CENPS-OP-DMMO

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)
Acenaphene	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 Labortories, 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 pptr (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 (pptr)	Sample MS-2 (pptr)
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 pptr relative to sample MS-2 at 6.98 pptr.

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

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[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 — David R. Kendall
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1-14-92 — Justine D. Smith
Date — John Malek/Justine Smith
Environmental Protection Agency
Region X

1-14-92 — Russ McMillan
Date — Russ McMillan
Washington Department of Ecology

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Date — Gene Revelas
Washington Department of Natural Resources

Enclosures

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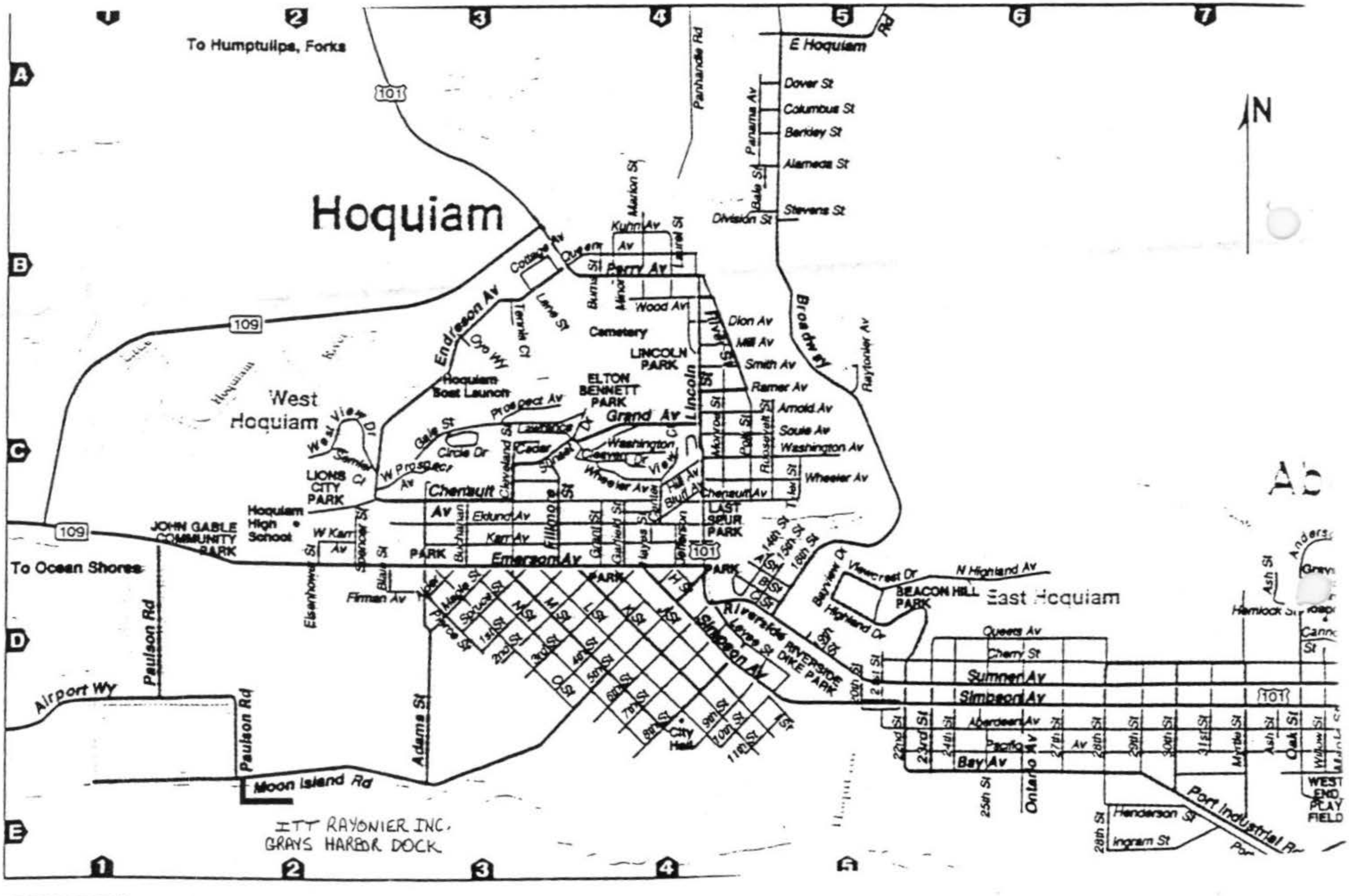
Dick Berg, Corps
John Malek/Justine Smith, EPA
Russ McMillan, Ecology
Gene Revelas, DNR
DMMO File

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


Hoquiam
To Humptulips, Forks
West Hoquiam
East Hoquiam
To Ocean Shores
101
109
E Hoquiam Rd
Panhandle Rd
Dover St
Columbus St
Berkley St
Alameda St
Stevens St
Division St
Panama Av
Broadway
Raytonier Av
Kuhn Av
Perry Av
Wood Av
Dion Av
Mill Av
Smith Av
Ramer Av
Arnold Av
Soule Av
Washington Av
Wheeler Av
Cemetery
LINCOLN PARK
ELTON BENNETT PARK
Grand Av
Lincoln St
Endresen Av
Cottage Av
Queen Av
Lane St
Hoquiam Boat Launch
Prospect Av
W Prospect Av
Gale St
Circle Dr
West View Dr
LIONS CITY PARK
Chenault Av
Eklund Av
Karr Av
Emerson Av
Fillmore St
Hoquiam High School
JOHN GABLE COMMUNITY PARK
W Karr Av
Eisenhower St
Spencer St
Firman Av
Pierce St
Maple St
Spruce St
Riverside
Levee St
Simpson Av
RIVERSIDE DIKE PARK
City Hall
LAST SPUR PARK
Viewcrest Dr
N Highland Av
Bayview Dr
Highland Dr
BEACON HILL PARK
Queen Av
Cherry St
Sumner Av
Simpson Av
Aberdeen Av
Pacific Av
Bay Av
Ontario Av
Henderson St
Ingram St
Port Industrial Rd
WEST END PLAY FIELD
Airport Wy
Paulson Rd
Adams St
Moon Island Rd
ITT RAYONIER INC.
GRAYS HARBOR DOCK
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Enclosure 1

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

* APPROX. 20,000 YRDS. REMOVAL.

[redacted] GRAYS HARBOR DOCK
MAINTENANCE DREDG AREA
APPROX. 24,750 SQ FT

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