

MEMORANDUM FOR RECORD

24 December 1991

SUBJECT: DECISION ON THE SUITABILITY OF DREDGED MATERIAL TESTED FOR THE ITT RAYONIER BERTHING AREA, HOQUIAM, WASHINGTON (OYB-2-010368) TO BE DISPOSED OF AT EITHER THE SOUTH JETTY OR POINT CHEHALIS ESTUARINE OPEN WATER DISPOSAL SITES, OR AT THE 3.9 MILE OCEAN DISPOSAL SITE.

1. The following summary reflects the consensus decision of the Agencies' (Corps, Department of Ecology, Department of Natural Resources, and the Environmental Protection Agency) with jurisdiction on the acceptability of the sampling plan and all relevant test data (i.e., contained in Data Summary Letter Report from Parametrix, Inc. dated October 29, 1991) to make a determination of suitability of the 20,000 cubic yards of material proposed for dredging from the ITT Rayonier berthing area at Hoquiam, Washington for disposal at either the South Jetty or Point Chehalis estuarine disposal sites, or at the 3.9 mile ocean disposal site.
2. The Agencies' approved sampling and testing plan was followed, and quality assurance/quality control guidelines specified by PSEP and the PSDDA program were generally complied with. The data gathered were deemed sufficient and acceptable for decision making by the Agencies based on best professional judgement.
3. Chemistry data from two composited samples indicated that both dredged material management units (DMMU) had minor detected exceedances of chemical of concern PSDDA screening level (SL) guideline values for Acenaphthene and Fluorene, whereas one DMMU (MS-2) slightly exceeded the SL for Dibenzofuran (Table 1). PSDDA SL's are used in Puget Sound to establish a concern for biological effects, where chemicals below the SL have a low level of concern. In this context, they are only used in Grays Harbor as an interim yardstick to evaluate chemical concentration levels measured in sediments. All three chemicals were well below the "Lowest Apparent Effect Threshold" (LAET) level, where biological effects have been observed (Table 1). Therefore, with respect to the present ITT Rayonier Maintenance Dredging Project, the Agencies' consensus was that because chemical exceedances of PSDDA SL's were all below biological effects levels, no biological effects testing was required.

Table 1. Chemicals detected over PSDDA screening level.

Chemical	PSDDA SL (ppb)	LAET (ppb)	MS-1 (ppb)	MS-2 (ppb)
Acenaphthene	63	500 (Oyster, Microtox)	69	78
Fluorene	64	540 (Oyster, Microtox)	75	75
Dibenzofuran	54	540 (Oyster, Microtox)		57

4. Two composited sediment samples were also analyzed for dioxins by Triangle Laboratories, Inc. utilizing EPA method 8290. These data are summarized in Table 2. Results indicated that 2,3,7,8

TCDD (Tetrachloro-Dibenzo-p-Dioxin) was detected at 3.0 and 2.8 ppt (parts per trillion). This congener is regarded by the EPA as the most toxic form of dioxin. A few other less toxic dioxin congeners were detected at low parts per trillion concentrations. In the following table, the toxicity equivalence in terms of 2,3,7,8-TCDD is shown for the nine most toxic congeners of furan and dioxin (U expresses the detection limit for congeners that could not be quantified).

Table 2. Native congeners of Dioxin quantitated in ITT Rayonier sediments.

NATIVE CONGENERS ¹	TOXICITY EQUIVALENCE FACTOR	Sample MS-1 (ppt)	Sample MS-2 (ppt)
2,3,7,8-TCDD	1	3.0	2.8
2,3,7,8-TCDF	0.1	3.2	3.3
1,2,3,7,8-PeCDD	0.5	3.2	2.8
2,3,4,7,8-PeCDF	0.5	0.5 U	0.8 U
1,2,3,7,8-PeCDF	0.05	0.5 U	0.8 U
2,3,7,8-HxCDD	0.1	14.0	12.5
2,3,7,8-HxCDF	0.1	2.7	1.1 U
2,3,7,8-HpCDD	0.01	49.0	47.4
2,3,7,8-HpCDF	0.01	10.4	10.1

5. One way to summarize potential toxicity for mammals is to calculate the toxicity equivalent concentrations (TEC) measured in tissue. This is usually used for food ingestion, and has limited applicability to sediment because it **does not** consider the relative bioavailability of the congeners. Accordingly, TEC overstates toxicity to mammals when applied to sediments. TEC as a toxicity measure does not apply to fish, shellfish or birds. For comparison purposes only, sample MS-1 had a TEC for sediment of 7.65 ppt relative to sample MS-2 at 6.98 ppt.

6. Comparative analysis of the two ITT-Rayonier samples with the highest dioxin sample 11 (A-C) from the Grays Harbor Widening and Deepening Project is depicted in Table 3. It demonstrates that in general the ITT samples had lower congener specific concentrations and TEC than sample 11. The table also depicts congener specific 30 day and 60 day bioaccumulation

¹ PeCDD = Pentachlorodibenzodioxin
 PeCDF = Pentachlorodibenzofuran
 HxCDD = Hexachlorodibenzodioxin
 HxCDF = Hexachlorodibenzofuran
 HpCDD = Heptachlorodibenzodioxin
 HpCDF = Heptachlorodibenzofuran

observed in the Macoma clams from the Grays Harbor sample 11 material, and demonstrates that the high toxicity equivalent factor congeners of dioxin were generally not detected in the clam tissue. Based on the previous bioaccumulation testing results, which demonstrated low bioaccumulation in clam tissue, the Agencies concluded that bioaccumulation testing would not be required for the ITT Rayonier maintenance dredged material.

7. Based on the Agencies' present best professional judgment, these low concentrations are unlikely to be environmentally harmful for this project. The Agencies' consensus is that the material is suitable for either estuarine or ocean unconfined open-water disposal relative to these dioxin test results.

8. Based on the chemistry results described above no bioassay or bioaccumulation testing was required.

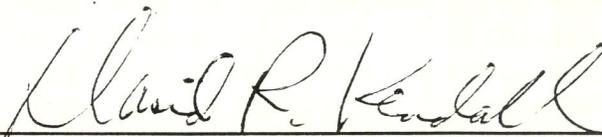
9. Based on the above discussion and summary of chemical results for the ITT Rayonier, Inc. berthing area maintenance dredging project area, the Agencies' concluded that all the dredged material tested (20,000 cubic yards) is suitable for disposal at either the South Jetty or Point Chehalis estuarine disposal sites, or at the 3.9 mile ocean disposal site.

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Concur:

1-14-92

Date



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

1-14-92

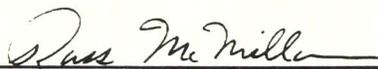
Date



John Malek/Justine Smith
Environmental Protection Agency
Region X

1-14-92

Date



Russ McMillan
Washington Department of Ecology

1/14/92

Date



Gene Revelas
Washington Department of Natural Resources

Enclosures

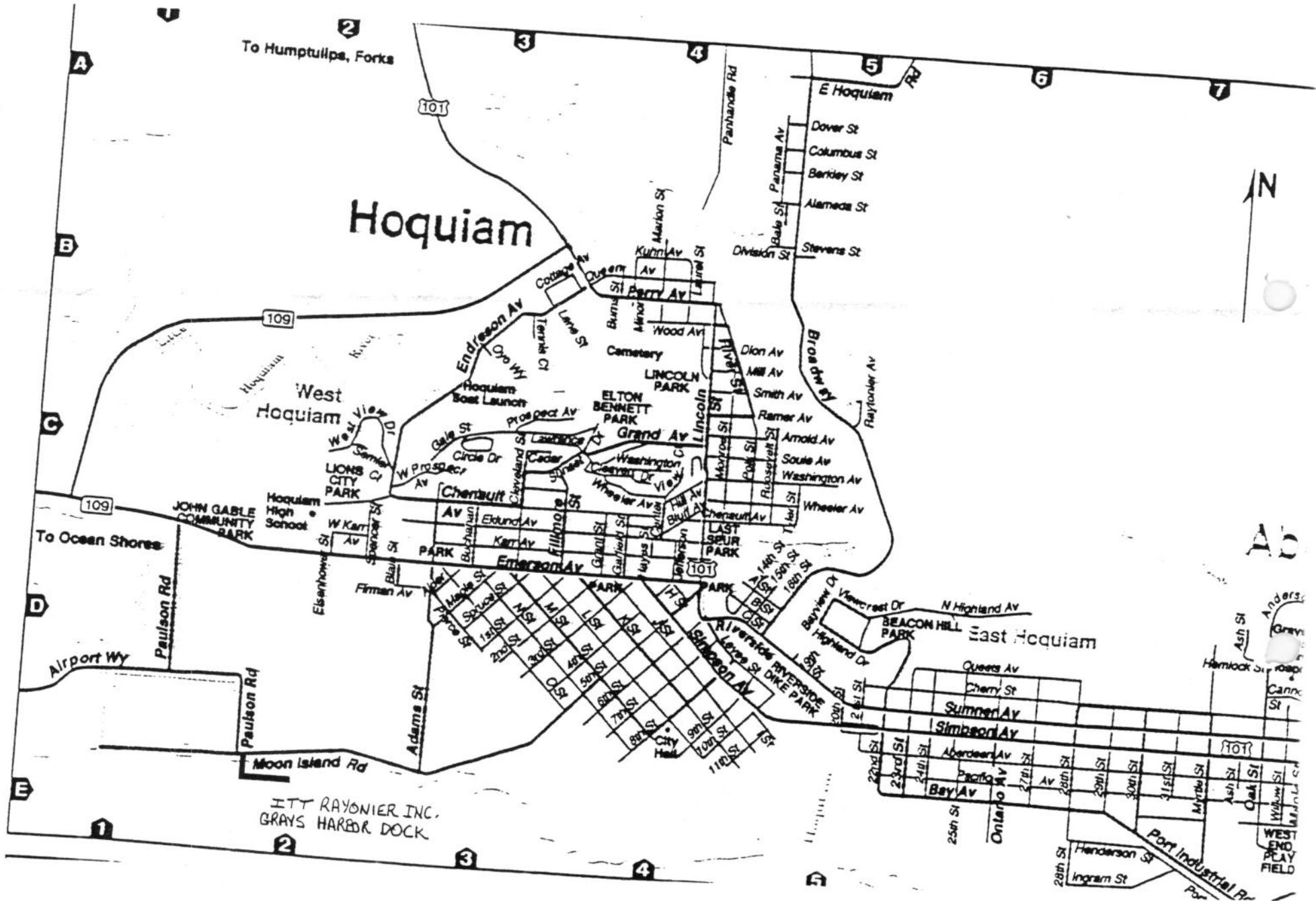
Copies Furnished:

John Wakeman, Corps
Frank Urabeck/Steve Babcock, Corps
Dick Berg, Corps
John Malek/Justine Smith, EPA
Russ McMillan, Ecology
Gene Revelas, DNR
DMMO File

TABLE 3. COMPARATIVE DIOXIN LEVELS FOR ITT RAYONIER SAMPLES VERSUS HIGHEST SAMPLE FOR GRAYS HARBOR WIDENING AND DEEPENING PROJECT.

CONGENOR	TOXICITY EQUIVALENT FACTOR (TEF)	ITT RAYONIER SAMPLE MS-1 and MS-2				GRAYS HARBOR PROJECT (WIDENING AND DEEPENING) SAMPLE 11 (A-C)			
		MS-1 (ppt)	TEC	MS-2 (ppt)	TEC	Concen. (ppt)	TEC	30 Day Macoma (ppt)	60 Day Macoma (ppt)
2,3,7,8-TCDD	1.0	3.0	3.0	2.8	2.8	2.9	2.9	ND	ND
2,3,7,8-PeCDD	0.5	3.2	1.6	2.8	1.4	4	2	ND	ND
2,3,7,8-HxCDD	0.1	14.0	1.4	12.5	1.3	18.7	1.9	ND	ND
2,3,7,8-HpCDD	0.01	49	0.49	47.4	0.47	130	1.3	5.7, 2.1, 5.8	2.6, 4.0
OCDD	0.001	305	0.31	284	0.28	140	0.14	8.0, 82, 93	18, 83
2,3,7,8-TCDF	0.1	3.2	0.32	3.3	0.33	3.1	0.31	0.04, 0.54	1.2, 0.79
1,2,3,7,8-PeCDF	0.05	<0.5 (0.25)*	0.01	<0.8 (0.4)*	0.02	3.5	0.18	ND	ND
2,3,4,7,8-PeCDF	0.5	<0.5 (0.25)*	0.13	<0.8 (0.4)*	0.2	3.1	1.55	ND	ND
2,3,7,8-HxCDF	0.1	2.7	0.27	<1.1 (0.55)*	0.06	15.8	1.51	0.3, 1.5, 1.2	0.9, 1.2
2,3,7,8-HpCDF	0.01	10.4	0.10	10.1	0.10	163.4	1.63	0, 1.47, ND	2.97, ND
OCDF	0.001	24.1	0.02	19.3	0.02	1000	1	6.0, 1.3, 5.4	4.5, 4.0
TOC (percent)		2.5		2.7		2.21			

* 0.5 X DETECTION LIMIT



Enclosure 1

FROM 0+00 TO 0+10 DREDGE TO 40 AT M.L.W.
 REMAINDER OF DREDGING TO 38' AT M.L.W.

* APPROX. 20,000 YRDS. REMOVAL.

GRAY'S HARBOR DOCK
 MAINTENANCE DREDGE
 AREA
 APPROX. 24,750 SQ. FT.



Port of
 Grays Harbor

GAYLE CONNOR
 Contract Administrator

P.O. Box 600
 Aberdeen, WA 98520
 (206) 533-9523
 FAX (206) 533-9505

SHEET 1 of 2

Station	N#1 DOLPHIN +	IFT-Rayonier Inc Pier														N#2 DOLPHIN +	N#3 DOLPHIN +	
		0+00	0+10	0+20	0+30	0+40	0+50	0+60	0+70	0+80	0+90	0+100	0+110	0+120	0+130			0+140	0+150
0+00	1.25 ^s	.36	.36	.35 ^s	.35	.34	.34	.33	.32	.32	.31	.31	.30	.30	.29	.29		
0+10	.36	.37	.37	.37	.37	.37	.37	.36	.35	.34	.34	.33	.33	.32	.32	.31		
0+20	.36	.37	.37	.37	.37	.37	.37	.36	.35	.34	.34	.33	.33	.32	.32	.31		
0+40	.35 ^s	.38	.38	.38	.38	.38	.37	.37	.36	.36	.35	.35	.34	.34	.33	.33		
0+60	.36 ^s	.38	.39	.39	.39	.39	.38	.38	.37	.37	.36	.36	.35	.35	.34	.34		
0+80	.37	.39	.39	.39	.39	.39	.39	.39	.38	.38	.37	.37	.36	.36	.35	.35		
1+00	.36 ^s	.37	.38	.39	.39	.40	.39	.37	.37	.37	.36	.36	.35	.35	.34	.34		
1+20	.36	.37	.38	.38	.39	.38	.38	.37	.37	.37	.36	.36	.35	.35	.34	.34		
1+40	.36 ^s	.38	.38	.38	.38	.38	.38	.37	.37	.37	.36	.36	.35	.35	.34	.34		
1+60	.37	.38	.39	.39	.39	.39	.39	.39	.39	.38	.38	.37	.37	.36	.36	.35		
1+80	.37 ^s	.39	.39	.39	.39	.39	.39	.39	.39	.38	.38	.37	.37	.36	.36	.35		
2+00	.38 ^s	.39	.39	.39	.39	.39	.39	.39	.39	.38	.38	.37	.37	.36	.36	.35		
NORTH EDGE NAVIGATION CHANNEL	.38 ^s	.39	.39	.39	.39	.39	.39	.39	.39	.38	.38	.37	.37	.36	.36	.35		
2+20	.38 ^s	.39	.39	.39	.39	.39	.39	.39	.39	.38	.38	.37	.37	.36	.36	.35		
2+40	.38 ^s	.39	.39	.39	.39	.39	.39	.39	.39	.38	.38	.37	.37	.36	.36	.35		
2+60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2+80	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3+00	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3+20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3+40	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3+60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

EBB
 FLOOD

NORTH EDGE NAVIGATION CHANNEL



PORT OF
 GRAYS HARBOR

SOUNDING GRID

DATE SOUNDED: 12/13/90
 DATE LAST SOUNDED: 4/23/90
 DATE LAST DREDGED: