

15 January 1999

MEMORANDUM FOR RECORD

**SUBJECT: DETERMINATION OF THE SUITABILITY OF DREDGED MATERIAL TESTED UNDER DMMP EVALUATION PROCEDURES FOR HURLEN CONSTRUCTION AND BOYER ALASKA BARGE LINES (98-2-00476, 98-2-00477) FOR DISPOSAL AT THE ELLIOTT BAY OPEN WATER DISPOSAL SITE.**

1. Hurlen Construction and Boyer Alaska Barge Lines propose to dredge 15,100 cubic yards and 8,000 cubic yards respectively from their berthing areas in the Duwamish River. Since these projects are near one another, a combined sampling and analysis event was undertaken. 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. This project area is ranked "high" based on guidance provided in the Management Plan Report, Phase 11, Page A-10, and on previous testing data.

3. A sampling and analysis plan was completed for this project and approved by the PSDDA agencies on 8 June 1998. Sampling for this project was performed on 27-28 August 1998.

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SAP Approval Date	8 June 1998
Sampling dates	27-28 August 1998
Data Report submittal date	17 December 1998
Recency determination dates	27 August 2000

4. Four surface DMMU were characterized for the Hurlen site (C1, C2, C3, and C4) and two surface DMMU (C5 and C6) were characterized for the Boyer site. Two core samples were taken from each DMMU and composited for one analysis.

5. DMMUs C1, C2, C3, C4 and C6 had exceedances of Dredging Year 1998 DMMP screening levels. The chemical values above screening level are listed in Table 1. DMMU C3 exceeded the DMMP Maximum Level (ML) for acenaphthene (ML=2000, C3=2300 ppb). There were no detection limits above screening level. A tiered approach was used for tributyltin (TBT) testing. One sample was analyzed from each project area, with additional analysis required if TBT was detected. Porewater from sediment samples C2 and C5 was extracted and analyzed for the

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presence of TBT. TBT was not detected in either sample, with a detection limit of 0.05  $\mu$ /L, well below the DMMP/SMS screening level of 0.15  $\mu$ /L.

6. As a result of laboratory error, volatiles analysis was not performed on the samples within the required holding time. The DMMP agencies agreed that biological testing could be performed in lieu of resampling for volatiles.

7. The applicant did not elect to pursue biological testing on samples C2 and C3 due to multiple SL exceedances. In the absence of biological test results, these two DMMU, representing 7,550 cubic yards, are not suitable for open-water disposal. For those samples undergoing biological testing, the amphipod 10-day acute toxicity test, using *Ampelisca abdita*, and the *Neanthes* 20-day growth test were conducted. Seasonality of acceptable echinoderm species for the sediment larval test resulted in lack of species availability within the holding times for these sediments, and it was determined that two tests would be used for decision-making. Tests were conducted according to PSEP (1995), as modified by the DMMP program.

8. Reference sediment for use in the bioassays was collected from Carr Inlet. Control sediment for the amphipod test was obtained from Narragansett Bay, MA. Amphipod organisms were obtained from East Coast Amphipod Supply, Narragansett, RI. *Neanthes* organisms were obtained from Dr. Don Reisch, Long Beach California.

9. Bioassay results are listed in Table 2. One bioassay for composite C6 had a two hit failure. No other hits were observed in the bioassays, and all bioassays met performance standards. The amphipod test had minor water quality deviations (salinity exceedances) but these did not affect the usability of the data.

10. In summary, the DMMP-approved sampling and analysis plan was generally 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 and biological testing, the consensus determination of the PSDDA agencies is that 7,550 cubic yards of sediment proposed to be dredged from the Hurlen site (composites C1 and C4) and all 8,000 cubic yards from the Boyer site are suitable for open-water disposal.

11. This memorandum documents the suitability of proposed dredged sediments for disposal at a PSDDA open water disposal site. 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 input, and after an alternatives analysis is done under section 404 (b) 1 of the Clean Water Act.

Concur:

~1 Feb 1999  
Date

4 February 1999  
Date

4 Feb 99  
Date

04 FEB 99  
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**Table 1. Exceedances of Sediment Screening Levels**

	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>C4</b>
<b>Analytes</b> (in $\mu\text{g}/\text{kg}$ )				
Acenaphthene			2300	
Fluorene			1100	
Phenanthrene		1800	5900	
Total LPAH			10051	
Total HPAH		22720	40819	
Fluoranthene	2600	5200	15000	2700
Pyrene	4400	7200	12000	
Benz(a)anthracene		2100	3800	
Chrysene		2200	3200	
Benzo(a)fluoranthenes (b+k)			3900	
Benzo(a)pyrene		1700	1900	
Indeno(1,2,3-c,d)pyrene		700	640	
Dibenzofuran			710	
Total PCBs				

**Table 2. Bioassay Results**

<b>DMMU</b>	<b>Amphipod (<i>A. abdita</i>) Mortality (%)</b>	<b>20 Day Neanthes Mean Growth Rate</b>	<b>Suitability for Non- Dispersive Disposal</b>
Control	12	0.54	NA
Carr 48	12	0.58	NA
Carr 31	23	0.62	NA
C1	39	0.48	Pass
C4	23	0.48	Pass
C5	27	0.40	Pass
C6	34*	0.47	Pass
<b>Positive Control (EC50/LC50)</b>	CDCl <sub>2</sub> (Mg/L) 0.64	CDCl <sub>2</sub> (Mg/L) 7.18	
<b>DAIS mean</b>	0.79 ± 0.48	12.5 ± 5.4	

\* two-hit failure