.1	0.24	670	---	3,200	34	88
Total HPAH	---	93.9	4.47	12,000	---	69,000	960	5,300
CHLORINATED HYDROCARBONS (µg/kg dry weight)							mg/kg Organic Carbon	
1,4-Dichlorobenzene	106-46-7	3.1 J	0.15	110	---	120	3.1	9
1,2-Dichlorobenzene	95-50-1	2.9 J	0.14	35	---	110	2.3	2.3
1,2,4-Trichlorobenzene	120-82-1	<4.8	0.23	31	---	64	0.81	1.8
Hexachlorobenzene (HCB)	118-74-1	<0.98	0.05	22	168	230	0.38	2.3

Table 1 Continued
Summary of Chemical Analytical Results Relative to DMMP and SMS Criteria

CHEMICAL	CAS ⁽¹⁾ NUMBER	9/17/2014	For SMS	DMMP Marine Guidelines			SMS Guidelines	
		C1	C1	SL	BT	ML	SQS	CSL
PHTHALATES (µg/kg dry weight)							mg/kg Organic Carbon	
Dimethyl phthalate	131-11-3	14	0.67	71	—	1,400	53	53
Diethyl phthalate	84-86-2	<19	0.90	200	—	1,200	61	110
Di-n-butyl phthalate	84-74-2	<19	0.90	1,400	—	5,100	220	1,700
Butyl benzyl phthalate	85-68-7	<4.8	2.29	63	—	970	4.9	64
Bis(2-ethylhexyl) phthalate	117-81-7	<48	2.29	1,300	—	8,300	47	78
Di-n-octyl phthalate	117-84-0	<19	0.90	6,200	—	6,200	58	4,500
PHENOLS (µg/kg dry weight)							ug/kg dry weight	
Phenol	108-95-2	34 M	34 M	420	—	1,200	420	1,200
2-Methylphenol	95-48-7	3.8 J	3.8 J	63	—	77	63	63
4-Methylphenol	106-44-5	42	42	670	—	3,600	670	670
2,4-Dimethylphenol	105-67-9	<24	<24	29	—	210	29	29
Pentachlorophenol	87-86-5	<97	<97	400	504	690	360	690
MISCELLANEOUS EXTRACTABLES (µg/kg dry weight)							ug/kg dry weight	
Benzyl alcohol	100-51-6	<19	<19	57	—	870	57	73
Benzoic acid	65-85-0	88 J	88 J	650	—	760	650	650
Dibenzofuran	132-64-9	<19	<19	540	—	1,700	15 (3)	58 (3)
Hexachlorobutadiene	87-68-3	<0.98	<0.98	11	—	270	3.9 (3)	6.2 (3)
N-Nitrosodiphenylamine	86-30-6	<4.8	<4.8	28	—	130	11 (3)	11 (3)
PESTICIDES & PCBs (µg/kg dry weight)							mg/kg Organic Carbon	
4,4'-DDD	72-54-8	<0.98	—	16	—	—	—	—
4,4'-DDE	72-55-9	<0.98	—	9	—	—	—	—
4,4'-DDT	50-29-3	<0.98	—	12	—	—	—	—
sum of 4,4'-DDD, 4,4'-DDE and 4,4'-DDT		<0.98	—	—	50	69	—	—
Aldrin	309-00-2	<0.49	—	9.5	—	—	—	—
Total Chlordane		<1.1	—				—	—
(sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, oxychlordane)	5103-71-9	<0.49	—	2.8	37	—	—	—
	5103-74-2	<1.1 Y	—				—	—
	5103-73-1	<0.98	—				—	—
	39765-80-5	<0.98	—				—	—
	27304-13-8	<0.98	—				—	—
Dieldrin	60-57-1	<0.98	—	1.9	—	1,700	—	—
Heptachlor	76-44-8	<0.53 LY	—	1.5	—	270	—	—
Total PCBs Aroclors (Sum of 1016, 1221, 1242, 1248, 1254, 1260, 1268)	—	<14 Y	0.67	130	38 (3)	3,100	12	65

Table 1 Continued
Summary of Chemical Analytical Results Relative to DMMP and SMS Criteria

CHEMICAL	CAS ⁽¹⁾ NUMBER	9/17/2014	For SMS	DMMP Marine Guidelines			SMS Guidelines	
		C1	C1	SL	BT	ML	SQS	CSL
ORGANOMETALLIC COMPOUNDS								
Tributyltin ion (interstitial water; ug/L)	56573-85-4	<0.005	---	0.15	0.15	---	---	---
DIOXINS/FURANS⁽⁴⁾								
Total TEQ (ppt dry wt) ⁶	See Note 6	6.01	---	---	15	---	---	---

Updated September 2, 2014

Notes:

DMMP = Dredged Material Management Program (September 2014), SMS = Sediment Management Standards (February 2013)

Total LPAH = The sum of acenaphthylene, acenaphthene, anthracene, fluorene, naphthalene and phenanthrene.

Total HPAH = The sum of benzo(a)anthracene, benzo(a)pyrene, total benzofluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene and pyrene.

Total benzofluoranthenes = the sum of the "b," "j" and "k" isomers. The "j" isomer co-elutes with the "k" isomer, thus the concentration of the "j" isomer is included in the "k" isomer concentration.

⁽¹⁾ Chemical Abstract Service Registry Number

⁽²⁾ 2-Methylnaphthalene is not included in the summation for total LPAH.

⁽³⁾ This value is normalized to total organic carbon, and is expressed in mg/kg carbon.

⁽⁴⁾ Analyses required only when there is sufficient reason-to-believe for presence in given project or location. See the DMMP Users Manual for more information on when to include these compounds in a characterization.

⁽⁵⁾ Bulk marine sediment measurement of TBT is used only when porewater extraction cannot be accomplished.

⁽⁶⁾ For the dispersive sites in Grays Harbor, each disposed DMMU must have a 2,3,7,8-TCDD concentration less than or equal to 5 ng/kg and a TEQ of less than or equal to 15 ng/kg. DMMUs with concentrations above these levels would be required to undergo bioaccumulation testing in order to qualify for open-water disposal.

SL = Screening Level

SQS = Sediment Quality Standards

CSL = Cleanup Screening Levels

BT = Bioaccumulation Trigger

ML = Maximum Level

LPAH = low molecular weight polynuclear aromatic hydrocarbon compounds

HPAH = high molecular weight polynuclear aromatic hydrocarbon compounds

TOC = Total organic carbon

Qualifiers:

J = Estimated concentration when the value is less than ARI's established reporting limits

LY = A unique "LY" qualifier has been applied to this set of pesticide data. The elevated value associated with a "Y" flag due to positive chromatographic interference has been taken from the lower of the two column concentrations. Re-evaluation of the raw data has made this possible with a careful examination of the lower column baseline and retention time. The "L" qualifier was manually added to select results to indicate the lower column value was used for the final concentration.

M = Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses.

Y = The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag (non-detected) with a raised reporting limit.