CENPS-OP-RG

MEMORANDUM FOR RECORD 19 June 1990

SUBJECT: DECISION ON THE SUITABILITY OF DREDGED MATERIAL TESTED UNDER PSDDA CRITERIA FOR THE CHEVRON USA MAINTENANCE DREDGING PROJECT (OYB-2-013076) TO BE DISPOSED OF AT THE PORT GARDNER OPEN-WATER DISPOSAL SITE.

1. The following summary reflects the PSDDA agencies (Corps, 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 (delivered to the Corps October 30, 1989 and May 22, 1990 respectively) to make a determination of suitability of the 9,600 cubic yards of material proposed for dredging from the Chevron USA project site for disposal at a PSDDA open-water site.

2. The PSDDA-approved sampling and testing plan was followed, and quality assurance/quality control guidelines specified by PSDDA were generally complied with. The data gathered were deemed sufficient and acceptable for regulatory decision-making under the PSDDA program.

3. Three dredged material management units were characterized. Test sample S1 represented the surface sediment (0-3 ft) from sampling station 2 (see Enclosure 1 - plan view) on the south end of the project. Test sample C1 characterized a vertical composite of subsurface sediments (4-8 and 8-13 ft) from sampling station 1 on the north end of the project. Test sample C2 represented composited surface material from sampling station 1 (0-4 ft) and station 3 (0-2 ft) both on the north end of the project.

4. Chemistry data indicated that exceedances of the 1989 PSDDA screening levels (SL) occured for all three analyses. In addition, analysis of pesticides and total PCBs for all three management units resulted in sample-specific detection limits exceeding PSDDA SL's. Exceedances of six PSDDA maximum levels (ML) and one bioaccumulation trigger (BT) occurred for sample C2. No ML's or BT's were exceeded for samples S1 or C1. See Enclosure 2 for a table of all PSDDA sediment quality value exceedances. The multiple exceedances of ML in test sample C2 fail the sediment characterized in this dredged material management unit (Phase II MPR, page A-23, paragraph 6(d)). The SL exceedances for S1 and C1 trigger the requirement for biological testing; for this project concurrent bioassays were conducted.

5. The amphipod 10-day mortality test, Echinoderm sediment larvae combined mortality and abnormality test, Neanthes juvenile infaunal 10-day mortality test and the Microtox bacterial luminescence test were conducted. PSDDA interpretation guidelines specified in June 1988 EPTA, and Bivalve larvae/Echinoderm embryo bioassay interpretation guidelines clarified in the Phase II MPR were used to evaluate the bioassay data. Interpretation guidelines clarified in the Phase II MPR for the sediment larvae bioassay specified necessary clarifications/changes in the mortality and abnormality performance standards for control sediment, reference sediment, and dredged material relative to those specified in June 1988 EPTA. In general the bioassays performed well with respect to appropriate control sediment and seawater control guidelines as specified by PSDDA. The control sediment was from West Beach. The reference sediment (Carr Inlet) was not well-matched to the test sediments but this did not have any consequences for the bioassays: none of the sediments demonstrated dose-responsiveness for Microtox (testing occurred before revisions from the second annual PSDDA review meeting were placed in effect), no test sediment exhibited mortalities for the amphipod test greater than twenty percent over control, the reference sediment exceeded the control sediment mortality by less than twenty percent for the Neanthes test and outperformed the seawater control in the Echinoderm test.

6. The bioassays reflected the chemical analysis results. Sample C2 failed the Echinoderm sediment larvae test with combined mortality and abnormality exceeding the reference sediment by 76.4 percent. The results of this bioassay alone would fail this dredged management unit based on the "single hit" rule (Phase II MPR, page A-25), which is corroborated by the chemistry exceedances of ML. Sample C1 had a "single hit" for the Echinoderm test under the "two-hit" rule with no hits for any other bioassay. Sample S1 had a "single hit" under the "two-hit" rule for the Neanthes bioassay with no hits for any other bioassay. Therefore the dredged material management units characterized by samples S1 and C1 pass the biological testing guidelines and are suitable for open-water disposal.

7. The total volume represented by the failed surface sediment was 3,700 cubic yards and must be disposed of at an approved upland site if dredged. The subsurface sediments underlying this surface stratum consist of 5,500 cubic yards and are suitable for open-water disposal. A dredging plan must be approved by the Corps of Engineers which is adequate for separating the surface sediments from the subsurface sediments in this area. The volume represented by the surface sample S1 is 400 cubic yards and is suitable for open-water disposal.

8. Based on the above discussion and summary of chemical and bioassay results for the Chevron USA project area, the PSDDA agencies concluded that 5,900 cubic yards of proposed dredged material was suitable for unconfined open-water disposal at the Port Gardner disposal site, whereas 3,700 cubic yards of material was found to be unsuitable for open-water unconfined disposal.

Concur:

3 July 1990
Date

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

19 June 1990
Date

David F. Fox
David Fox
Seattle District Corps of Engineers

19 June 1990
Date

John Malek
John Malek
Environmental Protection Agency, Region X

Date

Richard L. Vining
Rick Vining
Washington Department of Ecology

21 June 1990
Date

Betsy Striplin
Betsy Striplin
Washington Department of Natural Resources

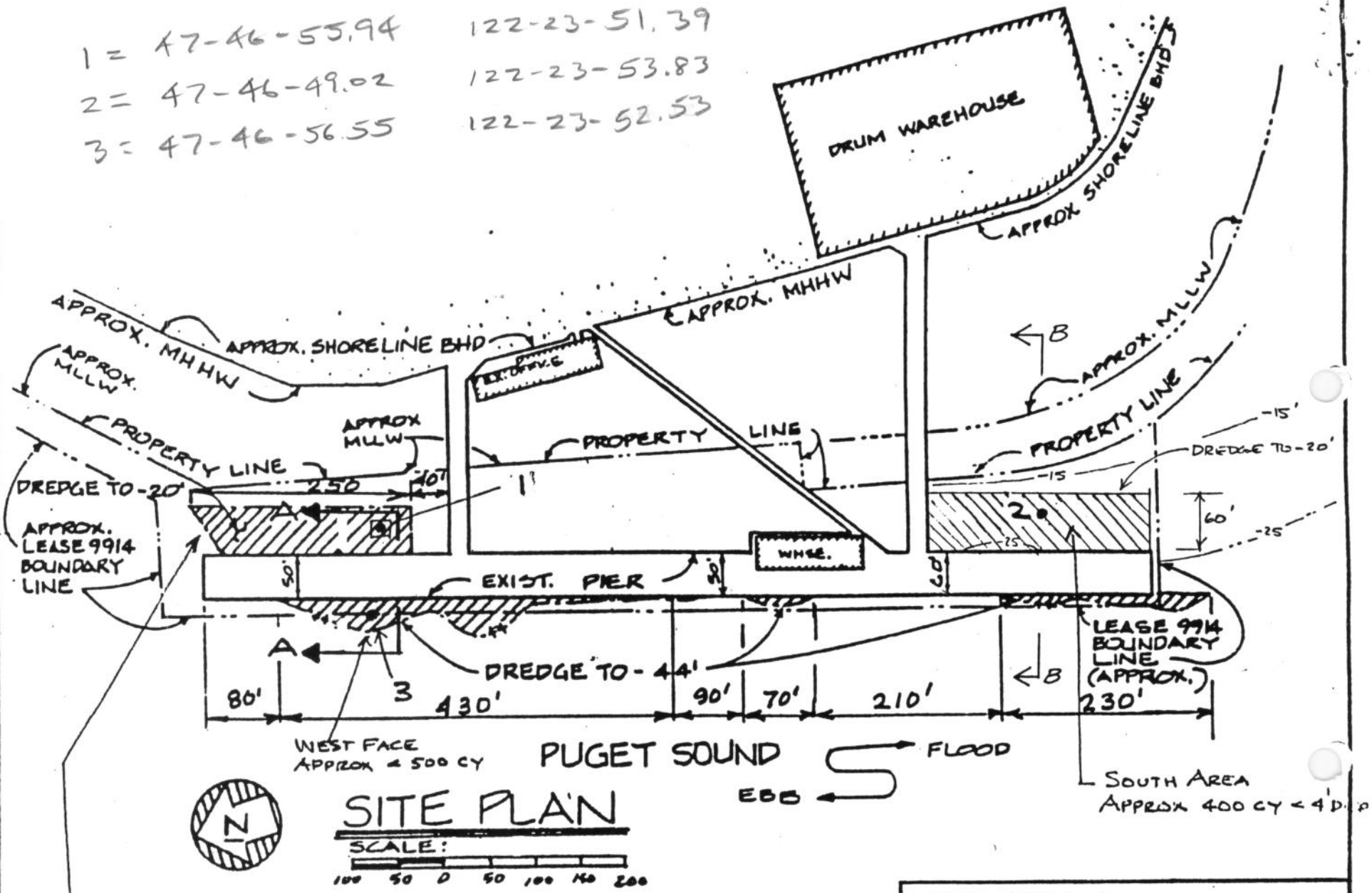
Enclosures

Copies Furnished:

Frank Urabeck/CENPS-EN-PL-PF
John Wakeman/CENPS-EN-PL-ER
David Kendall/David Fox/CENPS-OP-RG
Reg file

EPA/John Malek
DOE/Rick Vining
DNR/Betsy Striplin
DMMU file

1 = 47-46-55.94 122-23-51.39
2 = 47-46-49.02 122-23-53.83
3 = 47-46-56.55 122-23-52.53



SITE PLAN

SCALE: 100 50 0 50 100 150 200

071-OYB-2-

DREDGING WITH DEEP WATER DISPOSAL AND MAINTENANCE DREDGING

IN PUGET SOUND
POINT WELLS, KING CO., WASH.

CORE SAMPLING PLAN

Enclosure 1

SUMMARY OF ANALYSIS RESULTS
CHEVRON USA
OYB-2-013076

1. SEDIMENT QUALITY VALUE EXCEEDANCES AND BLANK DATA

CHEMICAL	1989 SL	1989 BT	1989 ML	6401 C2	6401 DUP C2 DUP	6402 C1	6402 DUP C1 DUP	6403 S1	Method Blank
CHLORINATED HYDROCARBONS									
1,3-Dichlorobenzene	170	1,241							
1,4-Dichlorobenzene	26	190	260						
1,2-Dichlorobenzene	19	37	350						
1,2,4-Trichlorbenzene	6.4		64						
Hexachlorobenzene	23	168	230						
PHTHALATES									
Dimethyl Phthalate	160	1,168							
Diethyl Phthalate	97								
Di-n-butyl phthalate	1,400	10,220							
Butyl benzyl phthalate	470								
Bis(2-ethylhexyl)phthalate	3,100	13,870							15
Di-n-octyl phthalate	6,200								
PHENOLS									
Phenol	120	876	1,200						
2-Methylphenol	10		72						
4-Methylphenol	120		1,200						
2-4-Dimethylphenol	10		50						
Pentachlorophenol	~~69~~ 100	504	690						
MISCELLANEOUS EXTRACTABLES									
Benzyl Alcohol	10		73						
Benzoic Acid	216		690						
Dibenzofuran	54		540	240					
Hexachloroethane	1,400	10,220							
Hexaclorobutadiene	29	212	290						
N-Nitrosodiphenylamine	22	161	220						
VOLATILES									
Trichloroethene	160	1,168	1,600						
Tetrachloroethene	14	102	210						
Ethylbenzene	10	27	50						
Total Xylene	12		160						
PESTICIDES									
Total DDT	6.9	50	69	8.4 U	8.4 U	7.2 U		9.8 U	
Aldrin	10	37		12.2 U	12.2 U	10.4 U		14.2 U	
Chlordane	10	37		12.2 U	12.2 U	10.4 U		14.2 U	
Dieldrin	10	37		12.2 U	12.2 U	10.4 U		14.2 U	
Heptachlor	10	37		12.2 U	12.2 U	10.4 U		14.2 U	
Lindane	10	37		12.2 U	12.2 U	10.4 U		14.2 U	
TOTAL PCBs	130	38*	2,500	160 U	160 U	140 U		180 U	

* Value normalized to Total Organic Carbon
(TOC normalized: 247.2*.463 (TOC) = 10.41)

SUMMARY OF ANALYSIS RESULTS
CHEVRON USA
OYB-2-013076

1. SEDIMENT QUALITY VALUE EXCEEDANCES AND BLANK DATA

CHEMICAL	1989 SL	1989 BT	1989 ML	6401 C2	6401 DUP C2 DUP	6402 C1	6402 DUP C1 DUP	6403 S1	Method Blank
METALS (ppm dry):									
Antimony	20	126	200						
Arsenic	57	393.1	700						
Cadmium	0.96		9.6						1 U
Copper	81		810						
Lead	66		660						12
Mercury	0.21	1.5	2.1						
Nickel	140	504							2
Silver	1.2	4.6	6.1						
Zinc	160		1,600						1
ORGANIC CHEMICALS (ppb dry):									
LPAHs									
Naphthalene	210		2,100						
Acenaphthylene	64		640	160 ✓					
Anthracene	130		1,300	1900 ✓			140 ✓		
Acenaphthene	63		630	510 ✓					
Fluorene	64		640	740 ✓					
Phenanthrene	320		3,200	8400 ✓				350 ✓	
2-Methylnaphthalene	67		670	76 ✓					
Total LPAH	610		6,100	12000 ✓				650 ✓	
HPAHs									
Fluoranthene	630	4,600	6,300	9700 * ✓					
Pyrene	430		7,300	9300 ✓				690 ✓	
Benzo(a)anthracene	450		4,500	1800 ✓					
Chrysene	670		6,700	1200 ✓					
Benzofluoranthenes	800		8,000	1600 ✓					
Benzo(a)pyrene	680	4,964	6,800						
Ideno(1,2,3-c,d)pyrene	69		5,200	230 ✓				97 ✓	
Dibenzo(a,h)anthracene	120		1,200						
Benzo(g,h,i)perylene	540		5,400						
Total HPAH	1,800		51,000	25000 ✓				2700 ✓	

* exceeds BT

—— exceeds ML