CENWS-OD-TS-DMMO

MEMORANDUM FOR: RECORD February 14, 2008

SUBJECT: DETERMINATION ON THE SUITABILITY OF PROPOSED MAINTENANCE DREDGED MATERIAL FROM BARBEE MILL BOATHOUSE RENOVATION PROJECT (NWS-2007-1019-NO) EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT FOR POTENTIAL BENEFICIAL USES (HABITAT ENHANCEMENT) IN LAKE WASHINGTON OR UPLAND BENEFICIAL USES.

The following summary reflects the consensus determination of the Dredged Material Management Program (DMMP) agencies (U.S. Army Corps of Engineers, Washington Departments of Ecology and Natural Resources, and the Environmental Protection Agency) on the suitability of material from Barbee Mill Boathouse Renovation Project for appropriate beneficial uses in Lake Washington and/or upland use.

Table 1. Project Details

SAP received	September 24, 2007
SAP approved	October 2, 2007
Sampling dates	October 21, 2007
Final data report submitted	January 31, 2008
Recency Determination: Moderate Concern (5 years)	October 2012
DAIS reference number	BCBAD-1-A-F-246

1. Historical Background. The proposed dredge area in Lake Washington is approximately 10,000 square feet with an average sediment thickness of approximately 2 ft. The estimated volume of material to be dredged is less than 1000 cy. Historically, dredging of the May Creek Delta and Boathouse Area was conducted every 3-5 years. However, with site development on the Conner Development property to the north and suspension of dredging in the May Creek Delta, the rate of future sediment accumulation in the Boathouse Area is not known with a great deal of certainty, but maintenance dredging is anticipated to be required every 3 to 5 years to maintain the dredge profile for navigation access and continued recreational use of the boathouse. The frequency of dredging will be largely determined by the rate of sediment deposition from storm water runoff arising from the May Valley and transported by May Creek to Lake Washington.

2. Sampling. The DMMP agencies approved sampling and analysis plan required testing of the proposed dredged material, for potential Beneficial Use (BU) suitability (upland and/or inwater habitat enhancement), and also specified collecting and archiving of a Z-sample (top 1 foot of the proposed new surface after dredging). The DMMP agencies evaluated the tested sample for compliance with SMS guidelines (e.g., SEF freshwater guidelines), and analysis of the archived Z-sample would be triggered if the material testing results demonstrated sediment quality concerns within the proposed dredged material footprint.

3. Sampling was conducted on October 21, 2007, and grab samples were collected at 5 locations (Figure 1), and composited for one DMMU-C1 analysis. Samples stations were located using differential GPS. However, attempts to collect Z-samples at the five sampling stations were unsuccessful with a gravity corer, and split spoon corer, and a modified Shelby Tube sampler, whereas surface samples were collected with a VanVeen grab sampler. A composited grab sample was submitted for analysis. After reviewing the characterization report submitted, the DMMP agencies agree that the approved sampling and analysis plan was generally followed, except the collection of the z-sample. The DMMP agencies reviewed the data for the composited grab sample, and quality assurance/quality control guidelines specified by the DMMP were generally complied with, and these data were deemed suitable for decision-making using best-professional-judgment.

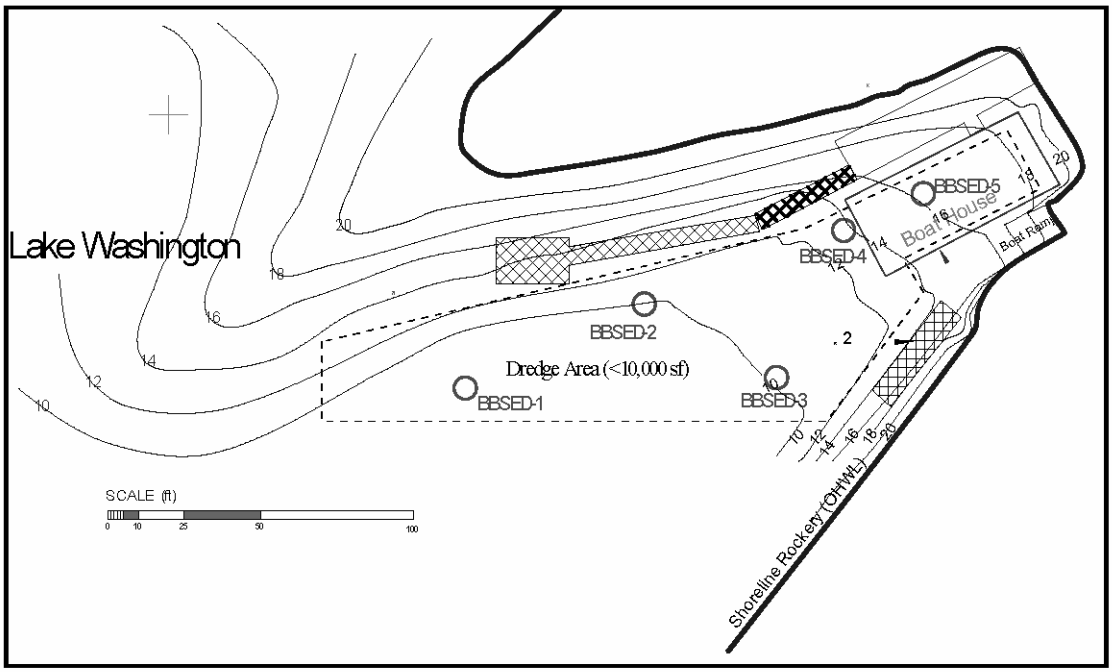

Figure 1. Barbee Boathouse Sediment Sampling Stations

4. Chemical Analysis and Comparison with SEF Freshwater/DMMP Guidelines. The Agencies' approved sampling and analysis plan was followed and quality assurance/quality control guidelines specified by PSEP and DMMP were generally complied with. A summary of Chemical analysis results are provided in Table 2, demonstrate that the single DMMU evaluated had no detected or undetected chemicals exceeding SEF-SL1-Freshwater or DMMP SL guidelines.

5. Suitability For Beneficial Uses. All sediments were found suitable for beneficial use as compared with the SEF Freshwater Guidelines, and all chemicals were also below DMMP Screening Level guidelines. The DMMP agencies will not require analysis of the new-surface after dredging is completed, based on these testing results.

6. This memorandum affirms the suitability of the sediment proposed for dredging at the Barbee Mill Boathouse for an appropriate beneficial use project. However, this suitability determination does not constitute final agency approval of the project. A dredging plan for this project must be completed as part of the final project approval process. A final decision will be made after full consideration of agency input, and after an alternatives analysis is done under Section 404(b)(1) of the Clean Water Act.

Concur:

3/3/2008
Date

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

2/28/2008
Date

Erika Hoffman, Environmental Protection Agency

02/28/2008
Date

Laura Inouye, Ph.D., Washington Department of Ecology

3/3/08
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Table 2. Barbee Company Boathouse DMMP/SEF-Freshwater Guidelines Characterization Summary

								DMMU ID:	DMMU-C1	
	DMMP Marine				Freshwater SEF				mg/kg-dry wgt	VQ
CHEMICAL NAME	Units	SL	BT	ML	Units	SL1	SL2			
Antimony		150		200		--	--		0.3	
Arsenic	mg/kg	57	507.1	700	mg/kg	20	51		**2.8**	
Cadmium	mg/kg	5.1	11.3	14	mg/kg	1.1	1.5		**0.30**	
Chromium	mg/kg	(2)	267	(2)	mg/kg	95	100		**21.1**	
Copper	mg/kg	390	1,027	1,300	mg/kg	80	830		**15.3**	
Lead	mg/kg	450	975	1,200	mg/kg	340	430		**10.0**	
Mercury	mg/kg	0.41	1.5	2.3	mg/kg	0.28	0.75		**0.06**	
Nickel	mg/kg	140	370	370	mg/kg	60	70		**24.7**	
Selenium	mg/kg	(2)	3	(2)	mg/kg	--	--		**0.7**	
Silver	mg/kg	6.1	6.1	8.4	mg/kg	2.0	2.5		**0.03**	
Zinc	mg/kg	410	2,783	3,800	mg/kg	130	400		**48.0**	
TBT ion (porewater)	ug/TBT/L	0.15	0.15		ug/TBT/L				**NA**	
TBT ion (bulk sediment)	ug/TBT/kg	73.2	73.2		ug/TBT/kg	75	75		**NA**	
Naphthalene	ug/kg	2,100		2,400	ug/kg	500	1,300		20.0	u
Acenaphthylene	ug/kg	560		2,000	ug/kg	470	640		20.0	u
Acenaphthene	ug/kg	500		2,000	ug/kg	1,100	1,300		20.0	u
Fluorene	ug/kg	540		3,600	ug/kg	1,000	3,000		20.0	u
Phenanthrene	ug/kg	1,500		2,100	ug/kg	6,100	7,600		**70**	
Anthracene	ug/kg	560		13,000	ug/kg	1,200	1,600		20.0	u
2-Methylnapthalene	ug/kg	670		1,900	ug/kg	470	560		20.0	u
Total LPAH	ug/kg	5,200		29,000	ug/kg	6,600	9,200		**70**	
Fluoranthene	ug/kg	1,700	4,600	30,000	ug/kg	11,000	15,000		**99**	
Pyrene	ug/kg	2,600	11,980	16,000	ug/kg	8,800	16,000		**56**	
Benzo(a)anthracene	ug/kg	1,300		5,100	ug/kg	4,300	5,800		**28**	
Chrysene	ug/kg	1,400		21,000	ug/kg	5,900	6,400		**39**	
Total Benzo(b+k)fluoranthenes	ug/kg	3,200		9,900	ug/kg	600	4,000		**53**	
Benzo(a)pyrene	ug/kg	1,600		3,600	ug/kg	3,300	4,800		20.0	u
Indeno(1,2,3-cd)pyrene	ug/kg	600		4,400	ug/kg	4,100	5,300		20.0	u
Dibenzo(a,h)anthracene	ug/kg	230		1,900	ug/kg	800	840		20.0	u
Benzo(g,h,I)perylene	ug/kg	670		3,200	ug/kg	4000	5200		20.0	u
Total HPAH	ug/kg	12,000		69,000	ug/kg	31,000	55,000		**275**	
1,3-Dichlorobenzene	ug/kg	170			ug/kg	--	--		20.0	u
1,4-Dichlorobenzene	ug/kg	110		120	ug/kg	--	--		20.0	u
1,2-Dichlorobenzene	ug/kg	35		110	ug/kg	--	--		20.0	u
1,2,4-Trichlorobenzene	ug/kg	31		64	ug/kg	--	--		20.0	u
Hexachlorobenzne (HCB)	ug/kg	22	168	230	ug/kg	--	--		20.0	u
Dimethylphthalate	ug/kg	71		1,400	ug/kg	46	440		20.0	u
Diethylphthalate	ug/kg	200		1,200	ug/kg	--	--		20.0	u
Di-n-butylphthalate	ug/kg	1,400		5,100	ug/kg	--	--		20.0	u
Butylbenzylphthalate	ug/kg	63		970	ug/kg	260.0	370		20.0	u
Bis(2-ethylhexyl)phthalate	ug/kg	1,300		8,300	ug/kg	220	320		**82**	
Di-n-octylphthalate	ug/kg	6,200		6,200	ug/kg	26	45		20.0	u
Phenol	ug/kg	420		1,200	ug/kg	--	--		20.0	u
2-Methylphenol	ug/kg	63		77	ug/kg	--	--		20.0	u
4-Methylphenol	ug/kg	670		3,600	ug/kg	--	--		20.0	u
2,4-Dimethylphenol	ug/kg	29		210	ug/kg	--	--		20.0	u
Pentachlorophenol	ug/kg	400		690	ug/kg	--	--		100.0	u
Benzyl alcohol	ug/kg	57		87	ug/kg	--	--		20.0	u
Benzoic acid	ug/kg	650		760	ug/kg	--	--		200.0	u
Dibenzofuran	ug/kg	540		1,700	ug/kg	400	440		20.0	u
Hexachloroethane	ug/kg	600		1,600	ug/kg	--	--		20.0	u

Table 2. Barbee Company Boathouse DMMP/SEF-Freshwater Guidelines Characterization Summary

								DMMU ID:	DMMU-C1	
	DMMP Marine				Freshwater SEF				mg/kg-dry wgt	VQ
CHEMICAL NAME	Units	SL	BT	ML	Units	SL1	SL2			
Hexachlorobutadiene	ug/kg	29		270	ug/kg	--	--		20.0	u
N-Nitrosodiphenylamine	ug/kg	280		130	ug/kg	--	--		20	u
Trichloroethene	ug/kg	160		1,600	ug/kg	--	--		1.3	u
Tetrachloroethene	ug/kg	57		210	ug/kg	--	--		1.3	u
Ethylbenzene	ug/kg	10		50	ug/kg	--	--		1.3	u
Total Zylene (sum of o-,m-,p-)	ug/kg	40		160	ug/kg	--	--		1.3	u
Total DDT (sum of 4,4'-DDD, 4,4'-DDE and 4,4'-DDT)	ug/kg	6.9	50	69	ug/kg	--	--		2.0	u
Aldrin	ug/kg	10			ug/kg	--	--		0.98	u
Chlordane	ug/kg	10	37		ug/kg	--	--		0.98	u
Dieldrin	ug/kg	10			ug/kg	--	--		2.0	u
Heptachlor	ug/kg	10			ug/kg	--	--		0.98	u
Alpha-BHC	ug/kg		10		ug/kg	--	--		2.00	u
Gamma-BHC (Lindane)	ug/kg	10			ug/kg	--	--		0.98	u
Total PCBs	ug/kg	130	38***	3,100.0	ug/kg	60	120		20.0	u
Total Solids	%								**80.1**	
Total Volatile Solids	%								**0.95**	
Total Organic Carbon	%								**2.0**	
Total Ammonia	mg/kg								**28**	
Total Sulfides	mg/kg								**126**	
Gravel	%								**3.5**	
Sand	%								**81.6**	
Silt	%								**NA**	
Clay	%								**NA**	
Fines (percent silt + clay)*	%								**14.9**	
Bioassay Determination: (P/F)									**NA**	
BTs exceeded:									**no**	
Bioaccumulation conducted:									**no**	
ML Rule exceeded:									**no**	
PSDDA Determination:									**Suitable BU**	
DMMU Volume:	cy								**<1,000 cy/yr**	
Rank									**LM**	
Mean grab sampling depth	cm								10.0	
Maximum sampling depth (mudline)	cm								10.0	
DMMU ID:									**DMMU-C1**	

Legend:

SL/SL1 = Screening Level exceedance

BT = Bioaccumulation Trigger exceedance

S (BU) = Suitable for Beneficial Uses (BU)

U (BU) = Unsuitable for Beneficial Uses

VQ = Validation Qualifier

U = undetected at the reported concentration

NA = Not analyzed

*** used # 200 sieve rather than #230 sieve for % fines**